114 年年會 海報論文展示：原著論文

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原著論文 114_A001

國立台灣大學附設醫院與台北市立聯合醫院忠孝院區雙向轉診的經驗

Experience of Bi-directional Referral Project between National Taiwan University Hospital Medical Center and Taipei City Hospital, Zhongxiao Campus Community Hospital

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Background

Overcrowding in medical center's emergency departments may threaten quality and safety of health services. The aim of our study is to retrospectively evaluate the practice of bi-directional referral project between National Taiwan University Hospital (NTUH) medical center and Taipei City Hospital Zhongxiao Branch community hospital.

Methods

We retrospectively collected data from 38 electric and paper records of nineteen age- and gender-matched concurrent control patients without bi-directional referral and nineteen case patients who received bi-directional referral between NTUH Medical Center and Zhongxiao Community Hospital from January 1st, 2017 to November 30th, 2017. Patients admitted not due to bidirectional referral during the same period were used as a control group. Mortality rate, rate of transfer back to National Taiwan University Hospital, 11-point satisfaction rating scale are used as key performance indexes of quality improvement of clinical services. Satisfaction of the enrolled patients was evaluated with the questionnaires containing satisfaction rating scale 0-10. An independent samples t test was used to compare the means of variables between the ESI triage level 2 and ESI triage level 3 groups.

Results

The ESI (emergency severity index) triage level 2 patients were significantly older than the ESI triage level 3 patients with non-significant p value of Levene's test indicating equal variance between the control and case groups , but there was no significant difference of average total satisfaction (TSAT) score of bidirectional referrals between these two ESI groups. Mortality rate is zero. Rate of transfer back to NTUH is zero. The average TSAT score of case group is 8.89± 0.81 while the average TSAT score of the control group is 9.40± 0.31.Both the
average TSAT scores of the case and control groups were above 8.

Conclusion

Early orienting of the admission of elderly patients on bi- directional referral system was demonstrated in this study. The parameters of quality of health care of the case group are comparable to those of the control group. The 0% mortality rate, 0% rate of transfer back to NTUH and good average TSAT score suggest that the referral program is safe and the quality of clinical services of these bi-directional referral patients is good.

原著論文 114_A002

長期暴露於空氣污染物與心血管及癌症相關死亡風險研究

Long-term air pollutant exposure and the risk of cardiovascular- and cancer-related mortality

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Background

Exposure to air pollution can cause vascular dysfunction and induce mutagenesis; however, its impact on cardiovascular disease (CVD) and cancer-related mortality remains inconclusive. This study investigated the effect of various air pollutant exposure levels on the risk of CVD and cancer-related mortality among Taiwanese adults.

Methods

We prospectively enrolled 83 257 adults who maintained the same residential address from 2005–2017. Participants were followed for CVD- and cancer-related mortality over 10.6 years. Residential address-specific air pollutant concentrations were estimated using the Ordinary Kriging model. The Fine–Gray subdistribution hazard model was applied to evaluate the association between air pollutant exposure and risks of CVD- and cancer-related mortality, with deaths from non-CVD and non-cancer causes treated as competing risks, respectively.

Results

Over 879 834 person-years of follow-up, 2,554 participants died, including 485 (19.0%) from CVD and 1,230 (48.2%) from cancer. Exposure to SO_2 was associated with the highest adjusted hazard ratio (aHR) for CVD-related mortality (aHR: 1.23; 95%CI: 1.07–1.41 per 2 ppb increase), followed by particulate matter ($PM_{2.5}$) (aHR: 1.05; 95% confidence interval [CI]: 1.03–1.08) and PM_{10} (aHR: 1.02; 95%CI: 1.01–1.04). Similarly, cancer-related mortality risk increased with higher concentrations of these pollutants, with aHRs of 1.23 (95%CI: 1.07–1.41) for SO_2, 1.05 (95%CI: 1.03–1.08) for $PM_{2.5}$, and 1.02 (95%CI: 1.01–1.04) for PM_{10}. Long-term exposure to NO_2 and O_3 was not significantly associated with the risk of either CVD- or cancer-related mortality.

Conclusion

Proactive air pollution control strategies are crucial for reducing CVD- and cancer-related deaths.

原著論文 114_A003

比較 Amivantamab 合併 lazertinib、osimertinib 合併化療以及 osimertinib 單用於 *EGFR* 突變肺癌之成本效果分析

Cost-effectiveness analysis of amivantamab-lazertinib, osimertinib-chemotherapy, and osimertinib in *EGFR*-mutated lung cancer

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Background

Amivantamab-lazertinib, osimertinib-chemotherapy, and osimertinib alone are the current standard first-line therapies for *EGFR*-mutated advanced lung cancer. A cost-effectiveness analysis comparing all three regimens is required.

Methods

This economic evaluation with a lifetime horizon and annual 3% discount was conducted from the perspective of the healthcare sectors in Taiwan and the US. Simulated patients with *EGFR*-mutated advanced lung cancer were entered into partitioned survival models upon initiation of first-line therapies. Model inputs were derived from trials and network meta-analyses (progression-free/overall survival, adverse events, and subsequent therapies), insurance payments or retail prices (costs of drug administration, physician visits, monitoring, and end-of-life care), and hospital cohorts (health utility). Subgroup, one-way deterministic, and probabilistic analyses were performed.

Results

The incremental cost-effectiveness ratios (ICERs) of osimertinib-chemotherapy versus osimertinib (Taiwan: $215,037/QALY; US: $441,467/QALY) and amivantamab-lazertinib versus osimertinib-chemotherapy (Taiwan: $758,462/QALY; US: $4,686,623/QALY) exceeded willingness-to-pay (WTP) thresholds (Taiwan: $70,000/QALY; US: $150,000/QALY). The costs of drugs and adverse event management resulted in the main cost differences among the three strategies. ICERs remained higher than WTP thresholds across patient subgroups. Osimertinib-chemotherapy had a 2.0% (0.3%) probability of being cost-effective at Taiwan's (the US's) WTP threshold. The probability of amivantamab-lazertinib was even lower.

Conclusion

Our analysis suggests that despite the superior efficacy of amivantamab-lazertinib and osimertinib-chemotherapy, they are not cost-effective compared with osimertinib as a first-line treatment for *EGFR*-mutated advanced lung cancer.

原著論文 114_A004

代謝功能障礙相關脂肪性肝病與心臟舒張功能之相關性

Diastolic function in patients with metabolic dysfunction-associated steatotic liver disease (MASLD)

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Background
Speckle-tracking echocardiography provides insights into myocardial contractility and relaxation. This study aimed to assess myocardial structure and diastolic function in patients with metabolic dysfunction-associated steatotic liver disease (MASLD), with a focus on differences by disease severity.

Methods
We prospectively enrolled patients with MASLD and control participants. Within the MASLD group, those with steatohepatitis (MASH) were further stratified by histological severity. Baseline characteristics, including liver histology and echocardiographic parameters, were analyzed. Linear regression was used to identify factors associated with myocardial structure and function.

Results
Between March 2015 and November 2023, 109 participants were enrolled: 33 controls without steatosis or hepatitis, 13 with cardiometabolic risk factors (CMRFs) and steatosis without steatohepatitis (steatosis group), and 63 with CMRFs and MASH (MASH group). Compared to controls, patients with steatosis or MASH showed significantly impaired myocardial relaxation (presented as increased E/e' ratio, tricuspid regurgitation velocity, and LA stiffness index) and signs of left ventricular (LV) remodeling (increased LV mass index and relative wall thickness). LA stiffness index was the most prominently elevated parameter in MASH patients. Regression analysis revealed that higher NAS scores, severe hepatocellular ballooning, elevated fatty liver index (FLI), and obesity were independently associated with increased LA stiffness index. MASH patients also showed a higher risk for heart failure with preserved ejection fraction (HFpEF).

Conclusion
MASLD is associated with impaired myocardial relaxation and LV remodeling. LA stiffness index may serve as a key marker for identifying patients at risk. Early screening and risk management are particularly important for those with MASH.

原著論文 114_A005

AT-rich interaction domain 1A 在肝細胞癌的免疫調節角色

The role of immuno-modulatory effect of AT-rich interaction domain 1A in hepatocellular carcinoma

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Background

Hepatocellular carcinoma (HCC) is a common cancer that treats lives and the main risk factors include virus infection, alcohol addiction, metabolic-associated fatty liver disease (MAFLD), and dietary toxins. Although immune checkpoint inhibitors (ICIs) are a proven effective class in HCC, the detailed mechanisms in the regulation of immune system against HCC were still obscure. It was known that loss of AT-rich interaction domain 1A (ARID1A) in hepatocytes is associated with the activation of erythropoietin transcription and further promotes the HCC progression. However, the role of ARID1A in the ICI-relieved HCC is unknown. Thus, this study aims to investigate whether the expression of ARID1A is associated with the response to ICI therapy and the prognosis of HCC patients.

Methods

A total of 76 patients who received ICIs were divided into two groups based on treatment efficacy: responders (n=42) and non-responders (n=34). A cohort study using immunohistochemical staining was performed to analyze ARID1A expression in HCC. Kaplan-Meier survival curve analysis was used to evaluate the association between ARID1A expression levels and patient overall survival (OS) and progression-free survival (PFS). Univariate analysis and multivariate Cox analysis were conducted to determine independent prognostic factors for OS in HCC patients, incorporating clinicopathological characteristics and ARID1A expression. Bioinformatic tools and an in vivo mouse model were utilized to explore the molecular mechanisms by which ARID1A regulates the immune response.

Results

A positive correlation between ARID1A expression and the ICI treatment response of HCC patients was observed. Survival curve analysis showed a longer median OS time in the high ARID1A expression group, as compared with the lower expression group (40.1 months vs. 16.9 months, p=0.0257). High ARID1A expression was also associated with a longer PF) of 8.7 months (95% CI: 3.7–12.3), as compared with 3.4 months (95% CI: 1.8–5.7) for those with low ARID1A expression. Furthermore, an increment of CD8+ T cell distribution was observed in the tumor tissue of the responder group, which also had higher ARID1A expression. Furthermore, we found that knockdown of ARI1A in Hepa1-6 mouse hepatoma cells abolished the effects of ICI through decrease of T-cell infiltration into tumors in a tumor-bearing animal modal.

Conclusion

ARID1A promotes the infiltration of immune cells into the tumor microenvironment, and higher

ARID1A expression is associated with a better treatment response and longer survival duration.

原著論文 114_A006

肺阻塞合併不同共病症的結核病風險

The Risk of Tuberculosis in Chronic Obstructive Pulmonary Disease Across Different Comorbidities

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Background
Chronic obstructive pulmonary disease (COPD) is a progressive respiratory disorder with significant global morbidity and mortality. COPD is increasingly recognized as a systemic inflammatory condition that predisposes patients to multiple comorbidities, including tuberculosis. There are limited data on how comorbidities in COPD influence the development of tuberculosis.

Methods
We conducted a nationwide, retrospective cohort study using data from Taiwan's National Health Insurance Research Database (NHIRD) between 2011 and 2021. Patients aged ≧40 years with a diagnosis of COPD, confirmed by ≧3 outpatient visits or ≧1 hospitalization, were included. Individuals with prior tuberculosis were excluded. Non-COPD controls were matched 1:1 using propensity score matching for demographics and comorbidities. The primary outcome was incident tuberculosis (ICD-9-CM 010–018). Cox proportional hazards models were used to estimate adjusted hazard ratios (aHRs) for tuberculosis, accounting for a variety of comorbidities.

Results
A total of 117,989 COPD patients and an equal number of matched controls were analyzed. During follow-up, tuberculosis incidence was significantly higher in the COPD group (3.20 vs. 1.45 per 10,000 person-years). COPD was associated with a 74% increased risk of tuberculosis (aHR 1.74; 95% CI: 1.42–2.14; P < 0.001). Stratified analysis demonstrated that tuberculosis risk rose progressively with age and was markedly amplified by comorbidities. Notably, pneumoconiosis conferred a nearly sevenfold higher tuberculosis risk among COPD patients (aHR 6.94), followed by rheumatoid arthritis (aHR 2.05) and lung cancer (aHR 1.81).

Conclusion
COPD significantly increases the risk of developing tuberculosis, particularly in patients with high-risk comorbidities such as pneumoconiosis.

原著論文 114_A007

成人闌尾切除術後失智症風險：一項世代研究

Dementia Risk Following Adult Appendectomy: A Cohort Study

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Background

Growing evidence highlights bidirectional communication between the gut and the brain. Neurotransmitters are critical not only for gastrointestinal motility and innate immune function but also for regulating emotions and cognition. Previous studies have suggested an association between appendectomy and Parkinson's disease, and elevated levels of N- and C-terminal truncated alpha-synuclein aggregates have been identified in the healthy human appendix. However, evidence regarding dementia risk after appendectomy remains limited. We therefore conducted a retrospective cohort study to examine this association.

Methods

Patients aged≧20 years who underwent appendectomy between 2001 and 2016 were identified from the National Health Insurance Research Database to form the appendectomy cohort. A comparison cohort without appendectomy was randomly selected from the general population and frequency matched at a 1:1 ratio by age, sex, and index year. Participants were followed until a diagnosis of dementia, censoring, or the end of 2017. Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for dementia risk.

Results

A total of 287,078 patients who underwent appendectomy and an equal number of matched controls were included. The incidence of dementia was lower in the appendectomy cohort than in the control cohort (2.42 vs. 2.85 per 1,000 person-years). After adjusting for potential confounders, appendectomy was associated with an 11% lower risk of dementia compared with no appendectomy (adjusted HR = 0.89, 95% CI = 0.86 – 0.92). Among patients aged ≧ 65 years, appendectomy was linked to an even greater risk reduction (adjusted HR = 0.85, 95% CI = 0.81–0.88).

Conclusion

These findings suggest that appendectomy may reduce the risk of dementia, potentially through alterations in the gut–brain axis and related neuroinflammatory pathways.

原著論文 114_A008

定量分析比較維他命 D 接受體，Ki67， CK18 免疫組織化學的數位影像在胃炎，腸壁化生，胃腺癌不同部位的表現量

A Quantitative analysis for immunohistochemistry digital images of the vitamin D receptor, Ki67, cytokeratin 18 expression between gastritis, intestinal metaplasia and gastric adenocarcinoma

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Background

This study aimed to compare the immunohistochemical (IHC) expressions of vitamin D receptor (VDR), cell proliferation (Ki67), and apoptosis (CK18) in the gastric mucosa of patients with gastritis, intestinal metaplasia (IM), and adenocarcinoma using the quantitative analysis of digital images by computer software.

Methods

This study retrospectively enrolled specimens from tissue bank at the Keelung Chang Gung Memorial Hospital from November of 2016 to June, 2024, which were diagnosed as gastric adenocarcinoma. The inclusion criteria were pathologic findings revealed the three parts of gastritis, IM, and adenocarcinoma. Tissue slides after IHC staining were transformed into digital images using a scanner and analyzed by computer software (QuPath and ImageJ). IHC staining included VDR, Ki67 and CK18.

Results

Fifty-six patients were included in the IHC staining quantitative analysis. The mean age was 77.0 ± 11.9 y/o. Forty (40/56, 71.4%) patients were poorly differentiated type tumors (poorly differentiated adenocarcinoma N=5; poorly cohesive carcinoma N=18; mixed type). Sixteen (16/56, 28.6%) patients were well or moderate differentiated adenocarcinoma. According to the stage classification, the numbers of patients in each stage were stage I, N=12; stage II, N=11; stage III, N=16; stage IV, N=17. Compare with normal tissue by IHC quantitative analysis, Ki67, CK18 and VDR expressions (%) were increased in gastric malignant tissue ($P < 0.05$)。In view of gastric malignancy, the expressions of Ki67, CK18, VDR were negatively correlated with stage ($P<0.01$)。There was no difference of Ki67 and VDR expression between gastric malignant tissue and intestinal metaplasia tissue. But the expression of CK18 was higher in gastric malignancy than the presence in normal gastric tissue. According to the pathologic classification of gastric adenocarcinoma, poorly differentiated adenocarcinoma (PDA) and poorly differentiated cohesive carcinoma (PCC) and mixed type were included in the group of poorly differentiated type. Well and moderate differentiated adenocarcinoma were included in the group of well differentiated type. No different expression of Ki67，CK18，and VDR among these three groups (PDA, PCC and WA). The expressions of Ki67, CK18 and VDR were higher in gastric malignant part than gastric normal tissue. However, the presentations of Ki67, CK18 and VDR were negatively correlated with stage classification ($P < 0.05$). However, survival time was not correlated with the expressions of VDR, Ki67, and CK18.

Conclusion

In the presentation of IHC stains, including Ki 67, CK18 and VDR, the presentation was higher in gastric malignant part than gastric normal tissue. But the presentation was negatively correlated with tumor stage. No different presentation of Ki67, CK18 and VDR was found among different tumor type (PDA, PCC and WA). Survival time was not correlated the presentation of Ki67, CK18 and VDR.

原著論文 114_A009

綜合溫度熱指數與中央肥胖在台灣不同地區呈相反關係

Opposite association between wet-bulb globe temperature with central obesity in different geographic regions in Taiwan

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Background

Despite the known effects of global warming and rising ambient temperatures, the potential influence of environmental heat stress on central obesity remains underexplored, particularly in subtropical and tropical regions such as Taiwan. This study investigates the association between wet-bulb globe temperature (WBGT) with central obesity across the main island of Taiwan.

Methods

Using data from 120,424 participants in the Taiwan Biobank, central obesity was assessed via waist circumference (WC), with central obesity defined as WC 80/90 cm in women/men. WBGT exposure data were derived using high-resolution spatial-temporal models. The analysis examined WBGT values during two time periods: work (8:00 AM – 5:00 PM), and midday (11:00 AM – 2:00 PM).

Results

In central Taiwan, each 1°C increase in average midday period WBGT was significantly associated with a high prevalence of central obesity (odds ratio [OR], 1.048, $p = 0.009$), whereas each 1°C rise in both midday and work period WBGT in southern Taiwan was significantly associated with a low prevalence of central obesity (OR 0.929, $p < 0.001$ and 0.954, $p < 0.001$, respectively). However, no significant associations were observed between central obesity with WBGT in northern or eastern Taiwan.

Conclusion

There are significant regional disparities in the association between WBGT with central obesity in Taiwan, emphasizing the need for tailored public health strategies and climate-adaptive interventions to mitigate the risk of obesity across different environments.

原著論文 114_A010

急性骨髓性白血病中細胞免疫分型異常表現：對預後和風險分級的影響

Aberrant Immunophenotypic Marker Expression in AML: Prognostic and Risk Stratification Implications

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Background

Acute myeloid leukemia (AML) is a heterogeneous hematologic malignancy with diverse prognoses. While genetic exams are widely used for risk classification, flow cytometric immunophenotyping still plays a key role in diagnosis and prognosis evaluation. Increasing evidence suggests that aberrant expression of surface markers—particularly CD7, CD56, and CD79a—is linked to adverse outcomes. CD7 is often associated with FLT3 mutations and poor survival, whereas CD56 correlates with extramedullary disease and t(8;21) AML. These markers may therefore refine prognostic stratification and guide personalized treatment strategies. This study aims to evaluate the prognostic significance of aberrant CD7, CD56, and CD79a expression in AML patients to improve risk stratification and support personalized therapy.

Methods

This study retrospectively analyzed 136 AML patients at Kaohsiung Medical University Hospital diagnosed between 2022 and 2024. Flow cytometry was used to detect aberrant surface markers on myeloid precursor cells. The relationship between aberrant CD56 and CD7 expression and clinical outcomes was evaluated. Patients were stratified according to ELN 2022 risk categories and followed for treatment response and clinical outcomes. Statistical analyses included survival estimation (Kaplan-Meier method), association testing (χ^2 or Fisher's exact test), and multivariate modeling (Cox proportional hazards regression).

Results

Aberrant CD56 expression was detected in 37 patients (27.2%), while CD7 expression was observed in 42 patients (30.9%). Patients with CD56 expression had significantly shorter relapse-free survival (5.97 vs. 10.39 months, p=0.031) and overall survival (9.75 vs. 15.32 months, p=0.022) compared with CD56-negative patients. In multivariate analysis among adverse-risk patients, aberrant CD56 expression emerged as an independent prognostic factor for relapse-free survival (HR 1.93, 95% CI 1.16–3.71, p=0.026). Notably, co-expression of CD7 and CD56 was associated with the highest relapse rate (90%).

Conclusion

This study revealed that aberrant CD56 expression is related to poorer clinical outcome in AML, particularly in adverse-risk and secondary AML patients. These findings suggest that CD56 and CD7, especially when co-expressed, may serve as useful prognostic markers in AML, potentially aiding in more accurate risk stratification and personalized treatment planning.

原著論文 114_A011

探討正子掃描在新診斷濾泡性淋巴瘤中的角色：單一機構經驗

Investigation of the Role of PET/CT in Newly Diagnosed Follicular Lymphoma: A Single-Institution Experience

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Background

^{18}F-FDG PET/CT (^{18}F-fluorodeoxyglucose positron emission tomography/computed tomography) is the gold-standard imaging modality for staging and treatment response assessment in follicular lymphoma (FL). Progression of disease within 24 months (POD24) is a well-established predictor of poor outcomes; however, identifying high-risk patients at diagnosis remains challenging. This study aimed to evaluate the prognostic significance of baseline maximum standardized uptake value (SUVmax) derived from PET/CT in predicting POD24 and progression-free survival (PFS). In addition, the integration of SUVmax with clinical and molecular markers, including lactate dehydrogenase (LDH), β2-microglobulin, and Ki67 proliferative index, was explored to refine risk stratification.

Methods

This retrospective study included 119 newly diagnosed FL patients treated at a single institution. Baseline SUVmax values were recorded at whole-body and site-specific levels (biopsy site, right iliac crest, sternum, L1). Clinical parameters (LDH, β2-microglobulin, Ki67) were collected. Correlation analysis, ROC curve determination, Kaplan–Meier survival analysis, and Cox proportional hazards models were used to assess prognostic associations with POD24 and PFS.

Results

Among 119 patients, the median PFS was 54.3 months, and the mean was 70.2 ± 57.4 months; 25% experienced POD24. Higher baseline SUVmax correlated with shorter PFS (Pearson correlation). ROC analysis identified a whole-body SUVmax cutoff of 14.5 as optimal for predicting POD24. Kaplan–Meier analysis demonstrated that patients with SUVmax >14.5 had significantly shorter PFS (median 38.2 months, p=0.024). In multivariate Cox regression, SUVmax remained an independent predictor of PFS after adjusting for LDH and β2-microglobulin ($p<0.05$).

Conclusion

Baseline whole-body SUVmax is a significant independent predictor of PFS in FL. Integration of PET-derived SUVmax with conventional biomarkers may enhance baseline risk stratification and guide personalized treatment strategies for newly diagnosed patients.

原著論文 114_A012

台灣接受酪氨酸激酶抑制劑治療之癌症病人之治療性藥物監測 — 慢性骨髓性白血病群組研究

Therapeutic drug monitoring in Taiwan cancer patients receiving tyrosine kinase inhibitors – chronic myeloid leukemia cohort

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Background

Chronic myeloid leukemia (CML) is a myeloproliferative disorder caused by the BCR-ABL1 fusion gene from the Philadelphia chromosome. It leads to uncontrolled white blood cell growth, usually with slow progression but potential for aggressive disease. Tyrosine kinase inhibitors (TKIs) like imatinib, dasatinib, and nilotinib are the mainstay therapies, improving survival and allowing near-normal life expectancy. However, some patients experience side effects including fatigue, nausea, muscle cramps, fluid retention, and cardiovascular issues, often necessitating dose adjustments. Standard TKI doses are fixed based on pivotal trials mostly enrolling Caucasian patients, overlooking racial and body size differences that may affect drug metabolism, efficacy, and safety. Therapeutic drug monitoring remains underused. Due to limited pharmacokinetic data in Taiwanese patients under TKI treatment, this study aims to address these gaps.

Methods

We prospectively enrolled CML patients under stable dose of TKI at least 14 days. After informed consent, patient received blood tests 1 hour before and at least 1 hour after taking regular TKI. Blood samples were sent for further analysis using liquid chromatography-tandem mass spectrometry (LC-MS/MS). We compared serum level of trough concentration (C_0) and maximum concentration (C_{max}) of TKI with clinical outcomes including treatment result and adverse effects.

Results

Fifteen chronic phase CML patients were enrolled from August 2024 to March 2025, with a mean age of 58.7 years (6 males, 9 females). Each treatment group—imatinib, dasatinib, and nilotinib—included five patients. All imatinib patients received the standard 400 mg once daily dose, with mean C_0 and C_{max} concentrations of 1436.5 ng/mL and 2142.7 ng/mL, respectively. One patient had a C^0 below the recommended range (1100–3200 ng/mL) but still achieved deep molecular response (DMR) without side effects. In the dasatinib group, two patients were on the standard 100 mg once daily dose, while three received 50 mg once daily due to adverse effects such as thrombocytopenia and pericardial effusion. Mean C_0 and C_{max} were 2.9 ng/mL and 54.5 ng/mL, respectively. Two patients on reduced doses had lower C_{max} but still achieved DMR. Among nilotinib patients, two received 300 mg twice daily, two received 150 mg twice daily, and one was on a low dose of 150 mg every other day due to prior side effects. Mean C_0 and C_{max} were 784.3 ng/mL and 1073.2 ng/mL. The low-dose patient had a very low C_0 of 34.8 ng/mL but surprisingly maintained DMR.

Conclusion

Therapeutic drug monitoring (TDM) is widely used in antibiotics but less developed for cancer targeted therapies. We collaborated with experts from School of Pharmacology in Kaohsiung Medical University to create a platform for measuring serum trough and peak levels of various TKIs. In this CML cohort, we observed that TKI dose does not always correlate directly with blood concentration. The relationship between serum level and treatment response was also not so absolute. Individual differences remain a key factor in drug metabolism. Establishing this TDM platform will enhance future clinical care by enabling more precise and personalized treatments.

原著論文 114_A013

比較臨床早期胃癌(cT1)病人接受手術與內視鏡黏膜下剝離術的臨床預後

Comparison of clinical outcomes between endoscopic submucosal dissection and surgery in patients with early gastric adenocarcinoma (cT1)

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Background

Early gastric cancer (EGC) is a gastric adenocarcinoma confined to the mucosa or submucosa (cT1, any N). Endoscopic submucosal dissection (ESD) is a minimally invasive alternative to surgery, offering organ preservation and faster recovery. Although Japanese guidelines extend ESD criteria to <2 cm undifferentiated, non-ulcerated lesions, real-world data from Taiwan are limited. This study compares survival outcomes of cT1 EGC patients treated with ESD or surgery.

Methods

From 2008 to 2023, patients with cT1 gastric adenocarcinoma at a Southern Taiwan medical center who underwent ESD or surgery were retrospectively reviewed. Inclusion criteria were EGC confirmed by endoscopic biopsy, magnifying endoscopy with narrow-band image or endoscopic ultrasound, and computer tomography of the abdomen. Exclusion criteria included presence of other cancers, only received conservative/palliative care, or loss to follow-up. Our ESD followed Japanese guideline indications, with exceptions for older age, poor ECOG status, or comorbidities. The primary outcome was overall and progression-free survival (OS, PFS) in cases (all histological grades). Subgroup analysis evaluated those with pTis–pT1b, grade 3–4 tumors. Chi-square/Fisher's exact tests were used and Kaplan–Meier analysis assessed OS and PFS (significance: $P<0.05$).

Results

A total of 117 patients with cT1 EGC (pTis–pT1b) underwent either ESD (n=32) or surgery (n=85). Patients in the ESD group were older than those in the surgery group (mean age 69.5 ± 2.6 vs. 63.6 ± 1.1 years, $p = 0.02$), with a comparable gender distribution between groups (% of male: 68.7% vs. 51.8%, $P=0.11$). After adjusting for age and sex, OS did not differ significantly between groups (aHR = 1.56, $p = 0.29$), nor did PFS (aHR = 1.71, $p = 0.57$). In the subgroup of grade 3–4 tumors, OS and PFS were also comparable between ESD and surgery (aHR for OS= 1.70, $p = 0.57$). Only three recurrences were observed, all in the surgery group.

Conclusion

Our survival analysis suggests that ESD is a viable alternative for patients with EGC, even in grade 3–4 tumors staged pTis–pT1b, provided strict selection criteria are applied. It may be particularly suitable for patients who are older, have poor ECOG performance status, or significant comorbidities.

原著論文 114_A014

糖尿病與非糖尿病慢性腎臟病患者 Fazekas 量表與腎功能之關聯：來自 Taiwan Kidney Outcome cohort 的回溯性世代研究

Association between Fazekas score severity and renal function in chronic kidney disease patients with and without diabetes mellitus: A retrospective cohort study from the Taiwan Kidney Outcome Cohort

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Background

Proteinuria and estimated glomerular filtration rate (eGFR) vary across different chronic kidney disease (CKD) etiologies, with distinct patterns observed in patients with and without diabetes mellitus (DM). As renal function declines, cognitive impairment frequently develops. The Fazekas score, derived from brain magnetic resonance imaging, serves as a key measure of structural brain damage. This study aims to explore the relationship between renal function parameters and structural brain damage in CKD patients, stratified by DM status.

Methods

This study included 1,749 CKD patients from the Taiwan Kidney Outcome (TAKO) cohort, who received pre-ESRD care within the Kaohsiung Medical University Hospital care system between July 2007 and December 2021. Eligible patients were aged ≧18 years with an eGFR <60 mL/min/1.73 m^2, or an eGFR ≧60 mL/min/1.73 m^2 with proteinuria for more than three months. The Fazekas score was categorized into periventricular white matter (PWM, score 0+1, 2, 3) and deep white matter (DWM, score 0+1, 2, 3). Kidney function status was assessed using the eGFR (by CKD-EPI equation), albuminuria, and KDIGO CKD risk categories. Ordinal regression analysis was performed to assess associations between Fazekas score severity and renal parameters.

Results

Of the 1,749 enrolled patients, 655 were excluded due to missing baseline albuminuria and eGFR data, leaving 615 patients with DM and 470 patients without DM. In the fully adjusted model, the very high KDIGO risk category was associated with higher PWM severity in DM (OR 2.42, 95% CI 1.31–4.49, p=0.005) and non-DM (OR 1.76, 95% CI 1.03–3.00, p=0.038) compared to low-to-moderate risk. Besides, albuminuria category A3 was associated with increased PWM severity in both DM (OR 2.46, 95% CI 1.49–4.10, p<0.001) and non-DM (OR 2.11, 95% CI 1.27–3.51, p=0.004) compared to category A1. Lower eGFR was associated with higher Fazekas score severity in DM, with an OR 0.99 (95% CI 0.97–0.99, p=0.001) in PWM and an OR 0.99 (95% CI 0.98–0.996, p=0.007) in DWM, but no associations in non-DM patients.

Conclusion

This study highlights the distinct association between renal function and brain structure, as assessed by the Fazekas score. Our findings underscore the importance of evaluating brain

structural damage in relation to varying renal function parameters (eGFR and albuminuria) according to DM status.

原著論文 114_A015

明智選擇：登革熱病人不需常規使用 acetaminophen 退燒和止痛

Choosing wisely: Routine use of acetaminophen for fever and pain relief in dengue patients is unnecessary

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Background

The clinical symptoms of dengue fever include fever, headache, and generalized soreness. To alleviate patients' discomforts, physicians often prescribe acetaminophen. However, studies have reported that the routine use of acetaminophen in dengue patients increases the likelihood of abnormal liver function. Therefore, we established a Choosing Wisely topic: "Routine use of acetaminophen for fever and pain relief in dengue patients is unnecessary", and compared the average acetaminophen dose of hospitalization, proportion of patients with abnormal liver function, average length of hospitalization, average duration of fever, and average maximum pain score before and after the implementation of this policy.

Methods

This study began with the first locally transmitted case of dengue fever in Kaohsiung City on June 26, 2023. It included hospitalized dengue patients in the Department of General Internal Medicine of Kaohsiung Medical University Hospital up to November 20, 2023, with diagnostic codes (ICD-10) A90 or A91, and excluded patients who tested negative for both the NS1 rapid test and polymerase chain reaction. The patients included in this period were defined as group A. After promoting the policy, acetaminophen was administered only as needed (PRN) for symptoms control, the strategy was performed since November 21, 2023 to May 31, 2024. The patients included in the second period were defined as group B. The abnormal liver function was defined as Glutamic Oxaloacetic Transaminase (GOT) or Glutamic Pyruvic Transaminase (GPT) levels > 40U/L. The evaluation of maximum pain score was applied by the Numerical Rating Scale.

Results

After promotion of the policy, group B had significantly lower proportion of patients with abnormal liver function compared with group A (80.6% vs. 66.7%, p = 0.033), while there were no significant differences in average length of hospitalization, average duration of fever, or average maximum pain score between two groups.

Conclusion

Hospitalized dengue patients do not require routine administration of acetaminophen. Instead, acetaminophen should be given on a PRN basis for symptoms control only when the patient experiences clinical symptoms such as fever, headache, or generalized soreness.

原著論文 114_A016

糖尿病視網膜病變嚴重度與腎功能：Taiwan Kidney Outcome cohort 的回溯性世代研究

Diabetic retinopathy severity and renal function: a retrospective cohort study from the Taiwan Kidney Outcome cohort

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Background

Diabetes mellitus (DM) is the leading cause of end-stage renal disease (ESRD) in Taiwan. Diabetic retinopathy (DR) and nephropathy, both microvascular complications of DM, that affect the eyes and kidneys, respectively. While both complications share common pathophysiological mechanisms, the relationship between DR severity and renal function in diabetic patients with chronic kidney disease (CKD) remains unclear. This study examined the association between DR severity and renal function in this population.

Methods

This study included 1,503 diabetic patients CKD from the Taiwan Kidney Outcome (TAKO) cohort, receiving pre-ESRD care program in Kaohsiung Medical University Hospital care system between April 2008 and December 2021. Eligible patients were aged ≧18 years with an estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m^2, or an eGFR ≧60 mL/min/1.73 m^2 with proteinuria for more than three months. DR was graded into seven levels and further categorized into three groups: no apparent or mild to moderate non-proliferative, severe to very severe non-proliferative, and proliferative. Kidney function status was assessed using the CKD-EPI equation, albuminuria and KDIGO CKD risk categories. Ordinal regression analysis was performed using Jamovi software to evaluate associations between DR severity and renal parameters.

Results

In the fully adjusted model, eGFR was negatively associated with diabetic retinopathy severity (OR 0.99, 95% CI 0.98–0.998, p=0.022). Compared with albuminuria category A1, category A3 was associated with increased retinopathy severity (OR 3.07, 95% CI 1.77–5.47; p<0.001), whereas category A2 was not significant association (OR 0.96, 95% CI 0.56–1.71; p=0.893). Relative to KDIGO low-to-moderate risk categories, the high-risk category (OR 2.30, 95% CI 1.09–5.11, p=0.033) and the very high-risk category (OR 3.87, 95% CI 2.10–7.74, p<0.001) were associated with greater retinopathy severity.

Conclusion

Lower eGFR, albuminuria category A3, and high or very high KDIGO risk categories were independently associated with greater DR severity in diabetic patients with CKD. These findings suggested that impaired renal function should prompt comprehensive ophthalmic evaluation to

address the higher risk of severe retinopathy.

原著論文 114_A017

在不同酒精暴露下的脂肪性肝病的肝病嚴重性和心血管風險- 台灣的一項全國性研究

Liver disease severity and cardiovascular risk of steatotic liver disease with different alcohol exposure - a nationwide study in Taiwan

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Background

SLD subjects carrying CMRFs and with moderate alcohol consumption (daily intake of 20 to 50 g for females and 30 to 60 g for males) are named as metabolic dysfunction-associated SLD (MASLD) with excessive alcohol consumption (MetALD), whereas those with heavy alcohol consumption (daily intake >50 g for females and > 60 g for males) are viewed as having ALD regardless CMRF carriage. The study aims to address the prevalence, liver disease severity and cardiovascular risk in SLD patients with different alcohol exposures and CMRF carriage in Taiwan.

Methods

Eligible subjects were those retrieved from a nationwide-based health check-up system in Taiwan from 1997 to 2019. Subjects were excluded if they were seropositive for hepatitis B surface antigen and antibodies to hepatitis C virus. SLD was evaluated by sonography and/or having hepatic steatosis index greater than 36. Alcohol consumption was judged by questionnaires and transformed into daily exposure. CMRF was defined as having at least one of the five items.

Results

A total of 501,863 subjects were recruited, and 162,689 (32.4%) subjects had SLD (mean age 44.0 years, male: 63.6%). Of the SLD subjects, the proportion of subjects without alcohol use or with social drinking (Group A), moderate alcohol consumption (Group B) and heavy alcohol consumption (ALD, Group C) was 93.3% (n=151,747), 4.0% (n=6,597) and 2.7% (n=4,345), respectively. The proportion of CMRF carriage was 96.0 % (MASLD), 98.1% (Met-ALD) and 97.9% among the 3 groups, respectively. The FIB-4 value progressively increased from Group A (0.85±0.58), Group B (0.96±0.80) to Group C (1.20±1.13) (Ptrend <0.001). Those with CMRF carriage had a significantly higher FIB-4 than those without in each subgroup (All P value <0.001). Group A subjects without CMRF had the lowest FIB-4 value (0.71±0.36) whereas Group C subjects with CMRF had the highest FIB-4 value (1.21±1.14). Logistic regression analysis revealed that factors independent associated with significant fibrosis (FIB-4 > 2.6) included alcohol exposure. Coincidentally, FRS progressively increased from Group A (6.95±7.08), Group B (9.60±8.56) to Group C (10.79±9.33) (Ptrend <0.001). Group A subjects without CMRF had the lowest FRS (2.45±2.21) whereas Group C subjects with CMRF had the highest FRS value (10.93±9.36). Alcohol exposure was independently associated with a higher cardiovascular risk.

Conclusion

Despite the classification of Met-ALD and ALD taking CMRF carriage into consideration, almost all the SLD subjects with moderate or heavy alcohol consumption carried at least one CMRF. Both

alcohol exposure and CMRF carriage were independently associated with liver disease severity and cardiovascular risk in Taiwanese SLD subjects.

原著論文 114_A018

使用連續血糖監測裝置提升糖尿病前期患者的血糖控制：一項前瞻性研究

Utilizing Continuous Glucose Monitoring Device for Enhancing Glucose Control in Prediabetes Patients: A Prospective Study

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Background

Prediabetes, defined by impaired fasting glucose (FPG) or elevated HbA1c, is a key risk state for progression to type 2 diabetes mellitus (T2DM). Lifestyle intervention is the cornerstone of management, yet long-term adherence and effective glycemic control remain difficult. Continuous glucose monitoring systems (CGMS) provide real-time glucose profiling, reduce the need for finger-prick testing, and support better glycemic control in patients with diabetes [1,2]. By delivering real-time glucose feedback, CGMS have shown benefits in diabetes care of adhere to a healthier diet, increased physical activity, and promotes awareness of personal health [3]. However, evidence in prediabetic populations is scarce. Assessing the impact of CGMS in prediabetes patients may provide strategies for metabolic management.

Methods

This open-label intervention study was conducted at a metabolism and endocrinology outpatient clinic at a medical center in southern Taiwan. Patients aged over 20 years diagnosed of prediabetes were enrolled. A subset of patients received CGMS (Medtronic Guardian™ 4 system) monitoring for two weeks. Biochemical parameters were collected at baseline and at six months post-enrollment. All participants received clinical follow-up and dietary counseling at enrollment, three months, and six months. Patients who failed follow-up or who commenced metabolic medications were excluded from the analysis. We aimed to observe the changes in biochemical parameters in both groups (with CGMS and without CGMS) after six months, and to compare the differences. Statistical analyses were performed using IBM SPSS version 19.0.

Results

A total of 60 patients with prediabetes were enrolled between March 2023 and April 2024. Ten patients were excluded. The remaining 50 patients underwent statistical analysis, with 24 patients in the CGMS group and 26 patients receiving standard follow-up (without CGMS).

Regarding the baseline characteristics of the patients, in the standard follow-up group (control group), the mean age was 59.35 ± 13.84 years, the mean HbA1c was 5.69 ± 0.30%, and the mean duration of prediabetes was 2.52 ± 2.34 years. 38.5% of patients had hypertension, 42.3% had fatty liver, and 15.4% had diabetic retinopathy (DR). In the CGMS group, the mean age was 52.92 ± 8.58 years, the mean HbA1c was 6.01 ± 0.20%, and the mean duration of prediabetes was 2.87 ± 2.52 years. In this group, 25% of patients had hypertension, 41.7% had fatty liver, and 20.8% had DR.

Biochemical parameters were followed at six months. The CGMS group showed a significant reduction in HbA1c levels, with a mean change of -0.12 ± 0.18%, whereas the control group

exhibited no change (0.00 ± 0.15%) (p = 0.019). Additionally, the CGMS group demonstrated a significant decrease in low-density lipoprotein cholesterol (LDL-C) levels, with a mean change of -17.92 ± 29.33 mg/dL, in contrast to an increase of +9.87 ± 27.21 mg/dL in the control group (p = 0.001). There were no statistically significant differences in the mean changes of body weight (BW), BMI, systolic blood pressure, FPG, eGFR, urine albumin-to-creatinine ratio, or ALT.

Conclusion

This study suggests that the use of a CGMS in patients with prediabetes contribute to significant improvements in glycemic control and lipid profile. These findings indicate that CGMS serves as a useful tool in the early management of prediabetes to promote metabolic improvement.

原著論文 114_A019

以臺灣人體生物資料庫分析 108,956 位參與者之 ALDH2 基因變異、飲酒與腎功能下降之關聯性

ALDH2 Genetic Variant, Alcohol Consumption, and Renal Function Decline: Insights from 108,956 Participants in the Taiwan Biobank

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Background
Aldehyde dehydrogenase 2 (ALDH2) is a mitochondrial enzyme essential for alcohol metabolism and detoxification of toxic aldehydes. By protecting against oxidative stress and damage to DNA, proteins, and lipids, ALDH2 plays a crucial role in disease prevention. A single point mutation in the ALDH2 gene results in the deficient variant ALDH2*2, which leads to impaired enzyme activity. Limited evidence has suggested an association between ALDH2*2 and poor renal function. This study aimed to evaluate this association using real-world evidence from the Taiwan Biobank.

Methods
We conducted a retrospective analysis of the Taiwan Biobank data, which included 108,956 participants enrolled between December 2008 and October 2019. All participants underwent renal function testing, single-nucleotide polymorphism (SNP) genotyping for ALDH2, and a survey of substance use, including alcohol consumption. Comorbidities such as hypertension, diabetes mellitus, and hyperlipidemia were also recorded. Participants were stratified into four groups based on ALDH2 genotype and alcohol consumption: ALDH2*1 and non-drinkers (Group A), ALDH2*1 and drinkers (Group B), ALDH2*2 and non-drinkers (Group C), and ALDH2*2 and drinkers (Group D). The estimated glomerular filtration rate (eGFR) was calculated using the CKD-EPI equation and compared across the groups.

Results
The distribution of participants across the groups was as follows: Group A (n = 37,284), Group B (n = 37,451), Group C (n = 3,452), and Group D (n = 981). The mean age was approximately 50 years across groups with no significant difference. Group C demonstrated the highest prevalence of diabetes mellitus (6.1%), hypertension (19.2%), and hyperlipidemia (10.2%). A significant downward trend in mean eGFR was observed across the groups (Group A: 103.10 ± 14.41; Group B: 102.31 ± 14.86; Group C: 99.78 ± 14.64; Group D: 97.77 ± 13.77; $p < 0.01$).

Conclusion
Analysis of Taiwan Biobank data revealed that individuals carrying the ALDH2*2 variant who also consumed alcohol had significantly lower eGFR, suggesting an association between ALDH2 deficiency, alcohol use, and impaired renal function.

原著論文 114_A020

UTCC(upstroke time in the cardiac cycle)作為預測接受血管內治療的周邊動脈疾病患者全因死亡率的新參數

Upstroke time in the cardiac cycle as a novel parameter for all-cause mortality prediction in patients with peripheral artery disease treated with endovascular therapy

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Background
Patients with peripheral artery disease (PAD) treated with endovascular therapy (EVT) remain at risk for adverse outcomes. This study aimed to evaluate the prognostic value of ankle-brachial index (ABI) and pulse wave parameters, including brachial-ankle pulse wave velocity (baPWV), percentage mean arterial pressure (%MAP), and upstroke time in the cardiac cycle (UTCC), for predicting one-year all-cause mortality.

Methods
This was a multicenter, prospective registry study involving 261 PAD patients undergoing EVT at two centers in Taiwan. ABI, baPWV, %MAP, and UTCC were measured using an automated device. Baseline demographics, comorbidities, and procedural details were recorded. Univariable and multivariable logistic regression analyses were used to identify predictors of mortality. The incremental value of UTCC was assessed by examining changes in the global χ^2 when added to a model containing age, chronic kidney disease (CKD), and heart failure (HF).

Results
Over 12 months, 29 (11.1%) patients died. In multivariable analysis, heart failure (HR = 4.81; 95% CI: 1.34–17.26; p = 0.016), chronic kidney disease (HR = 11.22; 95% CI: 1.21–103.74; p = 0.033), and UTCC (per 1% increase: HR = 1.10; 95% CI: 1.01–1.20; p = 0.033) were independent predictors of mortality. In contrast, ABI, baPWV, and %MAP did not reach statistical significance. Furthermore, the inclusion of UTCC significantly improved the model fit ($\Delta\chi^2$, $p < 0.001$).

Conclusion
This is the first study to assess multiple parameters obtained from an ABI-form device in predicting outcomes in EVT-treated PAD patients. UTCC, along with CKD and heart failure, independently predicts one-year mortality, outperforming other ABI-related measures. UTCC could serve as a simple, non-invasive tool for stratifying post-EVT risk. Larger-scale studies are needed to validate these findings.

原著論文 114_A021

噪音暴露導致交感神經活化與心室心律不整之相關機轉探討

"Ventricular Arrhythmogenesis and Noise Exposure Assessed by Subcutaneous Nerve Activity": The Role of Autonomic Remodeling

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Background

Linked to autonomic nervous system (ANS) dysregulation, environmental noise contributes to cardiovascular disease and arrhythmias. We hypothesize noise causes ventricular arrhythmias (VA) via altered ANS function. In noise-exposed (NOE) mice, we recorded electrocardiogram (ECG), subcutaneous nerve activity (SCNA), and heart rate variability (HRV) using subcutaneous electrodes. We aimed to determine ANS modulation's role in mediating noise-induced VA by analyzing SCNA and HRV changes.

Methods

C57BL/6 mice were grouped: NOE or control (CTL), treated with vehicle or 6-OHDA. NOE mice received 28 days of broadband noise. SCNA, ECG, and HRV were recorded during baseline, cold pressor test (CPT), and recovery phases. SCNA was analyzed using a 500-2500 Hz bandpass filter. VA were defined as premature ventricular beats (PVCs). Ventricular tissue was analyzed for the expression of ANS markers, including Gap-43 protein, tyrosine hydroxylase (TH), synaptophysin (SYN), and fibrotic changes assessed by Masson's trichrome staining.

Results

Between-group comparisons, NOE +vehicle had higher SCNA than NOE +6-OHDA group during baseline and recovery phases ($p \leqq 0.013$). NOE +vehicle had higher SCNA than CTL +vehicle group during baseline and recovery phases ($p \leqq 0.030$). Within-group comparisons, all four groups showed higher SCNA during CPT compared to baseline ($p \leqq 0.013$), suggesting that CPT increases sympathetic nerve activity. 326 episodes (81%) of PVCs were preceded by elevated SCNA bursts within 0.2 seconds in the NOE +vehicle group. During CPT, the NOE groups showed a significant increase in PVCs ($p=0.0047$), while the CTL groups had no PVCs. HRV analysis revealed that the NOE groups had lower SDNN and RMSSD ($p=0.034$) compared to the CTL groups. QRS duration was significantly shorter in NOE +vehicle compared to control +vehicle ($p=0.001$). Ventricular tissue showed increased ANS markers and fibrosis after noise exposure (all $p< 0.01$).

Conclusion

Noise exposure increases SCNA, inducing sympathetically-driven VAs (inhibited by 6-OHDA) in mice, likely explained partly by ANS remodeling.

原著論文 114_A022

MBNL1 與 MBNL2 基因剔除對心房電生理重塑之影響

Electrophysiological Remodeling of the Atrium Induced by MBNL1 and MBNL2 Gene Knockout

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Background

Myotonic dystrophy (Dystrophia Myotonica, DM) is a rare autosomal dominant genetic disorder characterized by muscle weakness and myotonia. The pathogenesis of myotonic dystrophy type 1 (DM1) is primarily associated with an abnormal expansion of CTG repeats in the three prime untranslated region (3' UTR) of the DMPK gene on chromosome 19q13.3, leading to RNA splicing abnormalities that affect muscle and cardiac function. The mechanisms underlying cardiac arrhythmias in DM1 remain uncertain, with previous studies focusing mainly on ventricular arrhythmias (VA), while research on atrial fibrillation (AF) is relatively limited. Therefore, this study aims to investigate the arrhythmogenesis of DM1 on the heart, particularly the mechanisms contributing to AF.

Methods

This study utilized Mbnl1 and Mbnl2 knockout mice as a DM1 animal model. Optical mapping technology was used to access the changes in action potential duration (APD), conduction velocity (CV), and calcium transient duration (CaTD) in control (CTL) and double knockout (Mbnl1 and Mbnl2 knockout, DKO) mouse hearts. Susceptibility to AF was assessed through right atria (RA) burst pacing, and quantitative real-time polymerase chain reaction (qPCR) was employed to analyze changes in ion channel gene expression related to cardiac rhythm regulation.

Results

Under Langendorff perfusion, hearts were paced from 150 ms to 100 ms pacing cycle length (PCL) for APD and CaTD measurements. APD was significantly prolonged in DKO mice compared to CTL mice at all pacing frequencies: 23.22 ± 3.36 ms vs. 17.95 ± 1.16 ms at 150 ms, 24.12 ± 2.63 ms vs. 16.03 ± 2.78 ms at 130 ms, and 21.60 ± 2.74 ms vs. 15.44 ± 2.39 ms at 100 ms (all $p \leqq 0.001$). CaTD was not different between groups (e.g., 32.05 ± 4.39 ms vs. 34.33 ± 4.74 ms at 150 ms, $p = 0.315$), but the calcium transient decay constant (τ) was significantly increased in DKO mice (19.04 ± 4.39 ms vs. 13.52 ± 3.99 ms, $p = 0.007$). Atrial CV was markedly reduced in DKO mice compared to control mice (33.34 ± 8.17 cm/s vs. 44.70 ± 5.47 cm/s, $p = 0.004$). qPCR analysis showed downregulation of KCNE1, KCNE2, KCNA5, CaV1.2, and CaV1.3, with upregulation of IK1 and NCX2, and decreased NCKX3 (all $p < 0.05$). Out of 11 DKO mice, 6 developed AF after burst

pacing compared to 1 in 11 CTL mice (55% vs 9%, p=0.022).

Conclusion

This study demonstrates that APD prolongation, calcium handling abnormalities, and impaired cardiac conduction collectively contribute to AF susceptibility in DM1. Our findings provide electrophysiological evidence of DM1-related arrhythmias. We further confirm that potassium channel dysfunction, along with disruptions in the homeostasis of calcium and sodium-calcium exchange in DKO mice may lead to delayed atrial repolarization and electrophysiological abnormalities. Additionally, reduced CV may exacerbate electrical signal propagation abnormalities, making the atria more prone to AF. Overall, our study offers novel insights into the mechanisms underlying DM1-related arrhythmias and suggests potential therapeutic strategies targeting ion channel regulation to mitigate arrhythmic risks in DM1 patients.

原著論文 114_A023

代謝異常相關脂肪肝(MASLD)與台灣南部慢性 C 型肝炎病毒感染的相互作用

Interaction between MASLD and HCV infection in Southern Taiwan

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Background

The emergence of Metabolic Dysfunctional-Associated Steatotic Liver Disease (MASLD), as the most prevalent chronic liver condition, has introduced new complexities in the Hepatitis C Virus (HCV) infection treatment and management. The convergence of these two previous conditions presents special pathophysiological challenges particularly in regions where both conditions demonstrate significant prevalence. The present study aimed to explore the MASLD and HCV interaction in the southern Taiwan population. Additionally, to investigate the correlation of the MASLD and SLD condition presence with a simultaneous HCV infection, as well as in liver fibrosis.

Methods

This is a retrospective single-center study performed in our tertiary medical center at Taiwan. For the baseline database, we collected clinical information from the HCV-positive patients receiving transient elastography by Fibro Scan for the steatosis and fibrosis screening, finding a total of 1949. After the application of exclusion criteria, a total of 1114 patients were included in this analysis. The clinical parameters were collected, including the biochemical and virological data.

Results

There were a total of 1114 treatment-naïve HCV patients with an average age of 61.0 ± 12.1 years, and 4.6% patients were male. Of them, 40.9% have setatosis, 10.5% have a CAP value >290 dB/m, 25% have FIB-4 >3.25, and 38.2% have MASLD. Independent predictors of MASLD included elevated transaminases levels, elevated GGT, overweight or obesity, and dyslipidemia (notably LDL-C >100mg/dL). Among MASLD patients, the strongest predictors of advanced fibrosis (F3–F4) were thrombocytopenia (platelets<150,000), ALT elevation>80 IU/L, elevated GGT, hypertension, and the presence of ≧ 2 cardiometabolic risk factors (CMRFs). Notably, lower HCV RNA levels showed a modest inverse correlation with fibrosis, possibly reflecting metabolic dominance in fibrogenesis.

Conclusion

In patients with chronic HCV infection, MASLD emerges as a critical cofactor in liver fibrosis. Elevated transaminases, high GGT, low platelet count, and multi-risk metabolic burden consistently predicted fibrosis severity across models. MASLD serves not merely as a comorbidity in HCV patients but as a synergistic driver of liver fibrosis.

原著論文 114_A024

南台灣幽門螺旋桿菌抗生素抗藥性之十年變遷：2011-2014 與 2021-2024 兩時期之回溯性分析

A Two-Period (2011-2014 vs 2021-2024) Retrospective Analysis of *Helicobacter pylori* Antibiotic Resistance in Southern Taiwan

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Background

Helicobacter pylori (*H.pylori*) remains highly prevalent worldwide and is linked to peptic ulcer disease, chronic gastritis, gastric adenocarcinoma, and MALToma. Eradication rates have declined in recent years, largely owing to rising antibiotic resistance. Local resistance surveillance is therefore essential. This study focuses on phenotypic antibiotic resistance in treatment-naïve and treatment-experienced *H. pylori* isolates from a southern Taiwan medical center, comparing two four-year periods a decade apart (2011-2014 vs 2021-2024).

Methods

We retrospectively included patients who underwent esophagogastroduodenoscopy (EGD) with positive *H. pylori* culture during January 1, 2011-December 31, 2014, and January 1, 2021-December 31, 2024. Isolates were tested by E-test (AB Biodisk). Resistance breakpoints (MIC, mg/L) were: clarithromycin ≧1, metronidazole ≧8, levofloxacin ≧1, amoxicillin ≧0.5, tetracycline ≧1. Resistance rates were summarized separately for treatment-naïve and treatment-experienced patients and compared between periods.

Results

A total of 158 H. pylori strains were cultured from 670 subjects. Among them, 102 strains were from treatment-naïve patients and 56 strains from non-naïve patients. In the treatment-naïve group, resistance rates were: clarithromycin 24.5%, metronidazole 29.4%, levofloxacin 31.4%, amoxicillin 1%, and tetracycline 2.9%. In non- naïve patients, the resistance rates of clarithromycin, metronidazole, levofloxacin, amoxicillin, and tetracycline were 75%, 62.5%, 83.9%, 1.79%, 10.7%, respectively.

Conclusion

Over a decade, resistance among treatment-naïve isolates in our region was moderate and largely stable. Nevertheless, treatment-experienced isolates showed persistently high resistance, and increasing resistance was observed in clarithromycin and levofloxacin. According to the World Health Organization (WHO), antibiotic stewardship is a coordinated approach that promotes the appropriate use of antibiotics by ensuring the correct drug, dosage, and treatment duration. This strategy aims to improve clinical outcomes, limit the development of antibiotic resistance, and reduce healthcare-associated infections. Periodic surveillance of antibiotic resistance is essential to guide effective treatment strategies. The data from this study may serve as a reference for selecting optimal H. pylori eradication regimens in Southern Taiwan.

原著論文 114_A025

咽峽炎鏈球菌於人體消化道之分佈及其與胃病惡化關聯性分析

Distribution of Streptococcus anginosus in the Gastrointestinal Tract and its Correlation with Gastric Disease Severity

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Background

While *Helicobacter pylori* is a primary risk factor for gastric cancer, a substantial risk persists after its eradication, suggesting the involvement of other microbes. *Streptococcus anginosus* (*S. anginosus*) has recently emerged as a potential contributor to gastric carcinogenesis. This study aimed to investigate the association between the prevalence of *S. anginosus* in different gastrointestinal sites (saliva, gastric juice, and stool) and the severity of gastric diseases, including gastritis, intestinal metaplasia (IM), and gastric cancer (GCA), within a Taiwanese population.

Methods

This prospective, multi-hospital study enrolled 356 patients scheduled for esophagogastroduodenoscopy (EGD) in Southern Taiwan. Saliva, gastric juice, and stool samples were collected from participants. The presence of *S. anginosus* DNA was detected and quantified using a strand-specific quantitative PCR (qPCR). The association between *S. anginosus* prevalence and various gastric pathological states, as well as *H. pylori* infection history, was analyzed.

Results

A strong, progressive association was found between the presence of *S. anginosus* in gastric juice and the severity of gastric disease ($p < 0.001$). The detection rate increased from 45.4% in patients with gastritis without IM, to 60.6% in those with IM, and reached 92.3% in patients with newly diagnosed GCA. Furthermore, *S. anginosus* positivity in gastric juice was correlated with a significantly higher gastric pH (4.9 vs. 2.1, $p < 0.001$). In contrast, the detection rates in saliva and stool were generally high across all groups but did not show a similar progressive correlation with disease severity.

Conclusion

The presence of *S. anginosus* in gastric juice is strongly associated with intestinal metaplasia and gastric cancer. However, its prevalence in saliva or stool does not show a direct correlation with the severity of gastritis. These findings suggest that *S. anginosus* in gastric juice is a potential biomarker for monitoring gastric disease progression, particularly in the hypoacidic stomach environment that can follow an *H. pylori* infection. Further longitudinal studies are warranted to confirm its role.

原著論文 114_A026

睡眠醫學中 LLM 的優勢與瓶頸：十年專科試題（2015–2024）之評估

Where LLMs Shine—and Struggle—in Sleep Medicine: A 10-Year Evaluation of Board-Style Questions (2015–2024)

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Background

Sleep medicine board exams couple textual knowledge with visual EEG/PSG interpretation, creating a stringent multimodal challenge for AI. Despite rapid progress, it is unclear how reliably frontier-scale multimodal large language models (LLMs) perform across modalities, prompting strategies, and human comparators on domain-specific items.

Methods

We assembled a decade of Taiwan Sleep Medicine board–style questions (2015–2024), spanning text-only and image-dominant items. Eleven LLMs (frontier general-purpose and medical-tuned, plus compact baselines) answered all items under three prompting strategies: Direct, Chain-of-Thought (CoT), and Self-Consistency (SC). Accuracy was computed by year and modality. Models were compared using a Friedman/Nemenyi rank-based framework. Human–AI alignment was assessed on a curated 30-item subset (balanced by AI correctness profiles), answered by four cohorts: sleep medicine specialists, non-subspecialty internal medicine physicians, medical students, and high-school students. A GEE logistic model evaluated associations between AI correctness, cohort, and their interaction with human correctness (two-sided α=0.05).

Results

LLMs performed substantially better on text than on image items, with steady year-over-year gains most pronounced for frontier models. Across frontier systems, Direct prompting was modestly—but consistently—competitive with CoT and SC, and overall prompting choice produced only small performance shifts relative to model and modality effects. Rank-based comparisons showed practical parity among top-tier models, while all frontier systems outperformed compact baselines. Human–AI alignment was strong: items answered correctly by AI were more likely to be answered correctly by humans across cohorts. Cohort main effects were limited after accounting for item difficulty, and the AI-by-cohort interaction suggested slightly weaker alignment for high-school participants. Item-level contrasts in the curated set revealed heterogeneous gaps: a minority of items favored AI, a minority favored humans (notably on visually brittle cases), and several were jointly easy or jointly difficult.

Conclusion

On a ten-year benchmark of Taiwan Sleep Medicine board questions, multimodal LLMs

demonstrate robust text reasoning but persistently weaker visual EEG/PSG interpretation. Among frontier models, differences are small under rank-based testing and only modestly influenced by prompting strategy, yet substantially better than compact baselines. Human–AI correctness tends to co-vary, supporting targeted human–AI augmentation, while visual reasoning brittleness underscores the need for expert oversight and further progress in neurophysiology-focused vision and evaluation protocols.

原著論文 114_A027

縮短療程是否安全？成人菌血症抗生素治療之隨機對照試驗統合分析與試驗序列分析

Short vs Extended Antibiotic Durations for Adult Bloodstream Infections: A Meta-Analysis and Trial Sequential Analysis of Randomized Controlled Trials

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Background

The optimal duration of antibiotic therapy for adult bloodstream infections (BSIs) remains unclear. Pragmatic randomized trials have suggested that shorter courses may be sufficient; however, a consolidated estimate across trials is needed to inform practice.

Methods

We conducted a meta-analysis of randomized controlled trials comparing short (≦7 days) and extended (>7 days) antibiotic durations for adult BSIs. A systematic search of PubMed, Embase, Web of Science, and the Cochrane Central Register of Controlled Trials will be conducted to identify eligible trials from inception to July 28, 2025. The protocol was registered in PROSPERO, and reporting followed the PRISMA guidelines. Two reviewers independently screened the records and extracted the data. The primary outcome was all-cause mortality, and the secondary outcome was clinical failure, as defined by each trial. Random-effects models were used to generate pooled risk ratios (RRs) with 95% confidence intervals (CIs). Statistical heterogeneity was assessed using I^2 and Cochran's Q. Leave-one-out sensitivity analyses were performed.

Results

Of the 15,901 records screened, 13,763 were excluded for non-RCT design. After a comprehensive review, the BALANCE trial and five additional RCTs were included, comprising 5,154 participants. For all-cause mortality (Figure 1A), short-course therapy yielded a pooled RR of 0.92 (95% CI, 0.80–1.05), indicating no excess mortality versus extended therapy, with no heterogeneity (I^2 = 0%, p = 0.666). For clinical failure (Figure 1B), the pooled RR was 0.94 (95% CI, 0.84–1.05), with no heterogeneity (I^2 = 0%, p = 0.734). Effect directions were consistent across trials, and leave-one-out analyses (excluding von Dach et al.) did not materially change the estimates (Figures 1C, 1D). Short-course antibiotic therapy was not associated with improved mortality compared with extended-course therapy (RR, 0.93; 95% CI, 0.78–1.12; p = 0.472; I^2 ≃0 %; D^2 = 0.44). The cumulative Z-curve crossed neither the conventional nor the trial sequential analysis monitoring boundary for benefit or harm and, at the required information size (n = 5,154), remained within the zone of non-significance, indicating that any true mortality difference is unlikely to exceed the pre-specified 10% relative-risk effect.

Conclusion

Across contemporary RCTs, short antibiotic courses are non-inferior to extended courses for adult BSIs with respect to all-cause mortality and clinical failure. These findings support guideline-

concordant stewardship strategies favoring shorter durations when trial-like conditions are met. Further studies should refine the model's applicability to specific pathogens and complex presentations, and future large-scale RCTs are necessary to confirm these findings.

原著論文 114_A028

局部外用內含殼聚醣和微小核糖核酸-200b-3p 奈米複合物的泊洛沙姆 407 水凝膠可加速糖尿病傷口癒合

Topical application of chitosan-miR-200b-3p nanocomplexes by poloxamer 407 hydrogel accelerates diabetic wound healing

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Background

Diabetic foot ulcer (DFU) is refractory to healing owing to excessive oxidative stress, increased proinflammatory cytokines, accumulation of senescent cells, and impaired angiogenesis. We previously reported that local injections of lipofectamine-based transfection of miR-200b-3p have pro-healing properties in diabetic wounds, but multiple injections are unrealistic in clinical practice. The unique feature of FDA-approved poloxamer-407 hydrogel is its temperature-sensitive solution-to-gelation phasic change property, and this in-situ gelling property makes it suitable wound dressing. The major limitation of miRNA therapeutic in DFU is the inability to maintain the stability and integrity of miRNAs in wounds. Naked miRNAs have poor cellular uptake and the abundant nucleases in the blood and tissues can degrade naked miRNAs. Most common protective method of miRNAs is lipofectamine-based transfection. However, the high cost and cytotoxicity concern for liposome-based transfections make lipofectamine not suitable for clinical applications. Chitosan is a cheap and non-toxic natural biopolymer isolated from chitin, a key constituent of the exoskeleton of crabs and shrimps. Chitosan molecules have positively charged NH3+ groups and are easily conjugated with negatively charged miRNAs. The resultant chitosan/miRNA complexes can prevent miRNAs from degrading. However, it is not clear whether chitosan as a substitute for lipofectamine can be utilized in diabetic wounds. In this study, we investigated whether topical application of chitosan-miR-200b-3p nanocomplexes by using a poloxamer 407-based hydrogel carrier can accelerate diabetic wound healing in db/db diabetic mice.

Methods

Two dorsal wounds were created using an 8-mm punch biopsy. One hundred microliters of four poloxamer 407 hydrogel formulations (gel, gel+chitosan, gel+chitosan+miR-negative control, and gel+chitosan+miR-200b-3p) were topically applied to each wound, and the hydrogel was changed every two days. On the 14th day, the skin samples were sent for real-time PCR, H&E staining, and immunohistochemical staining.

Results

All db/db mice gradually lost their weight due to the hypercatabolic status of wound healing process. However, the mean percent body weight reduction between the 0th day to 14th day was most significant in the gel+chitosan+miR-negative control group (-13.86 %), followed by gel group (-10.95%), gel+chitosan group (-8.62%) and gel+chitosan+miR-200b-3p group (-8.56%). On the 14th day, gel+chitosan+miR-200b-3p demonstrated the best wound healing performance compared to

the other three groups, as supported by the reduced wound size and enhanced granulation tissue thickness. Mechanistic insights showed that gel+chitosan+miR-200b-3p caused significant upregulation of *Col1α2* gene expression and downregulation of *Nox1*, *Nox4*, *IL-6*, *IL-1β*, *p21*, and *p53* gene expression, as compared with gel group. The CD68 proteins were significantly decreased in the gel+chitosan+miR-200b-3p groups, as compared with the other three groups. Furthermore, the CD31 proteins showed a significant increase in the gel+chitosan+miR-200b-3p group, as compared with the other three groups.

Conclusion

Topical application of poloxamer 407 hydrogel formulation composed of chitosan and miR-200b-3p nanocomplexes shows a more promising result in accelerating diabetic wound healing than poloxamer 407 hydrogel alone though its effects on anti-oxidative stress, anti-inflammation, anti-senescence, and pro-angiogenesis. These data support that chitosan substitutes for lipofectamine as a feasible and effective approach in future application of microRNA therapeutic in diabetic wound management.

原著論文 114_A029

利用光體積變化描記圖法進行高血壓風險預測：一項非侵入性方法

Prediction of Hypertension Risk Using Photoplethysmography: A Noninvasive Approach

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Background

Hypertension is a silent yet powerful driver of cardiovascular disease—one of the world's leading causes of death. Despite being treatable, it often goes undetected until complications arise. Photoplethysmography (PPG), a low-cost, noninvasive tool, shows great promise for detecting vascular changes associated with elevated blood pressure.

Methods

We developed a compact, noise-resistant PPG acquisition system (Taiwan Patent No. 114206342) designed for real-world usability and recruited 590 adults from cardiology outpatient clinics. Using a validated oscillometric device, systolic blood pressure (SBP) was measured and categorized into four groups: ≦120, 121–139, 140–159, and ≧160 mmHg. Ninety-second fingertip PPG recordings (500 Hz) underwent rigorous preprocessing, including filtering, normalization, and artifact rejection. Nineteen features were extracted, capturing waveform shape, sharpness, heart rate variability (HRV), and frequency-domain harmonic ratios. Group differences were assessed using ANOVA or Kruskal–Wallis tests, with post hoc analyses and effect sizes (epsilon squared, ε^2).

Results

Several features exhibited strong associations with SBP levels. Waveform sharpness indices (1_10, 1_8, 1_6, 1_5, 1_3, 1_2) and harmonic ratios (H2/H1, H3/H1, and H4/H1) progressively declined with increasing SBP, indicating a loss of higher-frequency components consistent with vascular stiffening. Time-domain features revealed prolonged systolic phases, shorter diastolic intervals, and elevated systolic time/diastolic time (Ts/Td) ratios in participants with higher SBP. Peak amplitudes (P1, P2), systolic and diastolic slopes, and overall waveform area also varied significantly across groups. Effect sizes ranged from small to moderate, with the most pronounced changes observed in waveform sharpness metrics.

Conclusion

Our findings validate the potential of a single-sensor, PPG-based approach for monitoring subtle, hypertension-related vascular alterations by integrating morphological and spectral information. Progressive declines in harmonic ratios provide novel insights into arterial stiffening and altered wave reflections. The combination of physiological depth with a simple, portable acquisition system support the feasibility of wearable devices for immediate, scalable SBP screening, enabling broader public health impact. These advantages are further enhanced by the system's ease of operation and its compatibility with various analytical approaches, which expand its performance capabilities in this specific clinical context.

原著論文 114_A030

重症加護病房病人血中維生素 D 濃度與臨床預後之相關性：365 例前瞻性觀察研究

Association of Serum Vitamin D Levels with Clinical Outcomes in ICU Patients: A Prospective Study of 365 Cases

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Background

Vitamin D deficiency has been linked to infections, autoimmune diseases, cancer, and cardiovascular disorders. Its impact on sepsis-related mortality in critically ill patients remains unclear. This study evaluated the association between serum 25(OH)D levels and clinical outcomes in ICU patients and examined the effects of vitamin D supplementation.

Methods

From December 2019 to December 2023, 365 adult patients admitted to a 19-bed ICU at Chi-Mei Medical Center were prospectively enrolled. Demographics, laboratory data, severity scores, and outcomes were analyzed. Multivariable logistic regression was used to identify predictors of ICU mortality among 115 patients receiving vitamin D 576,000 IU supplementation with follow-up 25(OH)D measurements.

Results

The prevalence of vitamin D insufficiency was 87.7% (n = 320). Patients with low 25(OH)D had significantly higher APACHE II and SOFA scores, higher inspired oxygen fraction (FiO_2), more frequent septic shock, and lower mean arterial pressure, calcium, and albumin levels (all $p < 0.05$). In multivariable analysis, higher SOFA score (OR 1.173; 95% CI 1.068–1.290; p = 0.001), higher TISS score (OR 1.054; 95% CI 1.007–1.103; p = 0.023), presence of sepsis (OR 2.439; 95% CI 1.294–4.599; p = 0.006), and lower albumin (OR 0.300; 95% CI 0.140–0.640; p = 0.002) independently predicted vitamin D insufficiency. Among supplemented patients, higher initial FiO_2 (OR 1.039; 95% CI 1.014–1.063; p = 0.002), absence of diabetes mellitus (OR 0.315; 95% CI 0.105–0.944; p = 0.039), and lower post-supplementation 25(OH)D levels (OR 0.965; 95% CI 0.936–0.995; p = 0.023) independently predicted ICU mortality.

Conclusion

Vitamin D insufficiency is highly prevalent in critically ill Taiwanese adults and is associated with greater disease severity and worse hemodynamic profiles. Persistently low 25(OH)D levels despite high-dose supplementation, together with high FiO_2 requirements and absence of diabetes, predict increased ICU mortality.

原著論文 114_A031

保骼麗使用與副甲狀腺切除術之比較：對接受透析的次發性副甲狀腺功能亢進患者在血管鈣化與骨骼健康方面的影響

Denosumab vs. Parathyroidectomy: Effects on Vascular Calcification and Bone Health in Dialysis Patients with Secondary Hyperparathyroidism

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Background
Secondary hyperparathyroidism (SHPT) contributes to significant bone abnormalities and vascular calcification in patients undergoing dialysis. While parathyroidectomy (PTX) is effective, it often requires extensive preoperative evaluation due to cardiovascular risks. Denosumab, a RANKL inhibitor, may offer a timely alternative in patients for whom surgery must be delayed.
To compare the 6-month effects of denosumab and PTX on bone mineral density (BMD), vascular calcification, and serum mineral parameters in dialysis patients with SHPT.

Methods
In this prospective study, dialysis patients with severe SHPT (defined as PTH >800 ng/mL) were divided into three groups: denosumab (60 mg, n = 25), PTX (n = 25), and untreated controls (n = 25). Serum calcium, phosphate, and alkaline phosphatase levels were measured, and BMD at the lumbar spine (LS) and femoral neck (FN) was assessed at baseline and 6 months. Coronary artery calcification (CAC) was evaluated using the modified Hokanson criteria (regression: < -2, stable: -2 to 2, progression: >2).

Results
Both denosumab and PTX significantly improved BMD (LS: +12.62±13.06% vs. +9.61±5.97%; FN: +15.2±12.62% vs. +13.77±12.71%; all $P < 0.01$ vs. controls). LS and FN-BMD improvement was positively correlated with baseline alkaline phosphatase (Pearson $r = 0.681$ and 0.660, both $P < 0.01$). Post-treatment hypocalcemia and hypophosphatemia were observed in both intervention groups ($P < 0.01$). CAC regression occurred in 36% of the denosumab group and 24% of the PTX group, compared to 0% in controls.

Conclusion
Denosumab and PTX both effectively improve BMD and may reduce vascular calcification in dialysis patients with SHPT. Denosumab provides a viable interim strategy for patients awaiting surgical intervention.

原著論文 114_A032

乾癬病人的腎功能惡化風險

Risk of renal function impairment in psoriasis patients

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Background

Psoriasis is a systemic inflammatory disorder that affects approximately 2–3% of the global population. Beyond skin and joint manifestations, accumulating evidence suggests that psoriasis is associated with multiple comorbidities, including metabolic syndrome, cardiovascular disease, and chronic kidney disease (CKD). Chronic systemic inflammation, endothelial dysfunction, and the frequent use of nephrotoxic medications may contribute to renal impairment in these patients. However, few real-world studies from Asian populations have evaluated the magnitude of this risk or the clinical factors associated with renal decline. We investigated the incidence, timing, and predictors of renal function impairment in psoriasis patients.

Methods

We retrospectively analyzed 718 psoriasis patients from the Psoriasis Integrated Care Center in Taichung Veterans General Hospital. After excluding incomplete records, 549 patients were evaluated at baseline, and 223 patients with ≧1-year follow-up were included in longitudinal analyses. Renal impairment was defined as serum creatinine (Cr) >1.3 mg/dL. Worsening renal function was defined as a ≧20% increase in Cr, with the post-worsening value exceeding 1.3 mg/dL. Logistic regression and chi-square tests were applied to assess the roles of hypertension (HTN), diabetes mellitus (DM), NSAID, and cyclosporin use.

Results

At baseline, 25 of 549 patients (4.6%) had impaired renal function. During follow-up, 9 of 223 patients (4.0%) developed worsening renal function. The mean time to worsening was 1.21 ± 0.33 years. Most cases occurred early, with 3.6% within the first year, 19.0% within 1–2 years, 7.7% within 2–3 years, and 3.4% within 3–4 years. Overall, baseline Cr increased slightly from 0.87 ± 0.23 mg/dL to 0.90 ± 0.27 mg/dL at one year (p=0.031). Among the 9 patients with progression, 55.6% had HTN, 44.4% had DM, 55.6% used NSAIDs, and 44.4% received cyclosporin. By chi-square analysis, HTN (p=0.028) and DM (p=0.004) were significantly associated with renal function decline, while NSAID (p=0.426) and cyclosporin (p=0.408) were not. Logistic regression did not identify significant predictors (LLR p=0.051, pseudo R^2=0.125, AUC=0.65).

Conclusion

In this psoriasis cohort, baseline renal impairment was uncommon, but ~4% experienced worsening renal function within one year. Both HTN and DM were significant risk factors, whereas NSAID and cyclosporin use showed no clear associations. Logistic regression models had limited predictive value, underscoring the difficulty of identifying high-risk individuals solely based on these factors. Importantly, the timing analysis revealed that most renal decline occurred within the

first two years of follow-up, highlighting a critical window for monitoring. Our findings emphasize the importance of routine renal function surveillance in psoriasis patients, particularly those with cardiometabolic comorbidities. Larger, multicenter studies with extended follow-up are warranted to validate these results and to develop more accurate risk stratification tools to guide clinical management.

原著論文 114_A033

頭孢哌酮-舒巴坦不同製劑於肺炎與菌血症治療之臨床成效：單一醫學中心回溯性研究

Do All Cefoperazone–Sulbactam Products Perform Equally? A Retrospective Single-Center Study on Pneumonia and Bacteremia Treatment Outcomes

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Background

Cefoperazone/sulbactam (CPZ/SUL) is widely prescribed for pneumonia and bloodstream infections, but differences in clinical performance between branded and generic formulations remain unclear.

Methods

We conducted a retrospective single-center study at Tri-Service General Hospital, Taiwan, between June 2021 and May 2023. Adult patients with gram-negative pneumonia or bacteremia treated with CPZ/SUL for ≧72 h were included. Three CPZ/SUL formulations were compared: branded (drug A) and two generics (drugs B and C). Patients receiving anticoagulants, vitamin K1, or with pre-existing coagulopathy were excluded. Clinical and microbiological outcomes and adverse drug reactions were analyzed.

Results

A total of 402 patients were included (drug A: 218; drug B: 111; drug C: 73), with pneumonia (69.7%) or bacteremia (30.3%). Pathogens most frequently isolated were *Acinetobacter baumannii* (17%), *Klebsiella pneumoniae* (15%), and *Stenotrophomonas maltophilia* (13%). Microbiological eradication was significantly higher with drug A at day 4 (56.4%), day 7 (66.5%), and end-of-treatment (72.5%) compared with drugs B and C ($p<0.001$). Clinical improvement was also superior with drug A on day 4 (95.9% vs. 87.4% and 87.7%; $p=0.008$) and day 7 (92.2% vs. 79.3% and 84.9%; $p=0.003$), though end-of-treatment outcomes were similar ($p=0.291$). Coagulopathy occurred more often with drug B (35.7%) than with drug A (14.0%) or drug C (19.4%) ($p=0.017$). Thirty-day mortality did not significantly differ among groups ($p=0.802$), although Kaplan–Meier analysis showed poorer survival in drug B recipients ($p=0.003$).

Conclusion

Among the three CPZ/SUL formulations studied, the branded product (drug A) achieved higher microbiological eradication and better early clinical improvement. In contrast, drug B was associated with a higher risk of coagulopathy and poorer survival trends. Careful selection of CPZ/SUL formulations is essential to optimize outcomes and minimize safety concerns.

原著論文 114_A034

含鼠李糖乳桿菌 GG 低滲透壓電解質補充液於大腸息肉切除術後恢復期之耐受性與腸胃症狀改善成效評估

Evaluation of Tolerability and Gastrointestinal Symptom Improvement with a Low-Osmolarity Rehydration Solution Containing *Lactobacillus rhamnosus* GG During the Post-Colonoscopy Polypectomy Recovery Period

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Background

Colorectal polyps, such as tubular adenomas (TA), sessile serrated adenomas/polyps (SSA/P), and traditional serrated adenomas (TSA), are well-established precursors to colorectal cancer. Timely removal through polypectomy is essential for prevention. However, post-polypectomy gastrointestinal symptoms—such as abdominal pain, bloating, diarrhea, and rectal bleeding—may impact patient recovery and adherence to surveillance protocols.

Lactobacillus rhamnosus GG (LGG) is a widely studied probiotic known to restore microbiota balance, strengthen the intestinal barrier, and modulate host immunity. Muco-relax LGG+ORS powder drink combines LGG with a low-osmolarity oral rehydration solution to support hydration, electrolyte balance, and gut microbial homeostasis.

This randomized controlled trial evaluated whether supplementation with this formulation during the recovery period could alleviate gastrointestinal symptoms following colorectal polypectomy.

Methods

Participants

Adults scheduled for colorectal polypectomy for TA, SSA/P or TSA (≧0.5 cm. in size) were enrolled.

Study Design

Participants were randomized into:

1.Control group: 600 mL/day bottled water

2.Experimental group: 600 mL/day Muco-relax LGG+ORS powder drink

The intervention began on Day 0 (surgery day) and continued through Day 6.

Outcome Measures

Participants recorded daily self-assessments of:

1.Rectal bleeding

2.Abdominal pain

3.Bloating

4.Diarrhea

5.Constipation/ difficulty defecating

Results

A total of 90 participants were enrolled and randomized into the experimental group and control group.

Baseline characteristics

There were no statistically significant differences between the two groups in baseline characteristics, including age, sex, height, weight, polyp size, operative time, or incidence of preoperative gastrointestinal symptoms ($p > 0.05$ for all comparisons).

Postoperative gastrointestinal symptom trends

During the 7-day postoperative intervention period, the overall incidence of self-reported gastrointestinal symptoms (rectal bleeding, abdominal pain, bloating, diarrhea, and constipation) showed a statistically significant trend of reduction over time in both groups.

Differences in the incidence of postoperative gastrointestinal symptoms

Compared to the control group, the experimental group reported significantly fewer incidents of rectal bleeding ($p = 0.0205$) and diarrhea ($p = 0.0248$), but there were no statistically significant differences in abdominal pain ($p = 0.1403$), bloating ($p = 0.0569$), or constipation ($p = 0.0985$).

Conclusion

Post-polypectomy supplementation with a low-osmolarity rehydration solution containing LGG significantly reduced rectal bleeding and diarrhea. The formulation was well tolerated and may enhance mucosal healing and microbiota stability. This probiotic-electrolyte solution offers a promising adjunct for gastrointestinal symptom management following colorectal polypectomy.

原著論文 114_A035

急性冠心症住院患者早期使用威克倦 Bupropion 的安全性和有效性； 亞洲群族數據

Safety and Efficacy of Early Bupropion Prescription in Hospitalized Patients with Acute Myocardial infarction; East Asian Population Data

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Background

Acute myocardial infarction (AMI) is one of the leading causes of death worldwide. Smoking is a strong risk factor and smoking cessation is of critical importance in these patients, which reduces the risk of recurrent MI, cardiovascular death and further cardiac event as much as 50%[1] Few trials have examined the efficacy of smoking cessation pharmacotherapies in hospitalized patients with AMI.

Bupropion is an antidepressant whose efficacy in smoking cessation, result from its inhibitory action on the neuronal reuptake of dopamine and norepinephrine, as
well as nicotinic acetylcholine receptors.[2] The purpose of this study was to examine smoking cessation rates among smokers with AMI in East Asian population to determine whether bupropion, started in-hospital, is safe or not.

Methods

This is a prospective observational study in which we collected data from a single institution on hospitalized patients due to AMI who were prescribed Bupropion treatment after cardiac catheterization.

Intervention and Follow-Up

Patients were received Bupropion 150 mg daily for 3 days, followed by 150 mg twice daily for the remainder of the 8-week treatment period. At follow-ups, patients who failed to abstinence smoking were encouraged to receive the second similar treatment course. All the patients were traced for any adverse effect at weeks 4, 8, and 12. Further efficacy information of bupropion was also followed at weeks 24.

End Point Assessment

The primary end point was set as safety of Bupropion, any serious adverse cardiac event including recurrent MI, non-fatal stroke or death 24 weeks after medication. Efficacy of smoking abstinence was also assessed as self-report of complete abstinence in a week before the 24 week clinic visit.

Results

Baseline Characteristics

Among the 95 patients, 11 patients were excluded. A rest of patients were agreed to receive Bupropion treatment for smoking cessation. In brief, 84 patients who smoked ≧10 cigarettes/d and ≧10 packed-year, who were hospitalized with AMI were enrolled. The baseline characteristics were summarized in Table 1. Mean age was 51 (± 9.95) years. 97% of study patients were male. About 48.8% was STEMI, 51.2% were NSTEMI respectively.

Hospital Course

All patients had undergone percutaneous coronary intervention. Median time from admission to 1st dose of study medication was 2.05 (± 2.73) days. Mean duration of drug intake was 6.5 days.
Outcome
During the follow-up at 4, 8 and 12 weeks, one patient had died, one patient developed non-fatal stroke, three patients developed recurrent MI, four patients received unplanned revascularization. At 24 weeks, one more patient developed recurrent MI and two more patients received unplanned revascularization. For efficacy, the rate of smoking abstinence was 79% at 12 weeks and 64% at 24 weeks (Table 2).

Conclusion

Early use of bupropion was safe in hospitalized patients with AMI just undergoing percutaneous coronary intervention. It is also efficacious for smoking cessation in this high-risk patient population. Our data may represent another report about the safety and efficacy of early prescription of smoking cessation medication apart from varenicline in East Asian population who hospitalized due to AMI.

原著論文 114_A036

類鐸受體基因類鐸受體基因多型性與血液透析病患死亡之相關性研究

The association of Toll-Like Receptor gene polymorphisms with mortality in hemodialysis patients

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Background
Chronic kidney disease(CKD) is a major global public health concern. Once it progresses to end-stage renal disease (ESRD), it consumes substantial medical resources and costs. Numerous studies have reported familial clustering of CKD, suggesting that genetic factors may play an important role, with evidence of associations with inflammatory responses. Toll-like receptors (TLRs) are critical mediators in inflammatory pathways, and previous research has indicated that genetic polymorphisms of TLRs may be associated with ESRD. This research aim to investigate the association between survival related to infection-related mortality and five single nucleotide polymorphisms (SNPs)—TLR-2 gene polymorphisms rs3804099, rs3804100, and rs1898830, and TLR-4 gene polymorphisms rs10116253 and rs7873784—in patients undergoing hemodialysis.

Methods
This retrospective cohort study enrolled 200 hemodialysis patients from Tri-Service General Hospital. Demographic characteristics, clinical data, and survival status were analyzed, and blood samples were collected to assess biochemical parameters. Statistical analyses included independent-sample t tests and chi-square tests, and cause-specific mortality risks were evaluated using the Cox proportional hazards model.

Results
After adjusting for age and sex, patients carrying the C allele at TLR-4 rs10116253 had a significantly higher risk of infection-related mortality compared with those carrying the T allele (HR: 1.59, 95% CI: 1.01–2.49). No statistically significant associations were observed for the examined TLR-2 polymorphisms.

Conclusion
The TLR-4 rs10116253 polymorphism may be one of the genetic factors influencing infection-related mortality in patients undergoing hemodialysis.

原著論文 114_A037

NF-kB 轉錄因子結合位點與末期腎臟病患死亡之相關性研究

The association of binding site polymorphism of NF-kB transcription factor with mortality in hemodialysis patients

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Background

Chronic kidney disease (CKD) is a critical public health issue, with Taiwan having the highest incidence and prevalence of dialysis worldwide. Nuclear factor-kappa-B (NF-κB) is a key transcription factor involved in inflammation. Previous studies have shown that NF-κB influences the regulatory functions of renal tubular epithelial cells, podocytes, glomerular cells, and macrophages, contributing to chronic renal inflammation, CKD progression, and ultimately accelerating the transition to end-stage renal disease (ESRD). Based on our previous findings indicating an association between rs9395890 G/T and ESRD, this study aimed to validate its impact on ESRD risk using real-time polymerase chain reaction (PCR) and luciferase reporter assays.

Methods

Blood samples from hemodialysis patients at Tri-Service General Hospital were analyzed. Genotyping was performed using Sequenom Mass Array, followed by functional validation through luciferase reporter assays and chromatin immunoprecipitation (ChIP) assays to examine the binding affinity of NF-κB to rs9395890. Functional analyses were further supported by data from the GTEx database to strengthen the evidence.

Results

ChIP assays demonstrated that the rs9395890 TT allele significantly altered NF-κB binding affinity compared with the GG genotype ($P < 0.027$; GG = 1.71 ± 0.18, GT = 2.81 ± 0.20, TT = 3.20 ± 0.16). Luciferase assays revealed that the TT genotype at rs9395890 led to higher downstream gene activity. GTEx portal data further confirmed that MLIP-IT1, a downstream gene regulated by rs9395890, is associated with multiple inflammation-related diseases. In skin tissue, MLIP-IT1 expression was significantly higher in TT carriers compared with other genotypes.

Conclusion

The rs9395890 T allele increases NF-κB binding affinity and enhances downstream gene activity.

原著論文 114_A038

透過吸入藥物空盒回收達成減碳：智慧肺健康門診呼吸照護的永續實踐

Carbon Reduction through Empty Inhaler Recycling: A Sustainable Practice at the Smart Lung Health Clinic

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Background

In recent years, the concept of Environmental, Social, and Governance (ESG) has gained significant traction in the healthcare sector, with an increasing emphasis on sustainability. Medical plastic waste, especially from inhalers, poses an environmental threat, releasing microplastics and chemicals that contaminate air, water, and food chains. While recycling of syringes and infusion bottles is already well established, inhaler packaging presents unique challenges and opportunities due to their material complexity. Given their widespread use in respiratory diseases, inhalers generate a disproportionately high share of plastic waste, making inhaler-packaging recycling a critical target for achieving measurable carbon reduction in clinical practice. To evaluate this impact, our hospital implemented an innovative program. This initiative provides benefits across multiple perspectives: For patients, it ensures proper inhaler disposal, supporting adherence and reducing improper use, which improves outcomes in asthma or COPD. For hospitals, it reduces plastic waste and aligns with institutional sustainability goals. From a healthcare system viewpoint, the program minimizes waste, optimizes resources, and enhances efficiency, potentially lowering long-term costs. This initiative not only reduces carbon emissions and improves respiratory care but also sets a precedent for integrating sustainability into routine healthcare practice.

Methods

The study implemented a three-phase recycling program to improve inhaler shell collection and reduce waste. Phase 1 involved patient education and counseling to raise awareness of proper disposal. Phase 2 introduced the WaCare App, which provided reminders, adherence tracking, and photo uploads of empty shells, strengthening self-monitoring and compliance. Phase 3 collaborated with pharmaceutical companies (e.g., GSK) to add incentives such as raffles and giveaways, fostering sustained recycling habits and reducing unnecessary refills. The recycling process involved weighing and categorizing inhaler components to calculate the reduction in carbon emissions by applying standardized emission factors for plastic, aluminum, and iron, ensuring consistency and reproducibility of carbon accounting.

Results

The recycling rates for different inhaler brands varied significantly, with GSK products achieving 90%, AstraZeneca 67%, and Boehringer Ingelheim 18%. From May to July 2025, a total of 180 inhaler boxes (6,960 g) were collected. Inhalers can be decomposed into aluminum casings, plastic shells, and internal metal springs. Using material-specific emission factors, recycling yielded reductions of 13.92 kg CO_2e from plastic, 5.80 kg CO_2e from aluminum, and 0.34 kg CO_2e from iron,

totaling approximately 20.06 kg CO_2e , which is comparable to the carbon footprint of a motorcycle traveling over 100 km.

Conclusion

The integration of inhaler packaging recycling and AI-enhanced medication adherence tracking promotes sustainable healthcare by reducing waste and carbon emissions while enhancing adherence monitoring and long-term disease control. This model advances green healthcare practices and aligns with the Environmental, Social, and Governance (ESG) objectives, offering a scalable approach for other healthcare institutions. Such initiatives could also guide national sustainability strategies, integrating environmental responsibility into routine healthcare delivery.

原著論文 114_A039

Eschweilenol C 對於活化樹狀細胞之抗發炎效果

Anti-inflammatory effect of Eschweilenol C on the activated dendritic cells

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Background

Dendritic cells are professional antigen-presenting cells which link innate and adaptive immunity. Eschweilenol C (EsC) is a derivative of Phenols isolated from the ethanolic extract of T. fagifolia with anti-inflammatory and anti-cancer biological activities. However, its activity on immune dendritic cells has not yet been discussed. Our study explored the effect of EsC on the activation of mouse bone marrow differentiated dendritic cells.

Methods

Firstly, ELISA was used to analyze the effect of EsC on the expression of proinflammatory cytokines in LPS-activated dendritic cells. Then use flow cytometry to analyze the expression of MHC and co-stimulating molecules and their influence on the activation of antigen-specific T cells. Finally, to examine the efficacy in vivo, we will use type II collagen -induced DBA/1 mouse arthritis animal models to evaluate the efficacy of EsC in the treatment of rheumatoid arthritis.

Results

EsC reduced the maturation and function of mouse bone marrow differentiated dendritic cells with decreasing proinflammatory cytokines. The expressions of CD40 and CD80 were significant reducing in the EsC-treated group. In the mouse model, significant arthritis improved was found after EsC therapy. The levels of these proinflammatory cytokines in the paws of mice was decreased after treatment by EsC.

Conclusion

EsC may reduce the maturation and function of mouse bone marrow differentiated dendritic cells. This finding may provide a new direction for the pharmacological role of Es C and may serves as the possible treatment in rheumatoid arthritis.

原著論文 114_A040

親水性單胞菌感染症之治療經驗

The treatment experience of *Aeromonas* infection in one community hospital

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Background

Aeromonas are associated with human diseases. The important pathogens are *A. hydrophila*, *A. caviae* and *A. sobria*. They are present in aquatic and marine environment. The major diseases associated with *Aeromonas* are gastroenteritis and wound infections, combined with or without bacteremia. Gastroenteritis and wound infections may occur after the ingestion or exposure of contaminated food or water. Severe form of infection can cause necrotizing fasciitis or life-threatening and require treatment with antibiotics and even amputation.

Methods

At first, we would present 3 cases of *Aeromonas* infection from blood, wound and gastroenteritis. Then through Datong System, we search all of *Aeromonas* infected patients during 2012 and 2025. At last, demography, outcome, risk factor and therapy of this cohort are recorded.

Results

1. There are 51 patients who are infected with *Aeromonas* during Jan. 2011 and Sep, 2025.
2. The species are included *A. hydrophila* (17), *A. sobria* (8), *A. caviae* (4) and *Aeromonas spp.* (22).
3. Clinical specimen are isolated from blood (21), wound (13), sputum (6), stool (5), urine (4) and tip (1), BAL (1)
4. The distribution of age are <20 y/o (2), 21-30 y/o (1), 31-40 y/o (3), 41-50y/o (6), 51-60 y/o (5), 61-70 y/o (11), 71-80 y/o (14), 81-90 y/o (6) and >90 y/o (3).
5. The outcome of our cohort are MBD (36), OPD (8), died (4), refer (1) and AAD (1).
6. Majority of isolation time are reported during 3 and 7 days (88%).
7. The classes of antibiotics for therapy are penicillin (20), cephalosporin (15), fluoroquinolone (8), others (4) and unused (4).

Conclusion

1. Though *Aeromonas* are not predominant bacteria from clinical specimen. But the severe form of infection might cause necrotizing fasciitis or life-threatening, as *Vibrio spp.*
2. *Aeromonas* are sensitive to antibiotics, as cephalosporin, penicillin, fluoroquinolone. If treated with appropriate drug early and prevented exposure contaminated food or water, the morbidity and mortality rate might be reduced.

原著論文 114_A041

內科病房「院內急救」之發生時間與臨床特徵：三年回溯性研究

Temporal and Clinical Characteristics of "Code Blue" in Medical Wards: A Three-Year Retrospective Study

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Background

Inpatient medical emergencies (Colloquially known as "Code Blue" or "999") are critical events associated with high mortality. Early identification of patients at risk is essential to improving outcomes. Previous studies have suggested that "Code Blue" is associated with specific patterns. Understanding these characteristics may guide the implementation of early warning systems and preventive strategies. This study aimed to analyze the temporal distribution, comorbidities, and departmental characteristics of "Code Blue" events in medical wards, in order to identify high-risk groups and potential windows for timely intervention.

Methods

We retrospectively reviewed "Code Blue" events in medical wards between 2022 and 2024. Data were extracted from hospital records, including demographic characteristics, temporal variables (month, season, time of day), clinical department, and major comorbidities (CKD, dialysis, DM, cancer, cardiovascular and pulmonary diseases, etc.). Descriptive statistics were calculated for age (mean, median, SD), sex distribution, and comorbidities. Frequencies and percentages were reported for categorical variables.

Results

A total of 57 "Code Blue" cases were identified. The mean age was 75.9 years (SD 13.5), median 77 years; 29 patients (50.9%) were ≧70 years old. Males accounted for 27 cases (47.4%), females for 16 cases (28.1%). Events occurred most frequently in autumn (19 cases, 33.3%) and winter (16 cases, 28.1%). The daily high-risk periods were 0600-0900 (12 cases, 21.1%) and 0300–0600 (11 cases, 19.3%). Most of the patient are admitted to respiratory medicine (16 cases, 28.1%), cardiology (8 cases, 14.0%), and hematology/oncology (8 cases, 14.0%). CKD was the most prevalent comorbidity (37 cases, 64.9%), including 10 on dialysis (17.5%). DM was present in 20 cases (35.1%), cancer in 13 (22.8%), atrial fibrillation in 9 (15.8%), heart failure in 8 (14.0%), cirrhosis in 5 (8.8%), COPD in 4 (7.0%). Among the cohort, 14 patients died during emergency resuscitation, whereas 13 patients were successfully discharged alive.

This study demonstrates that "Code Blue" events in medical wards are not randomly distributed but exhibit distinct temporal and clinical patterns. Elderly patients (≧70 years) comprised over half of the cohort, consistent with previous findings that aging and multimorbidity increase vulnerability to cardiac arrest. Temporal clustering in early morning and evening hours may be attributed to circadian variation, reduced monitoring during night shifts, and care transitions. Seasonal variation, with more events in autumn and winter, may reflect higher rates of respiratory

and infectious diseases during these periods.
Comorbidity analysis identified CKD, diabetes, and cancer as major contributors. Patients with CKD, particularly those on dialysis, are at elevated risk. The high proportion of oncology patients also highlights the role of advanced malignancy and related complications. The departmental distribution mirrors these findings, with respiratory, cardiac, renal, and hematologic specialties being overrepresented.

Conclusion

In-hospital cardiac arrest in medical wards predominantly affects elderly patients with CKD, diabetes, or cancer. Events cluster during early morning and evening hours and are more frequent in autumn and winter.

原著論文 114_A042

Pentoxifylline 對糖尿病合併慢性腎臟病患者腎臟預後之影響：一項傾向分數配對世代研究

Effect of Pentoxifylline on Renal Outcomes in Patients with Diabetic Kidney Disease: A Propensity Score-Matched Cohort Study

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Background
Pentoxifylline (PTX), a non-selective phosphodiesterase inhibitor with anti-inflammatory and anti-fibrotic properties, has been proposed as a potential adjunctive therapy in diabetic kidney disease (DKD). However, its impact on renal outcomes in real-world clinical settings remains inconclusive.

Methods
We conducted a retrospective cohort study including adult patients with type 2 diabetes and stage 3–5 non-dialysis CKD from 2018 to 2024. After applying exclusion criteria and 1:2 propensity score matching, 50 patients receiving PTX and 63 non-users were included. The primary composite outcome was defined as either doubling of serum creatinine or initiation of renal replacement therapy (RRT). Secondary outcomes included annual eGFR slope and changes in albuminuria and proteinuria. Multivariable Cox regression was used to adjust for relevant clinical variables.

Results
The primary outcome occurred in 74.0% of the PTX group and 76.2% of the control group ($p = 0.79$). There were no significant differences in the annual eGFR decline or proteinuria reduction between the two groups. In Cox regression analysis, PTX use was not associated with improved renal outcomes (adjusted HR 1.03, 95% CI: 0.65–1.63, $p = 0.89$). Baseline eGFR was the only independent predictor of renal progression ($p < 0.0001$).

Conclusion
In patients with DKD and moderate-to-advanced CKD, pentoxifylline was not associated with better renal outcomes. Further prospective studies are warranted to clarify its role in modern nephrology practice.

原著論文 114_A043

Ketosteril 對第五期慢性腎臟病（非透析）患者腎臟預後之影響：一項傾向分數配對世代研究

Effect of Ketosteril on Renal Outcomes in Patients with Stage 5 Non-Dialysis Chronic Kidney Disease: A Propensity Score-Matched Cohort Study

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Background
Ketosteril, a ketoacid analogue supplement, is frequently prescribed alongside low-protein diets in patients with advanced chronic kidney disease (CKD) to mitigate uremic toxicity and delay progression to dialysis. However, the real-world impact of Ketosteril in patients with stage 5 non-dialysis CKD (CKD5-ND) remains uncertain.

Methods
This retrospective cohort study enrolled patients with CKD5-ND (eGFR <15 mL/min/1.73 m^2) at a single center between 2020 and 2024. After applying exclusion criteria, 85 patients were eligible. Propensity score matching (1:2) was performed to balance baseline characteristics, resulting in 19 patients in the Ketosteril group and 24 matched controls. The primary outcome was a composite of serum creatinine doubling or initiation of renal replacement therapy (RRT). Secondary outcomes included annual eGFR slope in 2024 and changes in proteinuria. Cox proportional hazards regression was used to evaluate the association between Ketosteril use and renal outcomes.

Results
In the matched cohort, the primary composite outcome occurred in 78.95% of Ketosteril users and 62.50% of non-users (p = 0.2435). The annual eGFR change in 2024 was −1.44 ± 1.03 mL/min/1.73 m^2 in the Ketosteril group and −0.35 ± 1.28 mL/min/1.73 m^2 in the control group (p = 0.1504). Changes in proteinuria were comparable between groups (167.9 ± 294.4 mg/g vs. 141.2 ± 240.9 mg/g, p = 0.8461). In multivariable Cox regression analysis, Ketosteril use was not significantly associated with a lower risk of the composite renal outcome (adjusted hazard ratio: 1.15; 95% confidence interval: 0.54–2.42; p = 0.7208).

Conclusion
Among patients with stage 5 non-dialysis CKD, Ketosteril use was not associated with improved renal outcomes. No significant differences were observed in the incidence of renal events, eGFR decline, or changes in proteinuria. Further prospective studies are warranted to clarify the clinical role of ketoanalogue supplementation in late-stage CKD management.

原著論文 114_A044

運用 16S rRNA 全長定序與代謝體分析探討腺瘤與大腸直腸癌患者之糞便微生物群組成

Integrative 16S rRNA Full-length Sequencing and Metabolomic Profiling of Fecal Microbiota in Adenoma and Colorectal Cancer

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Background

Colorectal cancer (CRC) is rising in Taiwan, linked to aging, obesity, and diet, etc., and gut microbiota dysbiosis is associated with CRC progression. Our aim is to explore microbial and metabolomic alterations in premalignant and malignant colorectal lesions for potential biomarkers.

Methods

Individuals who underwent colonoscopy for screening or surveillance at Taipei Veterans General Hospital were enrolled for gut microbiome analysis using 16S rRNA full-length sequencing and targeted metabolomic profiling.

Results

A total of 76 participants, including 37 healthy controls, 15 patients with colonic adenoma, and 24 patients with colorectal cancer were enrolled. In the microbiome analysis, *Phascolarctobacterium faecium* and *Faecalibacterium prausnitzii* were more abundant in the control group. In contrast, *Phascolarctobacterium succinatutens*, *Prevotella copri*, *Prevotella stercorea*, and *Fusobacterium mortiferum* were prevalent in the CRC group. The enriched bacteria in the CRC group, such as *Phascolarctobacterium succinatutens* and *genus Prevotella* were involved in the succinate pathway of propionate. Furthermore, Functional predictions revealed increased nucleotide synthesis and enhanced metabolic activity, including upregulation of the tricarboxylic acid (TCA) cycle, in CRC patients.

Conclusion

We identified potential microbial markers distinguishing healthy individuals, adenoma, and CRC patients. The CRC group showed increased nucleotide biosynthesis, TCA cycle activity, and enrichment of succinate-metabolizing bacteria. Larger studies are needed to validate these findings and assess their clinical significance.

原著論文 114_A045

胃腎分流與胃靜脈曲張出血之關係

The association of gastrorenal shunt and gastric variceal bleeding

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Background

The prevalence of gastric varices (GV) is about 20% in cirrhotic patients. The risk of bleeding is lower in GV than esophageal varices (EV) but usually accompanied with more severe and fetal bleeding episodes. The risk factors of GV bleeding are location, size and high-risk stigmata. This study aims to investigate the influence of gastrorenal shunt (GRS) on GV bleeding.

Methods

Clinical records of 107 patients with endoscopy-confirmed large GV who receiving endoscopic cyanoacrylate injection (ECI) from January 2010 to December 2021 were reviewed, 57 patients experienced GV bleeding and received ECI for hemostasis or secondary prevention, 50 patients received ECI for primary prevention. Clinical characteristics including biochemistry, imaging studies and endoscopic findings were analyzed. The Fisher exact test or a χ2-test with Yates' correction was used to compare categorical variables when appropriate, and the Mann-Whitney U-test was used to compare continuous variables. The risk factors of peristomal wound infection were compared using the Logistic regression model. The diagnostic accuracy of GRS was examined by the receiver operating characteristic curve (ROC curve). The best cut-off value of each indicator was chosen based on Youden's index.

Results

The patients in bleeding group were older (56 vs. 63 years old, p=0.023), less hepatitis C virus infection (21.1% vs. 36%, p=0.04), had higher serum platelet level (101 vs. 86.5*10^3, p=0.049), had higher serum gamma-glutamyl transferase level (94 vs. 47 U/L, p=0.037), had more portal vein thrombosis (PVT) (54.8% vs. 16%, p<0.001), and had smaller GRS (7 vs. 9mm, p<0.001). In multivariable logistic regression of GV bleeding, presence of PVT (OR 3.857, 95% CI 1.033-14.405) and smaller GRS (OR 0.773, 95% CI 0.651-0.917) independently were associated with GV bleeding. The best cut-off-point of GRS for GV bleeding was 7.5mm (AUROC 0.705, p<0.001).

Conclusion

Large GRS is associated with a lower risk of GV bleeding and presence of PVT is associated with a higher risk of GV bleeding. Further prospective, longitudinal hemodynamic study is needed to investigate the influence of portal systemic shunt in GV bleeding.

原著論文 114_A046

機器學習中不平衡資料的處理策略

Strategies for Imbalanced Dataset Management in Machine Learning

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Background

In the journey of clinical research, one of the common challenges a researcher may encounter is the management of imbalanced data. This problem is more prominent in machine learning algorithms, since conventional algorithms without proper sampling methods tend to underperform on minority classes and produce misleading results. This study explores multiple strategies to deal with imbalanced data, focusing on logistic regression and random forest models, using an imbalanced kidney biopsy dataset.

Methods

The imbalanced dataset was managed with random oversampling, synthetic minority oversampling technique (SMOTE) of minor class, undersampling of the major class, or cost-sensitive learning with class weighting. Feature scaling was applied to ensure uniform contribution of variables before sampling or weighting. Train-test split was performed after sampling or weighting. Model performance was evaluated using confusion matrices and accuracy for each modality was calculated. The dataset contained multiple categorical and continuous variables including demographic, laboratory, imaging parameters, and pathological results, so that different impact made by different sampling methods on categorical and continuous variables could be assessed.

Results

Among the 6 models, random forest with random oversampling had the highest accuracy (0.997), followed by random forest with SMOTE (accuracy = 0.971). The other models had accuracies lower than 0.9. Logistic regression with class weighting, balanced random forest, random forest with random oversampling, and random forest with SMOTE showed high precision (0.997, 1.000, 0.989, 0.991, respectively). Logistic regression with SMOTE, random forest with random oversampling, random forest with SMOTE showed high recall (0.900, 1.000, 0.990, respectively).

Conclusion

We conclude that, using random forest model with specialized variants of SMOTE algorithm to handle categorical variables is a proper choice for an imbalanced dataset similar to ours.

原著論文 114_A047

營養指標對於有無代謝脂肪肝病之肝細胞癌患者的預後價值

Prognostic Nutritional Index (PNI) as a prognostic factor for HCC patients stratified by status of MASLD

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Background
The effect of concurrent metabolic dysfunction-associated steatotic liver disease (MASLD) on the effect of patients with hepatocellular carcinoma (HCC) is still under debate. Prognostic Nutritional Index (PNI), calculated by serum albumin level and lymphocyte count, demonstrated ability to reflect the nutritional and inflammatory status of patients with different studies. Our research aimed to evaluate and compare the prognostic role of PNI in HCC patients with and without concurrent MASLD.

Methods
This retrospective study included 991 consecutive treatment-naïve HCC patients with normal AFP levels from 2016 to 2023 with baseline serum biochemistry, image and pathological data. Patients were categorized into MASLD and non-MASLD groups according to their pathology specimen, serum biochemistry data and medication records. The two groups were then divided into four subgroups according to their PNI levels. COX proportional hazardous models (COX PH) were performed to identify independent factors affecting overall survival (OS) and recurrence-free survival (RFS). Kaplan-Meier survival analysis was performed to compare the prognosis between different subgroups.

Results
After a median follow-up of 38.0 months (interquartile range 10.0–68.0 months), 207 patients had died, and the 5-year OS was 71.4%. The four subgroups demonstrated significant differences in baseline characteristics, including age, tumor characteristics (size, stage, numbers, vascular invasions, distant metastasis), serum biochemistry profile (platelet, albumin, ALT, AST, ALK-P, AFP) and liver function reserve. COX PH identified high PNI as an independent protective factor against poor OS for all patients. In the KM analysis, while comparing the four groups, the MASLD with high-PNI group had the best OS and the non-MASLD with low-PNI group had the worst OS. The OS of the MASLD with low-PNI and non-MASLD with high-PNI was comparable. Regarding RFS, the non-MASLD with low-PNI group had the worst RFS, while the three other groups had better RFS but no difference between groups. Subgroup COX PH analysis identified high-PNI as an independent protective factor for OS in the non-MASLD group but not for the MASLD group.

Conclusion
PNI can serve as an important factor to differentiate HCC patients into different risk groups and can even serve as an independent protective factor against poor outcomes, especially in patients

without concurrent MASLD.

原著論文 114_A048

牛樟芝藉由調降 VEGFR2 路徑改善肝硬化大鼠之側枝循環及肝腦病變

Antroquinonol attenuates portosystemic collateral circulation and hepatic encephalopathy by downregulating the VEGFR2 pathway in cirrhotic rats

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Background

Liver cirrhosis with portal hypertension arises from chronic liver injury and leads to life-threatening complications such as hepatic encephalopathy. Extrahepatic angiogenesis driven by VEGFR2 upregulation contributes to pathological neovascularization, which exacerbates portosystemic collateral shunting, hyperammonemia, and hepatic encephalopathy. Antroquinonol, a bioactive compound extracted from the mycelium of *Antrodia camphorata*, has demonstrated anti-tumor effects through inhibition of angiogenesis. However, its effects on cirrhosis and portal hypertension have not been investigated. This study aimed to evaluate the therapeutic potential of antroquinonol in experimental cirrhosis.

Methods

Male Sprague–Dawley rats underwent bile duct ligation (BDL) to induce cirrhosis. Beginning one day post-surgery, rats were randomly assigned to receive either vehicle or antroquinonol for 28 days. Experimental assessments were performed on day 29.

Results

Antroquinonol did not alter portal pressure, hepatic hemodynamics, or splanchnic circulation in cirrhotic rats. Notably, it significantly reduced the severity of portosystemic collateral shunting ($P = 0.009$). Mechanistic analyses showed that antroquinonol suppressed pathological mesenteric angiogenesis ($P < 0.001$) and decreased phosphorylation of VEGFR2, as well as phosphorylation of AKT and ERK as demonstrated by Western blot analysis. Plasma ammonia levels were reduced ($P = 0.002$). Locomotor activity testing demonstrated improved behavioral performance, indicating attenuation of hepatic encephalopathy.

Conclusion

Antroquinonol alleviates portosystemic collateral shunting, hyperammonemia, and hepatic encephalopathy in cirrhotic rats, at least in part through inhibition of extrahepatic angiogenesis via VEGFR2 pathway downregulation. These findings suggest that antroquinonol warrants further clinical investigation as a potential therapeutic strategy for hepatic encephalopathy in liver cirrhosis.

原著論文 114_A049

恢復型心收縮分率心衰竭患者之長期心血管預後分析

Long-term Cardiovascular Outcomes in Heart Failure with Recovered Ejection Fraction

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Background

Heart failure with recovered ejection fraction (HFrecEF) is increasingly recognized as a distinct phenotype with pathophysiology and prognosis different from heart failure with reduced ejection fraction (HFrEF). However, comprehensive long-term evaluation of cardiovascular outcomes in HFrecEF remain limited.

Methods

From 2011 to 2021, a longitudinal cohort of 2387 patients with HFrEF were enrolled and followed until March 31, 2022. After excluding those without baseline creatinine, with end-stage kidney disease, who died or were lost to follow-up, or without a second echocardiography within a 180-day exposure window, 601 patients were analyzed. Based on the second echocardiography, patients were categorized as: no EF recovery (EF ≦40% or ΔEF ‹10%), partial recovery (EF >40% and ΔEF 10–19%), or full recovery (EF >40% and ΔEF ≧20%). Multivariable Cox models were used to explore the association between EF recovery and risks of all-cause mortality and major adverse cardiovascular events (MACE; composite of cardiovascular death, myocardial infarction, stroke, or heart failure hospitalization).

Results

Over a median follow-up of 3.11 years, 67 deaths and 121 MACE events occurred. All-cause mortality did not differ for full vs no EF recovery (adjusted hazard ratio [aHR]: 0.51; 95% confidence interval [CI]: 0.22-1.20; P=0.123) or partial vs no EF recovery (aHR: 0.93; 95% CI: 0.43-2.01; P=0.849). For MACE, full recovery was associated with lower risk compared with no EF recovery (aHR: 0.37; 95% CI: 0.21-0.66; P<0.001), whereas partial recovery was not (aHR: 0.80; 95% CI: 0.44-1.45; P=0.458). These findings were consistent in restricted cubic spline and sensitivity analyses.

Conclusion

Full EF recovery was associated with a lower risk of MACE in patients with prior HFrEF. The magnitude of EF recovery should be considered in HFrecEF risk stratification, and further studies are warranted to guide management.

原著論文 114_A050

肝內 VEGFC 調升減緩肝硬化大鼠之肝纖維化及門脈高壓

VEGFC upregulation in the liver attenuates liver cirrhosis and portal hypertension in cirrhotic rats

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Background
Chronic hepatitis leads to liver fibrosis, which can progress to cirrhosis and portal hypertension. Lymphatic vessels have been implicated in modulating and alleviating inflammation. Although recent studies suggest that lymphangiogenesis occurs in liver fibrosis and cirrhosis, its impact on fibrosis progression, cirrhosis, and portal hypertension-related hemodynamic alterations remains unclear. This study aimed to evaluate the role of the lymphatic system in cirrhotic rats by enhancing lymphangiogenesis through adeno-associated virus (AAV)-mediated VEGFC upregulation.

Methods
Male Sprague–Dawley rats underwent common bile duct ligation to induce liver cirrhosis and portal hypertension. Rats were randomly assigned to receive either AAV-GFP or AAV-VEGFC, while sham-operated rats treated with AAV-GFP served as healthy controls. All experiments were performed 28 days post-operation.

Results
Cirrhotic rats exhibited significantly increased liver fibrosis. Remarkably, hepatic VEGFC upregulation attenuated fibrosis severity. Cirrhotic rats displayed typical features of portal hypertension, including elevated portal pressure, cardiac index, and hepatic vascular resistance, along with reduced mean arterial pressure, systemic vascular resistance, and superior mesenteric artery resistance. Notably, VEGFC upregulation ameliorated both hepatic vascular resistance and portal pressure. Moreover, α-SMA protein expression in the liver was significantly reduced in the VEGFC-treated group.

Conclusion
Hepatic VEGFC upregulation alleviates portal hypertension by reducing liver fibrosis and decreasing hepatic vascular resistance, underscoring the therapeutic potential of targeting the lymphatic system in cirrhosis.

原著論文 114_A051

維他命 D 濃度與內視鏡相關發現之關聯

The Relationship Between Vitamin D Levels and Endoscopic Findings: A Retrospective Study in a Single Center

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Background
Recently, arising evidence suggests that vitamin D is related to immune modulation and tumor suppression. However, the relationship between serum vitamin D levels and findings on esophagogastroduodenoscopy remains poorly understood. Additionally, how the anti-inflammatory effects of vitamin D perform in the gastrointestinal tract remains unknown.
To explore this uncertain area, we conducted a single-center retrospective study to seek answers and provide insights into the potential role of vitamin D in gastrointestinal health.

Methods
This is a single-center, retrospective study. We included patients who were above 18 years old. The inclusion criteria consisted of patients who underwent esophagogastroduodenoscopy between December 31, 2009, and April 28, 2023, and had their serum vitamin D levels measured within one year before or after the endoscopy examination. Endoscopy reports were reviewed manually, and the findings were compared with serum vitamin D levels.

Results
A total of 2730 patients were included in this study. Among all the patients, 1650 had low vitamin D levels, defined as serum vitamin D levels below 20 ng/mL, while 1076 patients had normal vitamin D levels. Reviewing the baseline characteristics of the two groups revealed that those with lower serum vitamin D levels had higher white blood cell counts and C-reactive protein levels, indicating a higher incidence of systemic inflammation. They also had higher creatinine levels, suggesting worse renal function; lower serum calcium and phosphate levels; and lower cholesterol, triglyceride, and low-density lipoprotein cholesterol levels, indicating poorer nutritional status.
Regarding endoscopic findings, the incidence rates of esophageal varices, esophageal ulcer, Barrett's esophagus, Forrest III gastric ulcer, portal hypertensive gastropathy, and gastric cancer were significantly related to vitamin D concentrations.

Conclusion
A lower vitamin D level was associated with systemic inflammation. There was also a relationship between serum vitamin D levels and some abnormal findings on endoscopy. Whether additional vitamin D supplementation benefits gastrointestinal health requires further investigation.

原著論文 114_A052

小腸細菌過度增生與大腸急躁症患者精神共病關係之研究

The relationship between Small Intestinal Bacterial Overgrowth and psychiatric comorbidities in patients with Irritable Bowel Syndrome

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Background

Functional dyspepsia (FD) and irritable bowel syndrome (IBS) are common gastrointestinal disorders affecting 10% - 20% of the population, imposing a significant socioeconomic burden. Both are characterized by persistent upper or lower abdominal pain / fullness without identifiable organic causes. Their pathophysiology remains unclear but may involve gut dysmotility, visceral hypersensitivity, brain-gut dysregulation, immune abnormalities, and chronic mild inflammation. Recent studies suggest gut microbiota alterations may contribute to FD/IBS, with small intestinal bacterial overgrowth (SIBO) linked to IBS symptoms; about one-third of IBS patients have SIBO, and some FD patients show increased SIBO prevalence. Additionally, many FD/IBS patients have psychological comorbidities like anxiety or depression. The gut microbiota is being explored for its role in psychogenic symptoms through the brain-gut axis. Research has shown that H. pylori eradication in peptic ulcer patients correlates with higher depression rates. Furthermore, gut microbial differences have been observed between patients with late-life depression (LLD) and healthy controls, with dysbiosis linked to changes in brain regions related to memory, somatosensory integration, and emotional regulation.

Methods

In this prospective study, we enrolled 79 IBS patients defined by Rome-III or -IV criteria, 96 FD patients, and 75 healthy subjects to evaluate the presence of SIBO. Their psychogenic status was assessed using validated questionnaires, namely the Hamilton anxiety and depression scales.

Results

We found that both IBS and FD patients showed higher HADS total scores and anxiety/depression sub-scores compared to healthy controls. However, the severity of psychological symptoms (anxiety/depression) measured by HADS was similar between SIBO-positive and SIBO-negative individuals within the healthy, FD, and IBS groups.

Conclusion

In conclusion, positive SIBO test is not associated with an increased risk for anxiety/depression.

原著論文 114_A053

在高齡八旬合併膽囊炎與膽管炎患者接受經皮膽囊造口術及後續介入性內視鏡逆行膽胰管攝影後，再接受膽囊切除術之預後

Outcomes of Cholecystectomy in Octogenarian With Concurrent Cholecystitis And Cholangitis Receiving Percutaneous Cholecystostomy And Subsequent Interventive Endoscopic Retrograde Cholangiopancreatography

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Background

Acute cholecystitis (AC) with concurrent cholangitis is a life-threatening disease in elderly patients. We aimed to investigate the outcome of receiving cholecystectomy in patients aged ≧ 80 years with moderate to severe AC who had received percutaneous cholecystostomy and subsequent interventive endoscopic retrograde cholangiopancreatography (ERCP).

Methods

From January 2008 to February 2021, we retrospectively enrolled 174 patients receiving percutaneous cholecystostomy and subsequent ERCP in Taipei Veterans General Hospital. Patients were divided into cholecystectomy or non-cholecystectomy groups after discharge. Clinical outcomes including overall survival rate, recurrent rate of biliary tract events, and complications of ERCP and cholecystectomy were analyzed. Kaplan-Meier model was used to interpret the overall survival and cumulative recurrent rates.

Results

There were 34 patients receiving cholecystectomy (cholecystectomy group) and 98 patients receiving conservative treatment (non-cholecystectomy group). The overall mortality rate and biliary tract event related mortality were not different between the cholecystectomy group and the non-cholecystectomy group (20.5% vs. 35.7%, p = 0.082; 0% vs. 3%, p = 0.083, respectively). The 1-year recurrent rate, 3-year recurrent rate and 5-year recurrent rate of biliary tract events were significantly lower in the cholecystectomy group than in the non-cholecystectomy group (2.9% vs. 18.4%, p = 0.002；5.9% vs. 20.4%, p = 0.014；8.8% vs. 24.5%, p = 0.02, respectively). There was no difference in terms of 1-year recurrent rate of cholangitis (2,9% vs. 6.1%, p = 0.407), and pancreatitis (0% vs. 0%). The overall ERCP-related complication rate was low (4%) in this elderly population. The overall surgical complication was 11.8% in the cholecystectomy group.

Conclusion

Cholecystectomy lowers the recurrent rates of biliary tract events in octogenarians with moderate-to-severe cholecystitis and concurrent cholangitis after receiving percutaneous cholecystostomy and subsequent interventive ERCP.

原著論文 114_A054

台灣包囊性腹膜硬化症發生率與臨床結果

Nationwide Incidence and Outcomes of Encapsulating Peritoneal Sclerosis in Taiwan

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Background
Encapsulating peritoneal sclerosis (EPS) is a rare but life-threatening complication of peritoneal dialysis (PD), characterized by progressive peritoneal fibrosis and bowel obstruction. While PD provides early survival benefits compared with hemodialysis, prolonged PD duration and recurrent peritonitis increase the risk for EPS. Taiwan is recognized for delivering world-class PD quality of care; however, comprehensive population-based epidemiological data on incidence, risk factors, and outcomes of EPS remain limited.

Methods
We conducted a retrospective cohort study using Taiwan's National Health Insurance Research Database from 2015 to 2021. Patients with EPS were identified, and demographic characteristics, peritonitis history, clinical course and survival outcomes were analyzed by age and sex.

Results
A total of 291 patients with EPS were identified. Annual incidence ranged from 27 to 47 cases, with a slightly higher frequency in females (Figure 1). The mean age at diagnosis was 56.6 years (Figure 2), and most patients were between 40 and 64 years of age (60.4%). Hospitalization occurred in 243 patients (83.5%). Annual mortality remained stable at 19-25 cases per year, with a mean age at death of 59.2 years (Figure 2). Mean survival after EPS diagnosis was 9.8 months. The mean interval from first peritonitis to EPS increased from 20.3 months in 2016 to 53.2 months in 2022. Survival analysis from 2012 to 2017 demonstrated one-, two-, three-, and five-year survival rates after EPS diagnosis were 50.7%, 37.7%, 32.6%, and 28.3%, respectively. Male patients had better survival, whereas older age was associated with a worse prognosis.

Conclusion
EPS is uncommon but associated with substantial mortality in PD patients. Survival declines sharply within five years after EPS diagnosis, particularly in older and female patients. Close surveillance, early recognition of high-risk patients, and timely dialysis modality transition may improve outcomes.

原著論文 114_A055

長效注射針劑與單錠型口服抗病毒治療對人類免疫不全病毒感染者免疫功能及病毒控制的影響

Impact of Long-Acting Injectable Agents versus Oral Antiretroviral Therapy on CD4+ Counts and Viral Blips in People Living with HIV

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Background

The long-acting injectable cabotegravir and rilpivirine (LAI-CAB/RPV) has emerged as a novel antiretroviral regimen for people living with HIV (PLWH). Since current oral antiretroviral therapy requires strict adherence to maintain virologic suppression, LAI-CAB/RPV can reduce dosing frequency and may mitigate challenges associated with daily adherence. However, real-world data comparing immunologic profiles and viral dynamics between this novel regimen and oral antiretroviral therapy (ART) are limited, especially in Asians.

Methods

This retrospective study enrolled PLWH who received LAI-CAB/RPV, dolutegravir/lamivudine (DTG/3TC), and bictegravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF) between August 2024 and September 2025. Changes in CD4+ cell counts were compared among three treatment groups by using one-way ANOVA. Logistic regression was used to estimate risk factors for viral blips across regimens.

Results

A total of 502 PLWH were enrolled, including 53 receiving LAI-CAB/RPV, 122 receiving DTG/3TC, and 327 receiving BIC/FTC/TAF. A negative change in CD4+ counts was observed among LAI-CAB/RPV group, whereas positive changes were seen in oral antiretroviral therapy groups ($p < 0.001$). Higher positive changes in CD4+ cell percentage were also observed in oral antiretroviral therapy groups ($p < 0.001$). A significant increase in CD4+/CD8+ ratio was also demonstrated.

In terms of viral blips, the rates were 3.8% in LAI-CAB/RPV, 18.0% in DTG/3TC, and 42.2% in BIC/FTC/TAF ($p < 0.001$). Multivariate analysis showed that the predictors of viral blips were hepatitis B (OR 3.95, 95% CI 1.32–11.83, p=0.014), duration of HIV infection (OR 0.96, 95% CI 0.93–0.99, p=0.011), use of LAI-CAB/RPV (OR 0.05, 95% CI 0.01–0.22, $p < 0.001$), and use of DTG/3TC (OR 1.8, 95% CI 0.04–0.82, p=0.026).

Conclusion

The long-term impact of different antiretroviral regimens on viral dynamics and changes in CD4+ counts remains to be investigated in a larger cohort with longer follow-up. LAI-CAB/RPV was associated with a significantly lower risk of viral blips but showed a decline in CD4+ counts.

原著論文 114_A056

超越血壓：透過儲存壓力與主動脈硬度整合以提升慢性腎臟病管理

Beyond Blood Pressure: Incorporating Reservoir Pressure and Aortic Stiffness for Improved Management of Chronic Kidney Disease

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Background
Improved cardiorenal disease outcomes require the early detection of kidney function decline. Conventional assessments of blood pressure and arterial stiffness inadequately account for the hemodynamic burden on the kidneys. Aortic input impedance (Zao) and carotid–femoral pulse wave velocity (cfPWV) indicate aortic stiffness, whereas reservoir pressure integral (RPI) reflects the Windkessel function. Their respective functions may enhance risk stratification and personalized treatment.

Methods
We employed noninvasive aortic pressure–flow recordings on 1987 community-dwelling adults (mean age 61.2 years; 38.4% male). We quantified RPI, Zao, and cf-PWV and utilized estimated glomerular filtration rate(eGFR) to evaluate renal function. Their independent and combined kidney function associations were evaluated through multivariable regression analysis.

Results
After controlling for age, sex, body mass index, fasting blood glucose, high density lipoprotein, and heart rate, higher RPI was linked to lower eGFR ($\beta = -2.516$, $P < 0.001$). However, this relationship was attenuated after adjusting for Zao, which remained strongly associated with kidney function ($\beta = -5.264$, $P < 0.001$). Similar results were obtained by replacing Zao with cf-PWV.

Conclusion
Our study suggest that Zao and cf-PWV, structural measures of central stiffness, determine kidney function, while RPI measures the downstream functional load of reservoir capacity impairment. Zao/cfPWV and RPI provide complementary insights into the cardiorenal axis. RPI may be more sensitive to dynamic fluctuations and therapeutic interventions than Zao/cfPWV, a stable long-term vascular risk indicator. Combining both indices may improve clinical risk stratification, treatment monitoring, and individualized chronic kidney disease management.

原著論文 114_A057

超音波監測於血液透析血管通路管理之角色：在自體瘻管降低不必要血管攝影以及其用於監測人工血管之侷限性

Role of Ultrasound Surveillance in Hemodialysis Access Management: Reducing Unnecessary Angiography in Fistulas While Addressing Limitations in Graft Monitoring

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Background

Vascular access complications account for 30% of hemodialysis-related hospitalizations, affecting dialysis adequacy and patient outcomes. Despite K/DOQI recommendations for monthly monitoring, surveillance strategies demonstrate variable effectiveness. Arteriovenous fistulas and grafts possess distinct stenotic characteristics requiring differentiated monitoring approaches. While duplex ultrasound provides structural assessment capabilities, comprehensive surveillance protocols incorporating diameter evaluation remain undefined for fistulas, and optimal graft monitoring strategies remain controversial. This study examined the differential utility of ultrasound-based surveillance across access types to optimize interventional timing while minimizing unnecessary procedures.

Methods

This single-center retrospective cohort study evaluated maintenance hemodialysis patients with arteriovenous fistulas (n=47, February 2020-October 2023) and arteriovenous grafts (n=33, 2022-2023). Fistula patients demonstrating >25% decline in access flow (Qa) by ultrasound dilution underwent duplex ultrasonography, with stenosis defined as diameter reduction >50%. All graft patients were enrolled in a surveillance protocol combining Qa monitoring with duplex ultrasonography; dysfunction was defined as >50% stenosis by imaging or Qa <600 mL/min. Primary endpoints were percutaneous transluminal angioplasty requirement within 3 months for fistulas and 90 days for grafts.

Results

Among 47 fistula patients with >25% Qa decline, duplex ultrasonography achieved 70% sensitivity and 81.5% specificity for predicting angioplasty requirement. Sequential screening effectively reduced unnecessary angiographic procedures. Patients with ultrasonographic stenosis demonstrated higher intervention rates within 6 months, supporting long-term patency prediction. False-negative cases correlated with heart failure, reduced ejection fraction, and hypotension, suggesting hypercoagulable states with non-occlusive thrombus. In graft patients, combined surveillance increased sensitivity (70%) versus individual modalities (duplex alone: 40%; Qa alone: 60%). However, overall diagnostic performance showed no significant improvement (AUC 0.771 vs 0.695, p=0.6039), indicating enhanced sensitivity without clinically meaningful diagnostic superiority.

Conclusion

Ultrasound surveillance shows access-specific utility. In fistulas, duplex after Qa decline reduces unnecessary angiography while preserving renal function; in grafts, added tests offer limited benefit beyond flow monitoring. These results support tailored protocols and call for prospective validation.

114_A058

膽道癌術後輔助化學治療之真實世界成效

Real-World Effectiveness of Adjuvant Chemotherapy After Resection of Biliary Tract Cancer: A Single-Center Retrospective Cohort Study

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Background

Biliary tract cancer (BTC), including intrahepatic, perihilar, and distal cholangiocarcinoma and gallbladder cancer, is uncommon but highly aggressive, with only 20–30% of patients eligible for resection and frequent recurrence even after R0 surgery [1-4]. While randomized trials support fluoropyrimidine-based adjuvant therapy, access is limited in Taiwan because capecitabine and TS-1 are not reimbursed [5, 6]. Real-world evidence on regimen selection remains scarce. We evaluated the impact of adjuvant chemotherapy on survival after BTC resection at a single high-volume center and explored high-risk subgroups that might derive preferential benefit.

Methods

We conducted a retrospective cohort study at Taipei Veterans General Hospital from April 2013 to September 2024 with median follow-up time of 25.7 months. Eligible patients had histologically confirmed BTC, underwent curative-intent resection, and had available follow-up; those with R2 margins, neoadjuvant therapy, synchronous malignancies, or missing survival data were excluded. The primary endpoint was disease-free survival (DFS). DFS was estimated using Kaplan–Meier methods with log-rank comparisons across treatment groups. Multivariable Cox models adjusted for clinical and pathological covariates. Prespecified subgroup analyses examined adverse features, including microscopic small-vessel invasion, tumor necrosis, perineural or intraneural invasion, moderate-to-poor differentiation, neutrophil-to-lymphocyte ratio (NLR) ≧ 2, and preoperative lactate dehydrogenase (LDH) ≧250 U/L.

Results

Of 1,088 patients with BTC, 315 qualified for DFS analysis after curative resection. Adjuvant groups were no therapy (n=155), TS-1 (n=43), other fluoropyrimidines such as capecitabine or Ufur (n=32), gemcitabine based regimens (n=29), and other regimens (n=10). One-year DFS was 63.9% with no therapy, 65.1% with TS-1, and 50.0% with other fluoropyrimidines. The TS-1 estimate should be interpreted with caution because the follow-up period was shorter.

Variables with p≦0.10 in univariable testing entered a multivariable Cox model. Shorter DFS was independently associated with microscopic small vessel invasion (p=0.004), tumor necrosis (p=0.037), perineural or intraneural invasion (p=0.009), moderate to poor differentiation (p=0.004), NLR ≧2 (p=0.053), and preoperative LDH ≧250 U/L (p=0.014). These features defined high-risk strata for exploratory analyses.

Across high-risk subgroups, TS-1 was consistently linked to longer DFS than comparators. In the perineural or intraneural invasion subgroup with 112 patients, 1-year DFS was 65.5% with TS-1 versus 40.0% with no therapy (p=0.036) and 42.9% with other fluoropyrimidines (p=0.032). TS-1

also outperformed other chemotherapy in small vessel invasion (p=0.022), tumor necrosis (p=0.001), moderate to poor differentiation (p<0.001), and NLR ≧2 (p=0.006). No regimen showed a clear advantage when preoperative LDH was ≧250 U/L.

Conclusion

In this single-center real-world cohort, TS-1 as adjuvant therapy after curative BTC resection was associated with more consistent DFS improvement than other regimens among patients with adverse pathological or inflammatory features. These data support consideration of TS-1 as a preferred adjuvant option in high-risk subgroups and justify prospective validation in settings with constrained access to reimbursed fluoropyrimidines.

原著論文 114_A059

持續使用新型口服抗凝劑對急性腎臟病合併新發生心房顫動病患之影響

Impact of Continuous Use of Novel Oral Anticoagulants on Acute Kidney Disease Patients with Incident Atrial Fibrillation

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Background

Acute kidney disease (AKD) represents a critical and potentially fatal disorder, and has been associated with an increased risk of developing atrial fibrillation (Af). Novel oral anticoagulant (NOAC), including both factor Xa inhibitors and direct thrombin inhibitors, have been shown to lower morbidity and mortality in Af patients without kidney dysfunction. However, their role in the management of Af among patients with AKD remains unclear.

Methods

We analyzed a longitudinal cohort of 11,704 AKD patients from a tertiary medical center between 2011 and 2021. The definition of AKD was based on the Kidney Disease: Improving Global Outcomes guidelines. Afterwards, 2,746 AKD patients with incident Af were enrolled and categorized into two groups: NOAC (apixaban, edoxaban, rivaroxaban and dabigatran), and vitamin K antagonist (warfarin). Only patients with continuous use of the same oral anticoagulant during follow-up were included for analysis. Cox regression was used to estimate the hazard of NOAC and warfarin on study outcomes (cardiovascular death, major adverse cardiovascular events [MACE: cardiovascular death, myocardial infarction, ischemic stroke, acute coronary syndrome], and major adverse cardiovascular events [MARE: end-stage renal disease, renal death, renal function decline]).

Results

During a median follow-up of 399 days, 333 patients experienced cardiovascular death, 474 patients developed MACE, 244 patients progressed to MARE, and 94 any bleeding events occurred. Kaplan-Meier survival analysis showed that The NOAC group had a lower risk of cardiovascular death, MACE and MARE ($p < 0.001$). NOACs were associated with significantly lower risks of MARE (HR 0.52, 95% CI 0.39–0.69), cardiovascular death (HR 0.46, 95% CI 0.37–0.62), and MACE (HR 0.56, 95% CI 0.45–0.69) compared with warfarin. The risk of any bleeding event was comparable between NOAC and warfarin users. The results were consistent in subgroup analyses.

Conclusion

Continuous user of NOACs demonstrated superior efficacy compared with warfarin for patients with AKD and incident AF, and is linked to lower risks of major adverse cardiorenal outcomes without increasing bleeding risk.

原著論文 114_A060

AST-120（Kremezin）在晚期慢性腎臟病患者延緩啟動腎臟替代療法的十年療效

The 10-year Effect of AST-120 (Kremezin) Preventing the Initiation of Renal Replacement Therapy in Patients with Advanced Chronic Kidney Disease

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Background
This 10-year prospective study aims to evaluate the long-term effects of AST-120 (Kremezin), an oral carbon adsorbent, on dialysis-free survival in chronic kidney disease (CKD) patients who have not previously undergone renal replacement therapy. Kremezin functions by adsorbing uremic toxins, which reduces their systemic absorption and may consequently delay the progression of CKD to end-stage renal disease (ESRD), thereby preventing the initiation of dialysis.

Methods
The cohort comprised of 344 patients diagnosed with chronic kidney disease (CKD) stages 3-5. A propensity score-weighted comparative analysis such as inverse probability of treatment weighting (IPTW), stabilized weights (SW), fine stratification weights (FSW), matching weights (MW), and overlap weights (OW) was executed between the Kremezin treatment group (n=173) and the non-Kremezin control group (n=171). The primary outcome of interest was the 10-year incidence of the end-stage renal disease (defined as the initiation of renal replacement therapy). Treatment efficacy was evaluated using the Kaplan-Meier survival curve analysis and weighted univariate Cox proportional hazards models. Statistical significance was set at p-value of < 0.05.

Results
The Kremezin group consistently demonstrated significantly better prognosis than the non-Kremezin group in preventing renal replacement therapy throughout the years, specifically at 1 (hazard ratio [HR]=0.26; P=0.03), 3 (hazard ratio [HR]=0.35; P=0.004), 5 (HR=0.29; P=0.002), 8 (HR=0.54; P=0.015), and 10 years (HR=0.73; P=0.183).

Conclusion
Kremezin revealed significant long-term renoprotective effects from 1 to 8 years in CKD stage 3-5 patients.

原著論文 114_A061

低蛋白飲食之慢性腎臟病病人中 Dapagliflozin 與 Empagliflozin 之療效比較

Comparative Effectiveness of Dapagliflozin and Empagliflozin in Chronic Kidney Disease Patients Adhering to a Low-Protein Diet

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Background

Chronic kidney disease (CKD) is associated with progressive renal decline and higher cardiovascular morbidity and mortality. Sodium–glucose co-transporter 2 (SGLT2) inhibitors and the low-protein diet are both used in CKD care, yet comparative effectiveness between individual SGLT2 inhibitors within the low-protein-diet population remains uncertain. We investigated adverse renal outcomes and all-cause mortality with dapagliflozin versus empagliflozin among CKD patients adhering to the low-protein diet.

Methods

This longitudinal cohort enrolled CKD patients receiving SGLT2 inhibitors with nutritional assessment at a tertiary medical center in Taiwan. The CKD patients on a low dietary protein intake (DPI) less than 1.1 g/kg/day were identified and further categorized into the dapagliflozin or empagliflozin users. Outcomes were all-cause mortality and major adverse renal events (MARE: renal death, long-term dialysis, ≧40% decline in estimated glomerular filtration rate, or ≧30% increase in proteinuria). Time-to-event outcomes were analyzed with multivariable Cox regression.

Results

Between July 1, 2016 and February 28, 2025, 373 low-DPI patients were included, including 234 empagliflozin users and 139 dapagliflozin users. The median follow-up was 21.1 months (interquartile range 10.65–34.47). The overall mean DPI was 0.77 (standard deviation 0.17) g/kg/day and the protein intake did not differ significantly between the empagliflozin and dapagliflozin groups (p = 0.144). Multivariable Cox regression found that there was no significant difference between these two groups in terms of all-cause of mortality (hazard ratio [HR] 1.71, 95% confidence interval [CI] 0.22–13.52) or MARE (hazard ratio [HR] 1.35, 95% confidence interval [CI] 0.90–2.01).

Conclusion

Among CKD patients on a low-protein diet, dapagliflozin and empagliflozin demonstrated comparable effectiveness for renal outcomes and all-cause mortality. These findings may support the use of either SGLT2 inhibitor in this population.

原著論文 114_A062

透過醫學診療行為分析和臨床實踐，重新設計醫學師徒制反思

Redesign medical apprenticeship via medical diagnostic behavior analysis and clinical practice.

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Background

在日益複雜的醫療環境中，傳統一對一的醫學教育模式面臨許多挑戰，包括教育者投入龐大且執行難度高。對於實證醫學教育而言，記錄和分析醫生的臨床情境是一項重大挑戰，這阻礙了針對臨床醫生的有效醫學教育模式的發展。

Methods

本研究引入了一種基於「流行病記憶」概念的數位化培訓方法。記錄醫生在電子病歷系統中的每次互動（例如滑鼠點擊），這些行為被稱為「診療點」。此方法旨在驗證臨床推理情境並促進情境知識的構建，透過專家對這些診斷點的評審，分析醫生在臨床推理方面的差異。

Results

新進住院醫師的數據揭示了以下發現：

1. 與資深醫師相比，住院醫師在診療同一位病患時，其診療點表現出較混亂的情境和無效的步驟。
2. 記錄診療點有助於住院醫師放慢思考速度，進而更全面地評估病患病情，提升醫療可靠性。
3. 診療點分析結果與教師對學員臨床表現的評估呈正相關。

Conclusion

口頭討論以及診療點的回顧性複習，有助於改善和擴展學員的臨床推理。診療點的課程可以找出學員臨床推理的薄弱環節，更好了解學員的學習動態。

原著論文 114_A063

在糖尿病患者中伴侶蛋白 HSP60 與生長分化因子 15 和細胞外粒線體 DNA 相關

Chaperonin HSP60 is associated with Growth Differentiation Factor 15 and Cell-free Mitochondrial DNA in Diabetic Patients

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Background

Chaperonin HSP60 (Cpn60) is a family of heat shock proteins primarily located within the mitochondria. These proteins assist in the folding of newly synthesized proteins and the refolding of misfolded proteins under stress conditions such as elevated temperature. Its association with cellular stress responses suggests potential applications as a biomarker or therapeutic target in metabolic disorders and malignancies. Recent studies have shown that cell-free mitochondrial DNA (cf-mtDNA) will be released as extracellular vesicles and exosomes in response to cellular stress and damage. Further, several lines of evidence indicate that mitochondrial stress caused by mitochondrial dysfunction induces the expression and secretion of GDF15. Both cf-mtDNA and GDF15 play the pivotal role of mitochondria in inflammation-related diseases. However, the relationship among HSP60, GDF15, and cf-mtDNA in regulating metaflammation remains unclear. Here, we investigate the association between HSP60, GDF15, and cf-mtDNA.

Methods

67 diabetic subjects aged over 20 years were enrolled in the study. Plasma HSP60 and GDF15 levels were measured using ELISA kits. GDF15 levels were logarithmically transformed to improve normality prior to analysis. For cf-mtDNA analysis, plasma samples were collected, and total DNA was isolated using the PROBA-NK reagent kit (QIAGEN). Quantitative analysis of mtDNA was performed using qPCR. Statistical analyses were performed with SPSS software using Student's t-test, Pearson's chi-squared test, and Pearson's correlation test. A two-sided p-value < 0.05 was considered statistically significant.

Results

The level of serum HSP60 is positively correlated with serum GDF15 ($r = 0.690$, $p < 0.001$) and cf-mtDNA level ($r = 0.261$, $p = 0.033$). Elevated serum creatinine level is correlated with higher serum level of HSP60, GDF15, and cf-mtDNA ($r = 0.308$, $p = 0.011$; $r = 0.351$, $p = 0.004$; $r = 0.241$, $p = 0.049$, respectively). After correction for age, serum HSP60 is positively correlated with serum GDF15 ($r = 0.684$, $p < 0.001$) and creatinine ($r = 0.285$, $p = 0.02$) while HSP60 is marginal significantly correlated with cf-mtDNA ($r = 0.221$, $p = 0.074$).

Conclusion

Our findings suggest that elevated circulating HSP60 is associated with GDF15 and cf-mtDNA levels, which may be related to chronic kidney disease in patients with diabetes. The association between HSP60 and GDF15 may be independent of age.

原著論文 114_A064

膽道真菌感染患者的預後分析

The Outcome Analysis in Patients with Biliary Tract Candidiasis

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Background
Biliary tract infections caused by Candida and other fungi are increasingly reported in hospitalized and critically ill patients. This study aimed to identify predictors of mortality in biliary tract candidiasis and to evaluate the impact of antifungal therapy on clinical outcomes.

Methods
We conducted a retrospective cohort study of adult patients with bile cultures positive for fungi at Kaohsiung Chang Gung Memorial Hospital between 2014 and 2024. Clinical characteristics, comorbidities, laboratory findings, infection-related variables, treatments, and outcomes were analyzed. The primary outcome was in-hospital mortality. Antifungal therapy included azoles, echinocandins, amphotericin B, and flucytosine. Source removal was defined as definitive biliary surgery, such as cholecystectomy or common bile duct resection, whereas absence of source removal was defined as management with tube drainage only, including percutaneous transhepatic cholangial drainage (PTCD) or similar procedures. Logistic regression and Kaplan–Meier survival analyses were performed.

Results
A total of 447 patients were initially screened. After excluding those under 18 years of age (n = 4) and those with incomplete data (n = 31), 412 patients were included in the final analysis, comprising 93 who died and 319 who survived. No significant differences were observed in age or gender between the deceased and surviving groups. Deceased patients had longer hospital stays, higher Charlson comorbidity indices, and were more likely to have coronary artery disease, renal disease, or cancer. Mortality was associated with ICU admission, vasopressor use, parenteral nutrition, previous steroid use, chemotherapy, and elevated inflammatory markers. Source removal procedures were performed more often in survivors (53.3% vs. 33.3%, p = 0.001). Neither empirical nor definitive antifungal therapy was associated with improved survival in univariate analysis. In multivariable analysis, a higher Charlson comorbidity index remained independently associated with increased mortality (OR 1.145, 95% CI 1.035–1.268, p = 0.009). Undergoing source removal was independently protective, with patients receiving surgery having significantly lower mortality than those managed without source removal (OR 0.261, 95% CI 0.129–0.528, p < 0.001). Neither empirical nor definitive antifungal therapy was significantly associated with improved survival. Kaplan–Meier analysis also confirmed that source removal improved survival (log-rank p = 0.003), while neither empirical nor definite antifungal therapy conferred a survival benefit.

Conclusion
Antifungal therapy was not an independent determinant of survival in patients with biliary tract

candidiasis. Instead, prognosis was determined primarily by comorbidity burden and adequacy of source control. Early and effective source removal improved survival, underscoring its critical role in management.

原著論文 114_A065

SGLT2 抑制劑使用與接受造影劑患者腎臟不良結局之關聯

Sodium-Glucose Cotransporter 2 Inhibitors Use and Adverse Kidney Outcomes in Patients with Contrast Media

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Background
The kidney benefits of sodium-glucose cotransporter-2 inhibitors (SGLT2i) in patients receiving contrast media remain unclear. This study evaluated the short- and long-term effects of SGLT2i on adverse kidney outcomes in patients receiving contrast media.

Methods
This cohort study assessed adult patients who received contrast media in Taiwan between January 1, 2016 and December 31, 2018. Propensity score matching paired patients who had used SGLT2i in the previous 90 days with those who had not previously received contrast media. Cox proportional hazards regression was used to estimate the relative risk of composite kidney events, including acute kidney injury (AKI), acute kidney disease (AKD), and a ³ 30% estimated glomerular filtration rate (eGFR) reduction sustained for at least three months. The average change in the eGFR was compared using a linear mixed-effects model.

Results
The analysis included 1032 patients, of which 344 received SGLT2i and 688 were in the control group. During follow-up, the composite adverse kidney event rate was 32.8%, which was lower in patients with SGLT2i than those with non-SGLT2i (29.94% vs 34.3%), with no statistical difference (adjusted hazard ratio [aHR]; 0.95, 95% confidence interval; 0.75–1.20). The aHR for SGLT2i versus non-SGLT2i was 0.45 (0.26–0.76) for the kidney function progression after contrast exposure. Stratified analyses showed SGLT2i was associated with lower kidney function progression in men aged < 65 years, with eGFR< 60 mL/min/1.73 m2, and diabetes at baseline.

Conclusion
SGLT2i had no short-term effects on AKI or AKD. However, SGLT2i may have long-term benefits in patients receiving contrast media.

原著論文 114_A066

根據 AFP 和 PIVKA-II 狀態分層的肝細胞癌臨床病理特徵和預後影響

Clinicopathologic characteristics and prognostic impact of hepatocellular carcinoma stratified by AFP and PIVKA-II status

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Background

Hepatocellular carcinoma (HCC) is a major cause of cancer-related deaths worldwide because of its high recurrence rate and poor prognosis. Alpha-fetoprotein (AFP) and prothrombin induced by vitamin K deficiency or antagonist-II (PIVKA-II) are an important biomarker for the diagnosis of HCC. This study aimed to evaluate the clinicopathological features and prognostic outcomes of HCC stratified by preoperative AFP and PIVKA-II levels.

Methods

We conducted a retrospective analysis of hepatocellular carcinoma (HCC) patients who underwent curative resection at Kaohsiung Chang Gung Memorial Hospital between January 2010 and July 2023. Patients were stratified according to preoperative AFP (≧9 vs. <9 ng/mL) and PIVKA-II (≧28 vs. <28 ng/mL) levels. Associations between histological characteristics and clinical outcomes were evaluated. Overall survival (OS) and recurrence-free survival (RFS) were estimated using the Kaplan–Meier method and compared with the log-rank test.

Results

Of 493 eligible patients, four groups were stratified according to preoperative biomarker levels: AFP (+)/PIVKA-II (+) (n = 180, 36.5%), AFP (+)/PIVKA-II (–) (n = 66, 13.4%), AFP (–)/PIVKA-II (+) (n = 169, 34.3%), and AFP (–)/PIVKA-II (–) (n = 78, 15.8%). In the pathological analysis, HCCs in the AFP (+)/PIVKA-II (+) group were larger, more poorly differentiated, and had the highest rates of vascular invasion, whereas those in the AFP (–)/PIVKA-II (–) group exhibited the most favorable pathological features. Significant differences among the four groups were observed in tumor size, histological grade, and microvascular invasion (all $p < 0.05$). Worth noting, patients with AFP (+)/PIVKA-II (–) tumors tended to have larger tumor size but relatively lower rates of vascular invasion, whereas those with AFP (–)/PIVKA-II (+) tumors often had smaller tumors but a higher likelihood of microvascular invasion. In survival analysis, recurrence-free survival (RFS) differed significantly among the four groups ($p = 0.024$). Patients in the AFP (+)/PIVKA-II (+) group had the poorest RFS, whereas those in the AFP (–)/PIVKA-II (–) group achieved the most favorable outcomes. Although overall survival (OS) did not differ significantly among the four groups, patients in the AFP (+)/PIVKA-II (+) group consistently exhibited the worst OS trend. The two single-positive groups demonstrated intermediate prognoses, with no significant difference between them.

Conclusion

Preoperative stratification by AFP and PIVKA-II effectively identified distinct clinicopathological

features and recurrence risks in resected HCC. Importantly, AFP and PIVKA-II had complementary prognostic value, underscoring that both biomarkers are equally important in clinical practice.

原著論文 114_A067

參與急性後期照護計畫之心衰竭患者腎功能與一年臨床預後之關聯性分析

Association Between Renal Function and One-Year Outcomes in Heart Failure Patients Enrolled in a Post-Acute Care Program

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Background

Renal dysfunction is common in heart failure (HF) patients and is associated with adverse outcomes. Estimated glomerular filtration rate (eGFR) is widely used to assess renal function. This study evaluated the relationship between renal function and one-year outcomes in HF patients enrolled in a post-acute care (PAC) program.

Methods

A retrospective analysis was conducted on HF patients admitted to Kaohsiung Chang Gung Memorial Hospital from November 2023 to October 2024 and enrolled in the PAC program. Patients were stratified by eGFR (≧60 vs. <60 mL/min/1.73 m^2). Demographics, laboratory data, one-year mortality, readmission, and hospital length of stay were analyzed. Logistic regression models were used.

Results

A total of 134 patients were enrolled for this analysis. Their average age was 64 year-old (±12), LVEF 37% (±14), serum creatinine (Cr.) level 1.5 (±1.2), eGFR 59.5 (±27.3). 75% were male. Thirty-nine (29%) patients had re-admissions and 13 (9.7%) died during this one year. The two most common reasons for admission were cardiovascular disease (52.2%) and infection (15.7%). Patients who died in this one year had lower LVEF, higher NT-proBNP and Cr. Compared to those with eGFR>60 (mL/min/1.73 m^2), patients with eGFR <60 had higher one-year mortality (15.3 vs. 3.2%, p=0.019). Logistic regression analysis confirmed eGFR<60 as the independent risk factors associated with one-year mortality.

Conclusion

In HF patients enrolled in a PAC program, impaired renal function (eGFR<60) was associated with higher one-year mortality. These findings highlight the complex role of renal function in HF outcomes and emphasize the importance of close renal monitoring post-discharge.

原著論文 114_A068

心房顫動導管消融後復發之預測因子：左心房結構與血流動力學的重要性

Predictors of Atrial Tachyarrhythmia Recurrence After Catheter Ablation of Atrial Fibrillation: The Role of Left Atrial Structure and Hemodynamics

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Background

Atrial tachyarrhythmias, encompassing atrial fibrillation (AF) and atrial flutter (AFL), are well-established contributors to adverse cardiovascular outcomes, including ischemic stroke, heart failure, cognitive decline, and increased mortality. Catheter ablation has demonstrated superior efficacy over antiarrhythmic drug (AAD) therapy in maintaining sinus rhythm, particularly when implemented early in the disease course. Despite procedural advancements, atrial tachyarrhythmia recurrence post-ablation remains a significant clinical challenge. Identification of reliable predictors of recurrence is critical for refining patient selection and guiding post-procedural management strategies.

Methods

We performed a retrospective cohort analysis of patients diagnosed with AF or AFL who underwent catheter ablation at Kaohsiung Chang Gung Memorial Hospital between January 2014 and December 2023. Baseline clinical parameters, CHA_2DS_2-VA scores, transthoracic echocardiographic measurements, and invasive left atrial (LA) hemodynamic data were systematically collected. Recurrence was defined as any documented episode of AF or AFL occurring beyond the standard 3-month blanking period. Cox proportional hazards regression models were employed to identify predictors of arrhythmia recurrence.

Results

Compared to patients without atrial tachyarrhythmia recurrence, those who experienced recurrence were significantly older and exhibited higher CHA_2DS_2-VA scores. They also had a greater prevalence of persistent atrial fibrillation, increased LA volume, elevated LA diastolic pressure, and were more likely to receive post-ablation antiarrhythmic drug therapy (all $p < 0.05$). Multivariable analysis confirmed persistent AF (HR 2.066; 95% CI 1.380–3.093), post-ablation AAD use (HR 2.231; 95% CI 1.401–3.554), and LA diastolic pressure (HR 1.049; 95% CI 1.008–1.093) as independent predictors of recurrence. Subgroup analysis revealed that in patients with paroxysmal AF, recurrence was significantly associated with post-ablation AAD use (HR 3.218; 95% CI 1.600–6.470), LA volume (HR 1.007; 95% CI 1.001–1.012), and LA diastolic pressure (HR 1.097; 95% CI 1.033–1.165). In contrast, no statistically significant predictors were identified in the persistent AF subgroup.

Conclusion

Among patients with paroxysmal AF, post-ablation AAD use, increased LA volume, and elevated LA diastolic pressure emerged as independent predictors of arrhythmia recurrence, highlighting the

prognostic importance of atrial structural and hemodynamic parameters. The lack of significant predictors in persistent AF suggests a more advanced substrate characterized by diffuse atrial remodeling, which may diminish the predictive utility of conventional metrics. These findings underscore the value of early rhythm control and meticulous optimization of atrial loading conditions to enhance long-term ablation success.

原著論文 114_A069

使用生物製劑治療乾癬性關節炎患者之心血管事件風險

Cardiovascular Risk Associated with Biologic Therapy in Psoriatic Arthritis: A Retrospective Analysis

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Background
Psoriatic arthritis (PsA) increases cardiovascular disease (CVD) risk and mortality. Biologic DMARDs (bDMARDs) may reduce this risk more effectively than conventional DMARDs (cDMARDs).

Methods
Using the Chang Gung Memorial Research Database (2001–2022), 2,383 PsA patients treated with DMARDs were analyzed: 1,190 received bDMARDs and 1,193 cDMARDs. The primary outcome was major adverse cardiovascular events (MACE: cardiovascular death, myocardial infarction, stroke, or revascularization). Inverse probability of treatment weighting was applied.

Results
During a mean 5-year follow-up, the bDMARD group showed reduced risks of MACE (HR 0.65; 95% CI 0.43–0.96), all-cause mortality (HR 0.44; 95% CI 0.35–0.57), and cardiovascular mortality (HR 0.54; 95% CI 0.32–0.92), but higher infection-related admissions (sHR 1.45; 95% CI 1.18–1.78).

Conclusion
bDMARDs significantly lower cardiovascular events and mortality in PsA, though infection risk increases. Careful monitoring and further research are warranted.

原著論文 114_A070

在第二型糖尿病患者中熱休克蛋白 60 與慢性腎臟病的關係

The relationship between heat shock protein 60 and chronic kidney disease in patients with type 2 diabetes

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Background
Heat shock protein 60 (Hsp60) is a mitochondrial chaperone essential for protein folding and cellular homeostasis. Beyond mitochondria, it appears in the cytosol, cell surface, and extracellular space, acting as a danger signal to regulate immune responses. HSP60 is implicated in inflammation, cardiovascular disease and may contribute to progression of chronic kidney disease (CKD). The aim of this study was investigating association between serum HSP60 levels and CKD in patients with type 2 diabetes (T2D).

Methods
We conducted a cross-sectional study involving 81 patients with T2D recruited from Kaohsiung Chang Gung Memorial Hospital between 2019 and 2020. Blood and urine samples were collected from all participants, and HSP60 concentrations were quantified. Serum creatinine levels and estimated glomerular filtration rate (eGFR) values were measured to assess kidney function. The relationships between HSP60 levels, creatinine, and eGFR were analyzed using Pearson's correlation test. Patients were categorized into CKD and non-CKD groups based on standard clinical criteria.

Results
In patients with T2D, the serum HSP60 concentrations were significantly higher in the CKD group as compared with the non-CKD group (7.76 ± 2.92 vs. 5.90 ± 3.52 μg/mL, $p = 0.012$). Conversely, urinary HSP60 concentrations were significantly lower in CKD patients than in non-CKD patients (3.08 ± 3.33 vs. 5.14 ± 4.76 μg/mL, $p = 0.027$). Correlation analysis revealed a positive association between serum HSP60 levels and CKD, whereas urinary HSP60 levels showed a negative association with CKD status.

Conclusion
Our findings suggest that altered HSP60 expression is associated with CKD in patients with T2D. Elevated serum HSP60 and reduced urinary HSP60 levels may reflect disease-related changes in protein regulation and renal clearance, which could a useful biomarker for assessment of CKD. However, given the relatively small sample size, further large-scale, longitudinal studies are warranted to clarify the prognostic role of HSP60 in patients with T2D and CKD.

原著論文 114_A071

聯合 SGLT2 抑制劑和 ARNI 治療可協同保護大鼠高蛋白飲食相關蛋白結合尿毒素誘發的心腎症候群模型中的心腎損傷

Synergistic Protection by Combined SGLT2 Inhibitor and ARNI Therapy Against Cardiorenal Injury from Protein-Bound Uremic Toxins Induced by High Protein Diet in a Rat Model of Cardiorenal Syndrome

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Background
Despite the widespread adoption of guideline-directed medical therapy (GDMT) for heart failure, including agents such as angiotensin receptor-neprilysin inhibitors (ARNI) and sodium-glucose cotransporter 2 inhibitors (SGLT2i), there is limited direct evidence that these therapies counteract the deleterious effects of uremic toxins accumulated from a high protein diet in patients with heart failure and concomitant renal dysfunction. Furthermore, the mechanistic role and potential harmful impact of a high-protein diet in worsening cardiorenal syndrome (CRS) remain insufficiently characterized.

Methods
We utilized a rodent model of CRS induced through 5/6 nephrectomy and doxorubicin administration. The CRS rats were subjected to a daily high-protein diet. The therapeutic effects of empagliflozin and Entresto, both individually and in combination, in comparison to a control group were evaluated.

Results
While monotherapy with empagliflozin or Entresto substantially improved the 60-day survival rate, reaching 75–78%, simultaneous administration further augmented survival to 89%. Mechanistically, both therapies demonstrated dual protective effects via synergistic inhibition of the TGF-β/Smad3 signaling pathway, and concurrent modulation of the AMPK axis and angiotensin II type 1 receptor signaling. These combined interventions attenuated fibrosis, reactive oxygen species formation, and inflammation within cardiac and renal tissues, suggesting complemental protection against injury driven by a high protein diet.

Conclusion
Dual therapy with ARNI and SGLT2i may synergistically mitigate uremic-toxin related cardiorenal injury, supporting their future potential in personalized CRS management where traditional GDMT lacks specificity for uremic toxin antagonism.

原著論文 114_A072

Enfortumab Vedotin 與 Pembrolizumab 作為局部晚期或轉移性尿路上皮癌一線治療之臨床結果：單一醫學中心實證經驗

Real-World Outcomes of Enfortumab Vedotin Plus Pembrolizumab as First-Line Therapy in Patients with Locally Advanced or Metastatic Urothelial Carcinoma: A Single-Center Experience

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Background

Platinum-based chemotherapy has long been the first-line treatment for locally advanced or metastatic urothelial carcinoma, with immunotherapy mainly used for maintenance. The phase III EV-302 trial showed that enfortumab vedotin plus pembrolizumab (EV+P) was superior to chemotherapy, establishing EV+P as a new standard. However, real-world evidence remains scarce. This study describes the real-world experience of EV+P in patients treated at Kaohsiung Chang Gung Memorial Hospital.

Methods

The medical records of patients treated at Kaohsiung Chang Gung Memorial Hospital, Taiwan, between January 6, 2022, and August 26, 2025, were retrospectively reviewed. Eligible patients had histopathologically confirmed urothelial carcinoma, unresectable clinical stage III or IV disease, and received at least one cycle of EV+P as first-line therapy. Demographic and baseline clinical data collected at treatment initiation included age, Eastern Cooperative Oncology Group (ECOG) performance status, pretreatment laboratory findings, primary tumor site, and PD-L1 expression. The presence of visceral metastases was assessed by computed tomography or magnetic resonance imaging. Objective response rate, progression-free survival (PFS), and overall survival (OS) were evaluated, with survival outcomes estimated by the Kaplan-Meier method and Cox regression model for univariate and multivariate analysis.

Results

From January 6, 2022, to August 26, 2025, thirty seven patients with stage III or IV urothelial carcinoma were enrolled, with a median follow-up of 13.2 months. The median age was 70 years, and 24 patients (64.9%) were male. Thirteen patients (35.1%) had locally advanced, unresectable disease and 24 (64.9%) had metastatic cancer. Among them, fifteen patients (40.5%) had visceral metastatic involvement, whereas 10 (27.0%) had metastases limited to lymph nodes. At the end of follow-up, eight patients (21.6%) achieved a confirmed complete response and 13 (35.1%) achieved a partial response. Eleven deaths (29.7%) occurred during follow-up. The median PFS was 10.25 months, while the median OS was not reached.

Univariate analysis identified ECOG performance status ≧1, white blood cell count ≧11 × 10^3 /μL, and serum calcium >10 mg/dL as significant prognostic factors for OS. For PFS, significant factors included body mass index (BMI) >25 kg/m^2 and elevated liver enzymes [aspartate aminotransferase (AST) >34 U/L or alanine aminotransferase (ALT) >36 U/L]. Multivariate Cox regression showed that elevated white blood cell count (≧11 × 10^3/μL) (HR 11.29, 95% CI 1.42–

89.50, P=0.022) independently predicted poor OS, while BMI >25 kg/m^2 (HR 4.12, 95% CI 1.51–11.24, P=0.006) independently predicted poor PFS. PD-L1 expression was not significantly associated with prolonged PFS or OS.
Treatment-related adverse events occurred in 25 patients (67.6%), most commonly skin rash (29.7%), pruritus (24.3%), peripheral neuropathy (21.6%), and alopecia (10.8%).

Conclusion

In this real-world retrospective study of patients with locally advanced or metastatic urothelial carcinoma, first-line treatment with EV+P demonstrated favorable efficacy and a manageable safety profile, consistent with outcomes reported in the EV-302 trial. Elevated white blood cell count and higher BMI were identified as independent adverse prognostic factors for overall survival and progression free survival, respectively, underscoring the need for further investigation in larger real-world populations.

114_A073

在有無慢性肝炎的心衰竭病人比較心衰竭再住院的風險

Readmission risk for heart failure patients with and without chronic hepatitis under multidisciplinary team care

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Background

In Taiwan, the prevalence of chronic hepatitis B and C is about 15–20% and 2–4% in older adults, higher than in Western countries. Chronic hepatitis may cause hepatopathy and cardiac complications, while heart failure (HF) can further impair hepatic perfusion and oxygenation, leading to injury or fibrosis. However, the relationship between chronic hepatitis and outcomes in HF with reduced ejection fraction (HFrEF) remains unclear. This study aimed to evaluate readmission, cardiovascular death, and all-cause mortality in HFrEF patients with and without chronic hepatitis.

Methods

Between February 2021 and December 2023, we retrospectively enrolled 432 patients with HFrEF hospitalized for HF under multidisciplinary team care. Chronic hepatitis was defined as positivity for hepatitis B surface antigen, hepatitis B core antibody, or hepatitis C antibody. Patients were stratified by hepatitis status, and a predefined subgroup with LVEF <30% was further analyzed. The primary outcome was HF readmission (RAHFH), and the secondary outcomes were cardiovascular and all-cause mortality. Kaplan–Meier survival curves with log-rank test were used, and Cox regression identified predictors of outcomes.

Results

Among the study cohort, 16.9% (73/432) had chronic hepatitis. The mean age was 59.5 ± 14.0 years, and 77.5% were male. There was no significant difference in baseline demographics or comorbidities, including hypertension, diabetes, hyperlipidemia, myocardial infarction, atrial fibrillation, and chronic kidney disease, between groups. Patients with hepatitis had a trend towards higher RAHFH (13.7% vs. 7.5%, P=0.086). Cardiovascular death (2.7% vs. 1.7%, P=0.537) and all-cause mortality (8.2% vs. 10.0%, P=0.634) showed no difference. In patients with LVEF <30% (n=200), hepatitis B infection (n=27) was associated with significantly higher RAHFH (29.6% vs. 8.1%, P=0.001). Kaplan–Meier analysis confirmed greater cumulative readmission risk in hepatitis B patients (log-rank P<0.001). In multivariate Cox regression, post-treatment LVEF was associated with better outcomes [HR 0.95, 95% CI 0.91–0.996, P=0.033].

Conclusion

Over a mean follow-up of 2.1 years, overall outcomes were similar between HF patients with and without chronic hepatitis under multidisciplinary care. However, among those with advanced HF and LVEF <30%, hepatitis B patients had significantly higher risk of readmission, while improved post-treatment LVEF predicted favorable outcomes. These findings support routine hepatitis

screening during HF hospitalization and optimization of guideline-directed therapy in patients with severe LV dysfunction.

原著論文 114_A074

探討新型冠狀病毒感染放置體外膜氧合（ECMO）之病人，評估放置後的有效性以及影響患者預後的關鍵因素

Evaluation of efficacy and determinants of survival in patients undergoing ECMO therapy in SARS-CoV-2 infection patients: Insights from an Asian Tertiary Center

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Background
Extracorporeal membrane oxygenation (ECMO) has been increasingly utilized as salvage therapy for patients with coronavirus disease 2019 (COVID-19) complicated by severe acute respiratory distress syndrome (SARS). While international registries have reported outcomes in ECMO-supported COVID-19 cohorts, data specific to Asian populations remain scarce. To address this gap, we reviewed our institutional experience to characterize clinical outcomes and identify factors potentially associated with survival.

Methods
We conducted a retrospective cohort study of adult patients with laboratory-confirmed COVID-19 who received ECMO support at Kaohsiung Chang Gung Memorial Hospital between June 9, 2022, and February 4, 2023. Demographic data, ECMO modality (venovenous [VV] vs. venoarterial [VA]), laboratory parameters at cannulation, and adjunctive pharmacologic therapies were extracted from electronic medical records. In-hospital mortality served as the primary outcome. Group comparisons were performed using chi-square tests for categorical variables and Mann–Whitney U tests for continuous variables.

Results
A total of 18 patients underwent ECMO support during the study period. Among them, 5 patients (28%) survived to hospital discharge, while 13 (72%) succumbed during hospitalization. The median duration of ECMO support was 5.5 days (interquartile range [IQR], 2.5–7.75 days). Survival rates differed by ECMO modality: 3 of 7 patients (43%) receiving VV-ECMO survived, compared to 2 of 11 patients (18%) on VA-ECMO.
Survivors exhibited numerically lower median age (49 vs. 63 years, p = 0.217), body weight (60.0 vs. 67.4 kg, p = 0.278), and serum lactate levels at the time of ECMO cannulation (20.8 vs. 37.0 mg/dL, p = 0.661), although none of these differences reached statistical significance. Adjunctive therapies included intravenous corticosteroids (n = 14), remdesivir (n = 5), and tocilizumab (n = 1). Remdesivir use was associated with a numerically lower mortality rate, but the association did not achieve statistical significance.

Conclusion
In this single-center Asian cohort, in-hospital mortality among COVID-19 patients requiring ECMO support remained high despite aggressive rescue interventions. Although survivors tended to be younger and demonstrated lower body weight and lactate levels at cannulation, these trends did

not reach statistical significance, likely due to limited sample size. The differential survival between VV- and VA-ECMO underscores the importance of patient selection and underlying cardiac involvement. Furthermore, the role of antiviral therapy in critically ill patients requiring ECMO remains inconclusive and warrants further investigation through prospective, multicenter studies with adequate statistical power in Asian populations.

原著論文 114_A075

以 PNI 和 GNRI 來預測肝細胞癌患者接受 Lenvatinib 治療之預後

Predictive Value of Nutrition Indices in Advanced Hepatocellular Carcinoma Patients Treated with Lenvatinib

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Background

The Prognostic Nutritional Index (PNI) and Geriatric Nutritional Risk Index (GNRI) are simple markers reflecting immune and nutritional status. This study evaluates their prognostic significance in advanced hepatocellular carcinoma (HCC) patients receiving lenvatinib.

Methods

A total of 276 advanced HCC patients received first-line lenvatinib. PNI and GNRI were calculated based on serum albumin levels, lymphocyte count, and body weight. Patients were classified into high and low groups for each index. Multivariate models were used to assess their prognostic impact on progression-free survival (PFS) and overall survival (OS).

Results

Higher PNI (cut-off: 45) and GNRI (cut-off: 98) scores were associated with significantly better outcomes in patients receiving lenvatinib. Patients with higher indices had greater objective response rates, lower rates of severe treatment-related adverse events, and were more likely to receive post-treatment therapies. The high-PNI group had a median PFS of 7.5 vs. 4.0 months ($p=0.002$) and an OS of 19.3 vs. 9.8 months ($p<0.001$) compared to the low-PNI group. Similarly, the high-GNRI group had a median PFS of 7.3 vs. 4.7 months ($p=0.001$) and an OS of 21 vs. 9.8 months ($p<0.001$). PNI (hazard ratio [HR]: 1.559, $p=0.009$), GNRI (HR: 1.577, $p=0.011$), and their combined indices (HR: 1.540, $p=0.008$) independently demonstrated prognostic value for mortality in multivariate models.

Conclusion

PNI and GNRI, individually and in combination, are simple yet powerful tools for predicting survival and treatment tolerance in HCC patients receiving lenvatinib. Routine assessment of these indices may enhance patient stratification and guide therapeutic strategies.

原著論文 114_A076

B 型肝炎患者在貝樂克或惠立妥停藥後 B 型肝炎病毒復發的型態對於表面抗原消失的影響

Impact of HBV Relapse Patterns on HBsAg Seroclearance After Entecavir or Tenofovir Discontinuation

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Background

HBV relapse are common after cessation of nuclot(s)ide analoges (NA) therapy. However, HBsAg loss rate was higher in patients who discontinued NA therapy compared to patients who continued NA therapy. This study investigated the association between HBV relapse patterns and HBsAg seroclearance during long-term follow-up after discontinued entecavir or tenofovir disoproxil fumarate (TDF).

Methods

A total of 900 non-cirrhotic patients (616 HBeAg-negative and 284 HBeAg-positive at treatment initiation) who had discontinued entecavir or TDF for at least 12 months were retrospectively analyzed.

Results

HBeAg-negative patients achieved significantly higher rates of HBsAg seroclearance than HBeAg-positive patients (10 years: 29.4% vs. 19.0%, p=0.007), despite comparable rates of clinical relapse and retreatment. Among the 115 HBeAg-negative and 34 HBeAg-positive patients who experienced HBsAg seroclearance, 36 (31.3%) and 8 (23.5%) did experience clinical relapse prior to HBsAg seroclearance, respectively. In HBeAg-negative patients with seroclearance, there was significant difference in clinical relapse rates between patients with HBsAg at end-of-treatment (EOT) <50 and ≧50 IU/mL (3/47 (6.4%) versus 44/68 (48.5%), p <0.001). Among the HBeAg-negative patients with clinical relapse, the optimal value of HBsAg at EOT was 300 IU/mL for predicting HBsAg seroclearance (10 years; <300 versus ≧300 IU/mL: 32.4% versus 11.6%, p <0.001). In this group, a lower peak alanine aminotransferase (ALT) levels were observed among patients with relapse and subsequent HBsAg seroclearance (peak ALT, p=0.029; ALT >5× ULN, p=0.015). By contrast, in HBeAg-positive patients, those who achieved seroclearance exhibited higher ALT flares than those with relapse but without seroclearance (peak ALT, p=0.009; ALT >10×ULN, p=0.007). Among 202 patients who underwent subsequent finite therapy, the 6-year cumulative HBsAg seroclearance rate after NA cessation was 19.2%. Among the HBeAg-negative patients, there was no significant difference in HBsAg seroclearance rates between the initial and subsequent finite therapies (p=0.440). The 5-year cumulative rates of HBsAg seroclearance in patients who achieved HBsAg <100 IU/mL at EOT were 46.3% and 57.6% in the initial and subsequent finite therapy groups, respectively (p=0.135). Among the 509 patients in the entire cohort who experienced clinical relapse, 8 developed hepatic decompensation during follow-up. The 10-year cumulative incidence of hepatic decompensation during clinical relapse was 0.8%.

Conclusion

HBV relapse patterns strongly influence HBsAg seroclearance. Careful post-treatment monitoring is crucial for early relapse detection and for preventing severe outcomes.

原著論文 114_A077

轉移性胰臟癌患者之第三線治療使用鉑金藥物的臨床效益及毒性分析

The efficacy and safety profile of third-line platinum-based chemotherapy in patients with metastatic pancreatic adenocarcinoma

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Background
Pancreatic ductal adenocarcinoma (PDAC) is an aggressive malignancy with limited later-line therapeutic options. This retrospective study aimed to evaluate the efficacy and safety of platinum-based chemotherapy as third-line treatment for metastatic PDAC.

Methods
We analyzed 102 patients who received third-line systemic treatment for PDAC between 2018 and 2023 across five medical centers in Taiwan. All patients had previously received first-line gemcitabine-based therapy and second-line nanoliposomal irinotecan with 5-fluorouracil and leucovorin. Overall, one group (N=40) received platinum-based regimens, whereas the other group (N=62) received non-platinum-based treatments. Survival outcomes and treatment-related toxicities were compared between the groups.

Results
The median overall survival (OS) duration was 5.8 months (95% CI, 3.3-8.3) for the platinum group and 4.3 months (95% CI, 3.5-5.0) for the non-platinum group, without a statistically significant difference (HR, 0.74, 95% CI: 0.46-1.18, p=0.21). The median time-to-treatment failure was 2.4 months (95% CI, 1.6-3.2) and 2.1 months (95% CI, 1.3–2.9), respectively (HR, 0.85, 95% CI: 0.57-1.28, p=0.44). Subgroup analyses suggested that younger age and no history of pancreatectomy tended to associate with better OS following platinum-based treatment. However, the platinum group experienced a higher incidence aspartate aminotransferase elevation (13% vs. 2%, p=0.033) and increased creatinine (13% vs. 2%, p=0.033) levels than the non-platinum group.

Conclusion
This study showed that a platinum-based third-line chemotherapy regimen for patients with metastatic PDAC did not confer a significant survival advantage over non-platinum-based regimens. Platinum-based regimens are associated with modestly increased treatment-related toxicities, thus potentially limiting their tolerability in this heavily pretreated patients.

原著論文 114_A078

癌症診斷時營養不良的盛行率與其預後影響：一項台灣的前瞻性觀察性研究

Prevalence and Prognostic Impact of Malnutrition at Cancer Diagnosis: A Prospective Cohort in Taiwan

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Background

Malnutrition is a prevalent yet often under-recognized condition in oncology that could potentially compromise treatment outcomes. This study assessed its prevalence at cancer diagnosis and the prognostic implications within a large cohort of Taiwanese patients with cancer.

Methods

In this prospective study, 2 501 adults with newly diagnosed, histologically confirmed cancer (2018–2022) underwent nutritional screening within seven days preceding the initiation of cancer therapy. Nutritional status was assessed using the Mini Nutritional Assessment–Short Form and patients were classified as well-nourished (12–14), at-risk (8–11), or malnourished (<8) points. Overall survival was analyzed using Kaplan–Meier estimates and multivariable Cox models.

Results

At baseline, 59.1% of patients exhibited compromised nutrition, with 47.1% at risk, and 12.0% malnourished. The highest burden was observed in pancreatic (74.2%), esophageal (72.8%), and gastric (67.5%) cancers. Malnourished patients more frequently presented with stage IV disease (62.7% vs. 49.5% in well-nourished patients; $P < 0.001$) and with poor performance status (ECOG $\geqq 2$: 20.0% vs. 4.8%, respectively; $P < 0.001$). Three-year overall survival was 69.8% in well-nourished patients, 51.5% in those at risk, and 37.2% in malnourished patients (log-rank $P < 0.001$). Adjusted hazard ratios (HRs) for mortality were 1.79 (95% confidence interval [CI], 1.51–2.13) in the at-risk group and 2.74 (95% CI, 2.20–3.42) in the malnourished group. Excess mortality remained significant in pancreatic (HR 2.38, 95% CI, 1.24–4.57), head and neck (HR 1.89, 95% CI, 1.01–3.53), and colorectal (HR 2.12, 95% CI, 1.21–3.71) cancers in the at-risk group.

Conclusion

Pre-treatment malnutrition affects almost 60% of patients with cancer and is a strong independent predictor of mortality. Routine nutritional screening and early intervention are warranted, particularly for patients with upper gastrointestinal, head and neck, and colorectal cancers.

原著論文 114_A079

多囊性腎臟病患者急性主動脈事件的預後和風險：一項為期 20 年的全國性世代研究

rognosis and Risk of Acute Aortic Events in Patients with Polycystic Kidney Disease: A 20-Year Nationwide Cohort Study

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Background
Polycystic kidney disease (PKD) may involve pathophysiological mechanisms related to aortic disorders, yet data on the risk remain limited. This study aimed to evaluate whether PKD serves as an independent risk factor for acute aortic events (AAE) and to examine its association with adverse clinical outcomes.

Methods
This was a retrospective cohort study using Taiwan's National Health Insurance Research Database (NHIRD) from 2000 to 2022. Patients with confirmed PKD were identified, and 100-fold age- and sex-matched non-PKD controls were enrolled. The primary outcome was the incidence of AAE between patients with or without PKD. Secondary outcomes included the difference in in-hospital and post-discharge event rates among the patients hospitalized for AAE.

Results
The cohort included 3,655 PKD patients and 36,550 controls. With a mean follow-up of 9.5 years, PKD patients had a significantly increased risk for ruptured aneurysm (HR, 4.20; 95% CI, 1.74–10.16), aortic dissection (HR, 2.31; 95% CI, 1.50–3.54), and sudden death due to aortic disease (HR, 3.82; 95% CI, 2.02–7.23) after propensity score matching (PSM). Among 40,995 AAE admissions, patients with PKD showed a higher risk of new-onset dialysis (OR 2.59, 95 % CI 1.13–5.91). After discharge, there were still higher risks of stroke, readmission, endovascular repair, and long-term dialysis.

Conclusion
PKD is an independent risk factor for acute aortic events, and affected patients experience poorer long-term outcomes. These findings emphasize the importance of early cardiovascular surveillance, particularly for male and aged PKD patients.

原著論文 114_A080

高密度脂蛋白膽固醇變異性與周邊動脈疾病風險：一項多中心資料庫分析

HDL-C Variability and Peripheral Artery Disease Risk: A Multi-Institutional Database Analysis

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Background

Emerging evidence highlights the clinical significance of lipid variability for cardiovascular outcomes. This study investigated the relationship between lipid variability and incident peripheral artery disease (PAD) risk.

Methods

We analyzed data from 93,948 hyperlipidemic patients in Taiwan's Chang Gung Research Database (2007-2013), assessing annual lipid levels (total cholesterol, LDL-C, HDL-C, triglycerides) and their visit-to-visit variability over four years. Patients were followed until 2019 for PAD development. Results: Over a mean 5.9-year follow-up, 2,735 patients (2.5%) developed PAD. While mean lipid levels were associated with PAD risk, only high-density lipoprotein cholesterol (HDL-C) visit-to-visit variability (ARV) remained independently associated with increased PAD risk after multivariate adjustment (aHR: 1.13; 95% CI: 1.004–1.27 for highest vs. lowest quartile; P trend = 0.002). Sensitivity and subgroup analyses confirmed these findings.

Conclusion

This multi-institutional study demonstrates that HDL-C visit-to-visit variability is significantly associated with incident PAD risk in hyperlipidemic patients, independent of traditional risk factors and mean lipid levels. These findings underscore the importance of stable lipid control in PAD prevention.

原著論文 114_A081

肝動脈灌注化療合併 TKI 對晚期肝細胞癌患者存活之效果

Combination of Hepatic Arterial Infusion Chemotherapy with Tyrosine Kinase Inhibitor Provides Better Survival in Advanced Hepatocellular Carcinoma Patients

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Background

Hepatic arterial infusion chemotherapy (HAIC) is recommended for unresectable hepatocellular carcinoma in Asian countries, particularly in patients with portal vein thrombosis. HAIC minimizes systemic toxicity while maximizing the intratumoral concentration of chemotherapy agents to HCC. Combination of systemic therapy, particularly tyrosine kinase inhibitors (TKI) has further expanded treatment options for advanced HCC.

Methods

Between March 2009 and February 2022, we conducted a retrospective, single-center cohort study at Linkou Chang Gung Memorial Hospital. Patients were allocated into two groups: HAIC combined with TKI (n=51) and HAIC alone (n=79). Propensity score matching (PSM) 1:1, yielded two balanced groups (n=51 per arm). The HAIC regimen comprised cisplatin plus 5-fluorouracil (5-FU) with oral leucovorin, administered on a five-day-on/two-day-off schedule treatment days per week followed by two days off; TKIs included sorafenib, lenvatinib, and regorafenib. Treatment response was assessed using Response Evaluation Criteria in solid tumors 1.1 (RECIST v1.1). Kaplan–Meier analysis was used to estimate the survival probability between groups, and the log-rank test was used to compare survival outcomes. Adverse effects of systemic treatment were graded according to the National Cancer Institute's Common Terminology Criteria for Adverse Events (CTCAE).

Results

Among 130 patients, the combination therapy group demonstrated significantly improved overall survival (OS) (20.2 versus 11.8 months, $p < 0.001$) and progression-free survival (PFS) (8.2 versus 3.6 months, $p = 0.011$) compared with the HAIC-only group. These benefits apersisted after propensity score matching with improved OS (20.2 vs 12.9 months, $p = 0.001$) and extrahepatic PFS (12.4 vs 5.5 months, $p = 0.008$). Subgroup analysis revealed that combination therapy improved PFS in the stage IV portal vein thrombosis (PVT) subgroup. TKI combination therapy, more than nine HAIC cycles, and sequential transarterial chemoembolization (TACE) following HAIC were independent predictors of improved OS.

Conclusion

HAIC combined with TKI therapy significantly improves survival outcomes compared to HAIC alone in patients with unresectable HCC, particularly in those with extrahepatic spread and PVT. Sequential TACE after HAIC further enhances survival benefits.

114_A082

通氣比於接受俯臥治療之急性呼吸窘迫症候群病患的預後分析

Prognostic Value of the Ventilatory Ratio in Patients with Acute Respiratory Distress Syndrome Undergoing Prone Positioning

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Background

Ventilatory ratio (VR) is a simple bedside index of impaired efficiency of ventilation and correlates well with physiological dead space fraction (dead space to tidal volume ratio, VD/VT) in patients with acute respiratory distress syndrome (ARDS). Among the management for ARDS, prone positioning has been proven as an effective strategy to reduce mortality. However, not all patients who received prone positioning had a favorable outcome. The aim of this study is to determine the predictive value of VR for clinical outcomes in patients with ARDS managed with prone positioning.

Methods

This multicenter retrospective study included data on all patients admitted to the intensive care units of eight referral hospitals in Taiwan from October 2015 to March 2016, and in Chang Gung Memorial Hospital Linkou branch from January 2017 to October 2023. The data were obtained from the electronic medical records of each hospital by using a standard case report form. VR was calculated as follow : [minute ventilation (ml/min) × PaCO2 (mm Hg)]/[(predicted body weight (kg) × 100 × 37.5)].

Results

We included 137 patients who received prone positioning. Among them, the group with VR decreased after prone positioning had significantly lower mortality in 28 days (22.2% vs. 48.2%, p = 0.001), lower mortality in 60 days (29.6% vs. 64.3%, p < 0.001), lower rate of requiring extracorporeal membrane oxygenation (ECMO) as rescue therapy (7.4% vs. 23.2% , p = 0.008), higher ventilator free days at day 28 (5.3±7.5 vs. 2.2±5.0 days, p =0.008), and higher ventilator free days at day 60 (22.1±21.3 vs. 10.4±17.9 days, p =0.001). After adjustment by multivariate Cox regression, the hazard ratio of mortality presented significance in patients with decreased body mass index [0.891 (0.817-0.971), p =0.009], increased C-reactive protein level [1.034 (1.006-1.062), p = 0.017], and increased VR [3.349 (1.526-7.348), p = 0.003]. Among patients with viral pneumonia, decreased VR group exhibited significant lower mortality at day 28 (14.0% vs. 44.4%, p = 0.002) and lower mortality at day 60 (18.0% vs. 61.1%, p < 0.001). The decreased VR group among the patients with bacterial pneumonia revealed no significance in mortality at day 28 (29.6% vs. 50.0%, p = 0.167) and mortality at day 60 (44.4% vs. 66.7%, p = 0.143).

Conclusion

In patients with ARDS and received prone positioning as rescue therapy, decreased VR after first day of prone positioning revealed significantly lower mortality, higher ventilator free days, and lower need for ECMO support compared to patients with increased VR. Among patients with viral

pneumonia, decreased VR is correlated to better clinical outcomes, but no such relationship among the patients with bacterial pneumonia.

原著論文 114_A083

第三期胃癌患者術後輔助化學治療之回顧分析

Real-World Survival Benefit of Adjuvant Chemotherapy in Stage III Gastric Cancer

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Background
To evaluate the real-world survival outcomes of different adjuvant chemotherapy regimens and the impact of treatment compliance in patients with stage III gastric cancer undergoing curative resection.

Methods
We conducted a retrospective study of patients with gastric adenocarcinoma who underwent D2 gastrectomy at Chang Gung Memorial Hospital, Taiwan, between January 2018 and December 2024. Patients with pathological stage III disease and R0 resection were included. Clinical data, chemotherapy regimens, and treatment compliance were analyzed. Overall survival (OS) and disease-free survival (DFS) were estimated using Kaplan–Meier analysis and compared by log-rank test. Cox regression was used to identify independent prognostic factors.

Results
A total of 228 patients with stage III gastric adenocarcinoma were analyzed. Among them, 192 (84.2%) received adjuvant chemotherapy, including XELOX (41.6%), TS-1 monotherapy (27.6%), SOX (21.9%), and other regimens (8.9%). Patients who received chemotherapy had significantly longer OS (61.7 vs. 14.5 months, $p<0.001$) and DFS (not reached vs. 15.8 months, $p<0.001$) compared to those without chemotherapy. Subgroup analysis showed median OS of 61.6 months for SOX, 70.5 months for TS-1, and 52.7 months for XELOX. Multivariate analysis identified early treatment termination as an independent predictor of poor OS (HR: 5.48, 95% CI: 3.23–9.31) and DFS (HR: 5.76, 95% CI: 3.19–10.41). Adverse events were more frequent with combination chemotherapy, particularly non-hematological toxicities.

Conclusion
Adjuvant chemotherapy significantly improves survival in stage III gastric cancer. SOX and TS-1 regimens showed superior efficacy compared to XELOX, with a more favorable toxicity profile. Treatment compliance critically impacts prognosis, and early termination was strongly associated with inferior survival. Optimizing regimen selection and adherence strategies is essential to maximize patient outcomes in real-world practice.

原著論文 114_A084

台灣癌症成人病患脆弱性盛行率與年齡相關功能障礙分布之研究

Frailty Prevalence and Age-Specific Impairment Patterns Across a Large Cohort of Adult Cancer Patients

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Background
Although frailty is classically linked to older adults, it may also affect younger people with cancer. This study assessed the prevalence and pattern of geriatric assessment (GA)–identified impairments across adulthood and examined their prognostic value.

Methods
In this multicenter cross-sectional study, 2,501 adults (≧20 years) with newly diagnosed cancer (2021–2023) completed a pre-treatment GA covering eight domains: functional status, comorbidity, cognition, mood, nutrition, polypharmacy, falls, and social support. Patients were grouped into six age bands (20–39 to ≧80 years). Frailty status was defined as fit (0 impairments), prefrail (1), or frail (≧2). We analyzed age-specific impairment patterns and associations with overall survival (OS).

Results
GA deficits increased with age (Spearman's rho = 0.943, p = 0.005). Only 26% of patients aged 20–39 had no impairments, versus 12.9% of those aged 70–79. Frailty was common at all ages and rose with age: 40.0% (20–39), 42.3% (40–49), 56.2% (70–79), and 74.4% (≧80). Malnutrition was the most frequent impairment overall (59.1%), affecting 51% of patients aged 20–39 and peaking at 63.8% in those 70–79. Older adults more often had functional decline, comorbidities, and cognitive impairment; polypharmacy and depressed mood were frequent but showed less age-related variation; inadequate social support was uniformly low. Both prefrailty and frailty independently predicted worse OS (adjusted HR 1.59, 95% CI 1.05–2.34, p = 0.002; and 2.34, 95% CI 1.55–3.52, p < 0.001). In age-stratified analyses (40–49, 50–59, 70–79), frailty remained associated with poorer OS (adjusted HR 1.81–3.85; all p < 0.05).

Conclusion
Frailty and GA-identified vulnerabilities are prevalent across all adult age groups with cancer and intensify with age. Malnutrition dominates across ages—including younger adults—while older patients carry greater burdens of functional decline, comorbidity, and cognitive deficits. Prefrailty and frailty are independently associated with inferior OS. These findings support routine, pre-treatment GA for adults of any age to detect vulnerabilities early and guide age-tailored supportive interventions.

原著論文 114_A085

直接口服抗凝血劑於心房顫動的療效與安全性：真實世界證據之網絡統合分析

Comparative Efficacy and Safety of Direct Oral Anticoagulants in Nonvalvular Atrial Fibrillation: A Network Meta-Analysis of Real-World Evidence

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Background

While direct oral anticoagulants (DOACs) are established as the first-line therapy over Vitamin K antagonists (VKAs) for stroke prevention in nonvalvular atrial fibrillation (NVAF), the most effective choice among the four individual DOACs remains a common clinical challenge. Although prior studies have validated the superiority of DOACs over VKAs, clinicians do not currently have strong, comparative real-world evidence to help them choose a drug based on the unique risk profile of each patient. This network meta-analysis (NMA) was performed to integrate large-scale real-world evidence to establish a comparative ranking among Apixaban, Dabigatran, Edoxaban, and Rivaroxaban, providing suggestive indicators for personalized therapy.

Methods

Following a predefined protocol, we conducted a systematic review of the PubMed database for observational studies providing real-world data on DOACs versus VKAs in adults with NVAF. A total of 57 studies, comprising over 1,500,000 patients, were included. The methodological quality of included studies was assessed using the Newcastle-Ottawa Scale (NOS). The primary outcomes were stroke/systemic embolism (SE), ischemic stroke, hemorrhagic stroke, major bleeding, and intracranial hemorrhage (ICH). We performed random-effects pairwise and network meta-analyses, with results adjusted for study-level age and sex proportions, to generate adjusted risk ratios (aRR) with 95% confidence intervals (CI). The Surface Under the Cumulative Ranking (SUCRA) method was used to rank treatments for each outcome.

Results

Confirming existing evidence, DOACs were associated with significantly lower risks than VKAs across all major outcomes, including stroke/SE (aRR = 0.72, 95% CI: 0.70-0.75), major bleeding (aRR = 0.64, 95% CI: 0.62-0.66), and ICH (aRR = 0.46, 95% CI: 0.43-0.49). The NMA provided crucial differentiation among the DOACs. For efficacy, Edoxaban ranked highest for preventing ischemic stroke (SUCRA=1.00) and the composite of stroke/SE (SUCRA=1.00), while Apixaban also showed excellent efficacy for stroke/SE (SUCRA=0.74). For safety, Edoxaban again demonstrated the most favorable profile, ranking best for reducing both major bleeding (SUCRA=1.00) and ICH (SUCRA=1.00), with an ICH risk significantly lower than all other DOACs. Notably, Dabigatran was ranked as the most effective agent for preventing hemorrhagic stroke (SUCRA=0.97).

Conclusion

This large-scale NMA of real-world evidence confirms the superior safety and efficacy of DOACs over VKAs and, importantly, provides a comparative ranking to guide clinical decision-making. Our

findings suggest that different drugs may provide distinct benefits for specific efficacy and safety endpoints, implying that the best anticoagulant choice may differ depending on clinical priority. This evidence provides a quantitative framework to support a more personalized approach to anticoagulant therapy in NVAF.

原著論文 114_A086

第二型糖尿病患者使用 SGLT2 抑制劑、GLP-1 受體致效劑與 DPP-4 抑制劑之心室性心律不整與心源性猝死風險：網路統合分析

Comparative efficacy of SGLT2 Inhibitors, GLP-1 Agonists, and DPP-4 Inhibitors on Ventricular Arrhythmia and Sudden Cardiac Death in Type 2 Diabetes: A Network Meta-Analysis

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Background

Patients with Type 2 Diabetes (T2DM) have a significantly increased risk of ventricular arrhythmias (VA) and sudden cardiac death (SCD). While sodium-glucose cotransporter-2 inhibitors (SGLT2i), glucagon-like peptide-1 receptor agonists (GLP-1RA), and dipeptidyl peptidase-4 inhibitors (DPP-4i) reduce major adverse cardiovascular events, their comparative effects on specific arrhythmic outcomes remain unclear. We conducted a comprehensive systematic review and network meta-analysis (NMA) to address this knowledge gap.

Methods

Following PRISMA guidelines, we systematically searched PubMed and ClinicalTrials.gov for randomized controlled trials (RCTs) in English evaluating SGLT2i, GLP-1RA, or DPP-4i against placebo or active controls in adults (≧18 years) with T2DM. The primary outcomes were the incidence of VA, ventricular tachycardia (VT), and SCD. Pairwise meta-analyses were conducted using a fixed-effects model to generate risk ratios (RR) with 95% confidence intervals (CI). A subsequent NMA was performed to assess the relative efficacy across drug classes. The surface under the cumulative ranking curve (SUCRA) was used to establish treatment hierarchies. Exploratory meta-regression analyses were conducted to assess the impact of study-level covariates (e.g., age, sex, BMI, disease duration) on the outcomes.

Results

A total of 48 RCTs comprising 157,737 participants and 16 antidiabetic drugs were included. In pairwise meta-analyses against controls, no drug class demonstrated a significant effect on any primary outcome. For sudden cardiac death (SCD), the risk ratios were: SGLT2i (RR = 0.93, 95% CI: 0.56-1.53), DPP-4i (RR = 0.63, 95% CI: 0.33-1.19), and GLP-1RA (RR = 0.79, 95% CI: 0.36-1.75). For ventricular tachycardia (VT), the effects were similarly neutral: SGLT2i (RR = 0.95, 95% CI: 0.62-1.45), DPP-4i (RR = 1.07, 95% CI: 0.62-1.86), and GLP-1RA (RR = 1.35, 95% CI: 0.90-2.03). The findings for ventricular arrhythmias (VA) were also non-significant. The subsequent NMA confirmed no significant differences between any drug classes for any outcome. Meta-regression analyses also found no significant effect modification by study-level covariates ($P > 0.05$). SUCRA rankings indicated SGLT2i as the most probable best treatment for reducing VA (SUCRA = 0.87) and VT (SUCRA = 0.65), while DPP-4i ranked highest for SCD (SUCRA = 0.78).

Conclusion

This study presents the most comprehensive NMA to date. SGLT2 inhibitors, GLP-1 receptor

agonists, and DPP-4 inhibitors do not demonstrate a statistically significant differential effect on the risk of ventricular arrhythmia or sudden cardiac death. The neutral findings were robust against multiple study-level characteristics. This highlights a potential disparity between the known cardiorenal benefits of these drugs and their direct impact on arrhythmogenesis, which may be influenced by the underdetection and underreporting of arrhythmic events in trials not designed for arrhythmia monitoring. Future research with specific arrhythmia evaluation is needed to clarify these relationships.

原著論文 114_A087

評估懷疑全身性硬化症時 Anti-Scl70 抗體的臨床意義：與肺部併發症及癌症風險之關聯

Clinical Significance of Anti-Scl70 Antibodies in the Evaluation of Suspected Systemic Sclerosis: Associations with Pulmonary and Malignant Outcomes

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Background

Systemic sclerosis (SSc) is a severe autoimmune disease characterized by fibrosis, vascular abnormalities, and immune dysregulation. Anti-Scl70 antibodies (anti-topoisomerase I) are highly specific for SSc and associated with interstitial lung disease (ILD), pulmonary arterial hypertension (PAH), and possibly cancer. In practice, anti-Scl70 testing is frequently performed in the evaluation of suspected SSc, yet the impact of antibody titer strength and concomitant anti-Ro52 antibodies remains insufficiently defined.

Methods

This retrospective cohort study analyzed 752 adults who underwent anti-Scl70 antibody testing at Chang Gung Memorial Hospital between 2019 and 2021, with follow-up until December 2023. SSc was diagnosed using the 2013 ACR/EULAR classification criteria. ILD was confirmed by high-resolution computed tomography. PAH was diagnosed by right heart catheterization or suspected by echocardiography when invasive testing was unavailable. Malignancies were confirmed by histopathology. Anti-Scl70 and anti-Ro52 antibodies were detected using a standardized line immunoblot and categorized as weakly or strongly positive. Clinical outcomes were compared by antibody status, titer strength, and anti-Ro52 co-positivity.

Results

Of 752 patients, 77 (10.24%) were anti-Scl70 positive and 675 (89.76%) negative. Anti-Scl70 positivity was associated with female predominance (90.91% vs. 76.15%, p=0.0032) but not age (52.5 ± 14.4 vs. 51.1 ± 16.7 years, p=0.479). The prevalence of SSc was markedly higher in positives (74.03% vs. 24.44%, p<0.0001). Pulmonary involvement was frequent, with ILD present in 50.65% of positives compared with 6.52% of negatives (p<0.0001), and PAH in 14.29% vs. 2.96% (p=0.0001). Malignancies occurred more often in the antibody-positive group (12.99% vs. 5.93%, p=0.0185), with lung cancer showing the clearest difference (5.19% vs. 1.19%, p=0.0266), while other cancers such as breast, gastrointestinal, and hematologic did not differ significantly. Within positives, strong positivity (n=55) was linked to higher prevalence of SSc (89.09% vs. 36.36%, p<0.0001) and ILD (45.45% vs. 18.18%, p=0.0257) compared with weak positivity (n=22), whereas rates of PAH (9.09% vs. 0.00%, p=0.3135) and cancer (12.73% vs. 13.64%, p=1.0000) were similar. Dual positivity with anti-Ro52 antibodies (n=9) showed numerically higher ILD (66.67% vs. 48.53%, p=0.4806) and PAH (33.33% vs. 11.76%, p=0.1134) compared with anti-Scl70 alone, though significance was not reached, and no cancers were observed in the dual-positive subgroup.

Conclusion

Anti-Scl70 antibodies are strongly associated with SSc and increased risks of ILD, PAH, and cancer, particularly lung cancer. Strong positivity further refines risk stratification for SSc and ILD. Although limited by small numbers, anti-Ro52 co-positivity may add to pulmonary complications. These findings underscore the diagnostic and prognostic utility of anti-Scl70 testing in suspected SSc.

原著論文 114_A088

Rifabutin 在頑固性幽門螺旋桿菌感染之除菌療效分析

Efficacy of Rifabutin Based Regimens for refractory Helicobacter pylori Infection

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Background

Helicobacter pylori (H. pylori) infection is an important etiology of chronic gastritis, peptic ulcer disease, and gastric malignancies. Currently, there is no standard rescue treatment for refractory H. pylori infection. Among available treatment options, rifabutin demonstrates a low resistance rate and is primarily used as a rescue therapy. This study aimed to evaluate the efficacy and safety of rifabutin-based regimens for H. pylori eradication as rescue treatment.

Methods

We retrospectively reviewed the medical records of 111 patients who received rifabutin-based therapy as third or fourth line of treatment. H. pylori infection was confirmed by rapid urease test, urea breath test, stool antigen test, or histology. Eradication status was assessed using the urea breath test or rapid urease test at least 4 weeks after completion of therapy.

Results

The mean age of the patients was 57.8 years, and 56.7% were female. Peptic ulcer disease was present in 41.4% of patients at the time of H. pylori diagnosis. The overall eradication rate was 73.8% (82/111) (95% confidence interval: 64.0%–81.9%). Rifabutin (150 mg bid) combined with amoxicillin (1 g bid) and a proton pump inhibitor (bid) for 7-10 days was prescribed in 90.9% of patients. Adverse events were reported in 6.3% of patients, all of which were mild and tolerable.

Conclusion

Our current study demonstrated that rifabutin-based triple therapy was well tolerated and yielded an acceptable eradication rate for refractory H. pylori infection.

原著論文 114_A089

運用兩種臨床使用基質輔助雷射脫附游離飛行時間式質譜和 9 種機器學習模式預測侵襲性金黃色葡萄球菌對甲氧西林具抗藥性的表現型和抗藥性的能力比較

Comparing the predictive performance of two commercialized MALDI-TOF MS systems using nine machine learning algorithms for antimicrobial resistance and *mecA* gene of invasive *Staphylococcus aureus* isolates

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Background

The use of Matrix-Assisted Laser Desorption/Ionization-Time-of-Flight Mass Spectra (MALDI-TOF MS) with machine learning (ML) has been explored for predicting antimicrobial resistance. This study evaluates the effectiveness of MALDI-TOF MS paired with various ML classifiers and establishes optimal models for predicting antimicrobial resistance and *mecA* gene existence among *Staphylococcus aureus*.

Methods

Non-duplicate *S. aureus* isolates from patients with invasive infections were collected from a Jan. 1st to Dec. 31st, 2023 from one medical center. ongidutinal study conducted in a medical center. The antimicrobial resistance against five tier 1 antibiotics including oxacillin (OX), erythromycin (ERY), clinicamycin (CLI), tetracycline (TET), and trimethoprim-sulfamethoxazole (TMP-SXZ) were determined using modified microbroth dilution (Vitek-2). Methicillin-resistant *S. aureus* (MRSA) was confirmed with *mecA* existence. The matrix-assisted laser desorption/ionization time-of-flight mass spectra (MALDI-TOF MS) profile of each isolate retrieved from the the Microflex Biotyper (Bruker Daltonics) and Vitek MS (BiMerieux) was analyzed using 9 ML algorithms (NB, MLP, Xgboost, LightGBM, KNN, RF, Ada, IR, and SVM).

Results

Totally, 296 invasive *S. aureus*, including 172 *mecA*+MRSA and 124 *mecA*-MSSA were included. The predictive performance for susceptibility to five tier 1 antibiotics in terms of accuracy, area under receiver operating characteristic curve (AUROC), and area under the precision-recall curve (AUPRC) varied with the sources of MALDI-TOF MS types, the algorithm types, and the types of targeted antibiotics. For predicting *mecA* and OX/ERY/TET resistance, the performance of Biotyper was superior to Vitek MS using Ada, RF, MLP, and lightGBM. Contrastly, for predicting CLIN/TMP-SXZ resistance, Vitek MS performed bettern than Biotyper. MLP had the best performance in predicting OX resistance (accuracy/AUROC/AUPR: 0.75/0.62/0.59) using Biotyper, wherein NB is superior to other algorithms using Vitek MS (accuracy/AUROC/AUPR: 0.78/0.5/0.71). The first 20 important quantification features for predicting resistance against tier 1 antibiotics and *mecA* gene existence had centralized in lower (2,000 – 5,000) using Vitek MS than Biotyper (6,000 – 12,500) m/z.

Conclusion

The authors have demonstrated that the predictive performance for antibiotic resistance against clinical *S. aureus* depend mostly on the numbers and geographic characters of isolates, ML types, targeted antibiotics, and MLALI-TOF MS databases. Expanding the microbiologic database scale, selecting appropriate ML algorithms and sources of MALDI-TOF MS will significantly improve the predictive performance of targeted antibiotic resistance and resistant gene existence with remarkable time- and cost-saving and impact on patient outcome during clinical practice.

114_A090

新型即時人工智慧巴瑞特式食道症偵測系統的世代研究

Real-time artificial intelligence Barrett's esophagus detection system: A single center cohort study in Taiwan

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Background

Barrett's esophagus (BE) is recognized as a premalignant condition associated with esophageal adenocarcinoma (EAC). Early endoscopic detection of BE-related dysplasia and eradication of high risk BE mucosa can decrease EAC incidence. However, previous studies revealed prevalence of histological BE in a health examination group was underestimated. Our study proposed an artificial intelligence (AI) system to assist real-time BE mucosa detection.

Methods

This retrospective cohort study enrolled patients with gastroesophageal reflux disease (GERD) symptoms and collected their esophagogastroduodenoscopy images and videos of lower esophagus in Chung Shan Medical University Hospital (CSMUH) between March 2023 and May 2025. A total of 144 patients were allocated to suspected-BE mucosa group, while 52 cases were classified as control group. Biopsy was performed in the suspected-BE mucosa group. 103 patients with histology- confirmed BE in endoscopically suspected group was categorized as histology-BE group. After standardized image processing, we include 41 patients (41 video clips, 820 images) in the endoscopic BE group, which with suspicious of BE mucosa but histology exam showed no goblet cell, 48 patients (56 video clips, 1120 images) in histology BE group and 25 cases (25 video clips, 1000 images) with GERD symptoms without suspicious of BE under endoscopic examinations. We compared the differences between the histology-BE group, the endoscopic-BE group and the combined endoscopic-histology group conducted as training database in AI model building. Different settings of optimal ensemble models were compared and the best performance outcomes settings was determined mainly by sensitivity (Recall) for the final AI BE detection system. After our BE AI-assisted detection system, named as TW (Tseng-Wang) BE AI detection system, was established, and underwent final external validation using endoscopic video from 7 BE cases in CSMUH and 15 BE patients in E-Da Hospital, comparing with 2 control cases.

Results

TW BE AI detection system is the first CADe system proposed in Asian population, and achieved a precision of 0.946, sensitivity of 99.6%, F1-score of 0.970 and accuracy of 95.8%. External validation comprised 440 BE images and 22 videos from 22 patients with histology BE, plus 80 images and 2 videos from 2 patients in control group. The results showed a precision of 0.915, sensitivity of 100%, F1-score of 0.956 and 91.8% as accuracy in external validation.

Conclusion

TW BE AI detection system can provide strong predictive performance for Olympus NBI images of

histological BE after training with videos and images of combined endoscopic-histology cohort.

114_A091

合併使用 SGLT2 制劑和 Finerenone 對於慢性腎臟病病患的療效

Efficacy of Combined Sodium-Glucose Cotransporter 2 Inhibitors and Finerenone in Chronic Kidney Disease: A Systematic Review and Meta-Analysis

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Background

Finerenone and sodium-glucose cotransporter 2 inhibitors (SGLT2i) are proven therapies for chronic kidney disease (CKD) with type 2 diabetes mellitus. The impact of their combination on clinical outcomes remains unclear.

Methods

We included eight studies comparing combination therapy versus monotherapy with finerenone or SGLT2i. Both randomized controlled trials and observational studies were assessed using ROB 2.0 and ROBINS-I. Outcomes included all-cause mortality, major adverse cardiovascular events (MACE), major adverse kidney events (MAKE), urinary albumin-to-creatinine ratio (UACR) reduction, and hyperkalemia.

Results

Eight studies involving 11,212 participants were included, comprising five randomized controlled trials and three retrospective cohort studies. Among them, 1,720 (15.3%) received combination therapy, 7,452 (66.5%) received finerenone alone, and 2,040 (18.2%) received SGLT2i alone. Combination therapy was associated with a significantly lower risk of all-cause mortality (OR = 0.58; $p = 0.02$), MACE (OR = 0.70; $p = 0.03$), and MAKE (OR = 0.63; $p < 0.01$) compared with finerenone alone. In addition, combination therapy was associated with a significantly greater reduction in proteinuria compared with finerenone alone (urine albumin creatinine ratio, weighted mean difference = 0.10; $p = 0.045$). However, the combination group had a higher risk of hyperkalemia than the SGLT2i group (OR = 3.00; $p < 0.01$).

Conclusion

Combined therapy with finerenone and SGLT2i was associated with lower risks of all-cause mortality, MACE, and MAKE compared to finerenone alone and greater reduction in proteinuria. However, the risk of hyperkalemia was higher with combination therapy than with SGLT2i alone, warranting caution in clinical practice.

原著論文 114_A092

SGLT2 受體抑制劑對腎病症候群病患的臨床預後

Clinical outcomes of SGLT2 inhibitors in patients with nephrotic syndrome

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Background

Sodium-glucose cotransporter-2 inhibitors (SGLT2i) are currently recommended for patients with chronic kidney disease and proteinuria or type 2 diabetes mellitus. However, evidence regarding the efficacy and safety of SGLT2i in the treatment of nephrotic syndrome remains scarce beyond case series or small cohorts and subgroup analyses of trial reports.

Methods

This retrospective cohort study included 7,872 individuals from the global TriNetX Research Network who were diagnosed with nephrotic syndrome and had a urine protein-to-creatinine ratio (UPCR) ≧3,500 mg/g, with or without SGLT2i treatment after April 1, 2013. We included only incident users and excluded patients with stage 5 chronic kidney disease (CKD) or under dialysis therapy at baseline. The primary outcome was end-stage kidney disease (ESKD), and secondary outcomes included acute kidney injury (AKI), stage 5 CKD, major adverse cardiovascular events (MACE), and the composite of ESKD or all-cause death. Propensity score matching was employed to balance the baseline characteristics of the SGLT2i group and untreated group. The index date was defined at the diagnosis of nephrotic syndrome, and we adopted landmark analyses with follow-up starting at 9 months after the index date for both groups to mitigate immortal time bias. Survival analysis was conducted using the Kaplan-Meier method with log-rank test, and hazard ratios (HR) with their corresponding 95% confidence intervals (CI) were calculated for all outcomes using the Cox proportional hazards model.

Results

There were 921 patients included in the SGLT2i group (mean age 54.5±16.3 years, 53.9% male) and 6,454 patients in the untreated group (mean age 51.5±19.5 years, 48.1% male). After propensity score matching, 751 patients were included in each group, and the baseline characteristics were well-balanced between them. Treatment with SGLT2i was associated with a similar hazard of ESKD compared to the untreated group (HR: 0.85, 95% CI: 0.63–1.13; p=0.258), while the hazard of AKI was higher in the SGLT2i group (HR: 1.37, 95% CI: 1.11–1.69; p=0.003). The hazards were similar between the two groups for stage 5 CKD (HR, 1.25; 95% CI, 0.87–1.78; p=0.222) and MACE (HR, 1.12; 95% CI, 0.82–1.54; p=0.469). The composite of ESKD or death was lower in the SGLT2i group (HR: 0.75; 95% CI: 0.58–0.96; p=0.022) but did not reach statistical significance under the Bonferroni-corrected α (p=0.01) accounting for multiple comparisons. Negative control outcomes were also similar between the two groups (sensorineural deafness HR: 0.71; 95% CI: 0.37–1.40; p=0.324; lumbar radiculopathy HR: 1.18; 95% CI: 0.55–2.55; p=0.675).

Conclusion

Treatment with SGLT2i in patients with nephrotic syndrome was not associated with reduced ESKD, stage 5 CKD, or MACE, but was potentially associated with an increased risk of AKI. Our findings did not support the use of SGLT2i solely for improving kidney outcomes in patients with nephrotic syndrome, and caution regarding AKI is warranted in this population.

原著論文 114_A093

血清鈣鎂比值對血液透析患者死亡率的預後價值

Prognostic Value of Serum Calcium-Magnesium Ratio for Mortality in Hemodialysis Patients

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Background

Both serum calcium (Ca) and magnesium (Mg) levels show associations with mortality in hemodialysis (HD) patients. Higher Ca is an independent risk factor for mortality among incident HD patients, while Mg has been identified as a predictor of all-cause mortality. Given their physical interaction, where Mg inhibits Ca-related processes and competes with Ca, imbalances in the Ca or Mg axis may have clinical significance. Only one study has examined serum calcium-to-magnesium (Ca/Mg) ratio in incident HD patients. Its prognostic role in long-term HD patients remains unclear.

Methods

In this retrospective cohort study, we included 444 adult patients undergoing maintenance HD for at least 3 months (mean dialysis vintage: 6.5 ± 5.7 years). The mean age was 62 ± 12 years, and 56.3% were male. Patients were categorized into four groups according to quartiles of their serum Ca/Mg ratio (Group 1 to Group 4). The primary outcome was all-cause mortality. Patients were followed for up to 2 years from baseline to assess outcomes. Survival was analyzed using Kaplan–Meier curves, and hazard ratios (HRs) with 95% confidence intervals (CIs) were estimated using Cox proportional hazards regression models. Multivariable models were adjusted for demographic factors, dialysis-related parameters, comorbidities, and relevant laboratory variables.

Results

During the 2-year follow-up, patients in Group 4 (highest Ca/Mg ratio) had a lower cumulative survival rate compared with the other three groups. This group was also characterized by a higher prevalence of diabetes mellitus, longer dialysis vintage, lower normalized protein catabolic rate, and higher high-sensitivity C-reactive protein levels. In multivariable Cox analysis, the highest Ca/Mg ratio was independently associated with increased mortality risk (HR 2.06, 95% CI 1.26–3.38).

Conclusion

A higher serum Ca/Mg ratio, associated with low nPCR and high hs-CRP, was independently associated with increased mortality in maintenance HD patients. These findings suggest that the Ca/Mg ratio may serve as a simple prognostic marker.

原著論文 114_A094

於動物模型中比較氣溶膠化多黏菌素 B 與膠黴素鈉之安全性概況

Comparing the safety profile for aerosolized polymyxin B versus colistimethate sodium in an animal model

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Background
This study aimed to evaluate the safety profile of polymyxin B (PMB) compared to colistimethate sodium (CMS) when administered via the pulmonary route.

Methods
A total of 49 mice were employed in this study and randomly assigned to seven groups, including a control and two main intervention groups—CMS and PMB—each subdivided into three dosage levels (high, middle, and low). Antibiotics were administered intratracheally for 14 days. Toxicity was assessed via daily weight monitoring and survival analysis. Lung tissues underwent histopathological evaluation, with injury severity scored using a standardized semi-quantitative scale (SQS).

Results
All CMS-treated mice survived, while PMB-treated groups showed dose-dependent mortality, with no survivors in the high- or middle-dose PMB groups. Histopathology revealed minimal or no lung injury in CMS-treated mice. In contrast, PMB, especially at the middle dose, induced significant alveolar inflammation and higher SQS across multiple parameters. In the high-dose PMB group, the immediate death of mice without notable histopathological changes in lung tissue suggests a possible etiology of bronchospasm or acute respiratory muscle paralysis.

Conclusion
The potential toxicity of PMB to alveolar cells and its associated lethality following pulmonary administration support the preference for CMS as the adjunctive inhalation therapy to achieve adequate pulmonary concentrations.

原著論文 114_A095

Tirzepatide 對於代謝功能障礙相關脂肪性肝病患者的臨床益處.

Clinical Benefits of Tirzepatide in Patients with Metabolic-Associated Steatotic Liver Disease

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Background

Metabolic dysfunction-associated steatotic liver disease (MASLD) affects over 30% of adults globally with limited treatment options. Tirzepatide, a dual glucose-dependent insulinotropic polypeptide and glucagon-like peptide-1 receptor agonist, has shown promise in early clinical trials, but its real-world effectiveness remains unclear.

Methods

This retrospective cohort study utilized the TriNetX Global Collaborative Network, a multinational, multi-institutional electronic health record database. We identified adults with MASLD between June 1, 2022, and November 30, 2024. Patients newly prescribed tirzepatide were propensity score–matched 1:1 to patients not receiving tirzepatide based on demographics, comorbidities, medications, and laboratory values. The primary outcome was the incidence of major adverse liver outcomes (MALO)—a composite of decompensated liver events, hepatocellular carcinoma, and liver transplantation. Secondary outcomes included the individual components of MALO. We estimated hazard ratios (HRs) and 95% confidence intervals (CIs) using Cox proportional hazards models and performed subgroup analyses.

Results

Among 54,882 propensity score-matched patients with MASLD, tirzepatide was associated with a significantly lower incidence of major adverse liver outcomes compared to the control group (9.5 vs. 30.2 per 1,000 person-years; hazard ratio [HR], 0.32; 95% confidence interval [CI], 0.28–0.37). Tirzepatide reduced multiple liver-related complications, including composite decompensated liver events (HR, 0.31; 95% CI, 0.26–0.36), esophageal variceal bleeding (HR, 0.39; 95% CI, 0.26–0.58), hepatic encephalopathy (HR, 0.27; 95% CI, 0.21–0.34), ascites-related complications (HR, 0.28; 95% CI, 0.23–0.33), hepatocellular carcinoma (HR, 0.36; 95% CI, 0.25–0.53), and liver transplantation (HR, 0.16; 95% CI, 0.08–0.33). Beyond liver benefits, tirzepatide was also associated with reduced risks of all-cause mortality (HR, 0.22; 95% CI, 0.18–0.28), major adverse cardiac events (HR, 0.46; 95% CI, 0.40–0.52), and major adverse kidney events (HR, 0.26; 95% CI, 0.22–0.32). These beneficial associations remained consistent across all subgroups.

Conclusion

This retrospective study shows that tirzepatide use was associated with significantly lower risks of liver-related complications, cardiovascular events, kidney events, and all-cause mortality in MASLD patients. These findings suggest tirzepatide may have an important therapeutic role in this patient population.

原著論文 114_A096

比較 Tirzepatide 與其他降糖藥物於預防第二型糖尿病足部併發症的臨床成效

Real-world effectiveness of Tirzepatide versus Other Anti-Diabetic Medications for Preventing Diabetic Foot Complications in Type 2 Diabetes

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Background
Diabetic foot complications affect up to 25% of patients with type 2 diabetes (T2D) and are a major cause of morbidity. Tirzepatide (TZP), a dual glucose-dependent insulinotropic polypeptide and glucagon-like peptide-1 receptor agonist, has shown superior glycemic control, but its impact on diabetic foot complications remains unknown.

Methods
We performed a retrospective cohort study using the TriNetX research network. Adults with type 2 diabetes (T2D) who initiated tirzepatide (TZP), sulfonylureas (SUs), dipeptidyl peptidase-4 inhibitors (DPP-4is), sodium–glucose cotransporter-2 inhibitors (SGLT2is), or glucagon-like peptide-1 receptor agonists (GLP-1RAs) between January 2022 and July 2025 were included. Propensity score matching was applied to generate balanced cohorts across four pairwise comparisons. The primary outcome was the incidence of diabetic foot complications (DFCs), defined as a composite of ulcers, infections, critical limb ischemia, and lower-extremity revascularization or amputation. Hazard ratios (HRs) with 95% confidence intervals (CIs) were estimated using Cox proportional hazards models.

Results
After matching, the study comprised four cohorts: 141,002 patients per arm for TZP versus SU, 131,449 per arm for TZP versus DPP-4i, 161,446 per arm for TZP versus SGLT2i, and 97,457 per arm for TZP versus GLP-1RA. Compared with SU, TZP was associated with a lower risk of diabetic foot complications (HR, 0.80; 95% CI, 0.76–0.84). Similar risk reductions were observed versus DPP-4i (HR, 0.83; 95% CI, 0.78–0.87) and SGLT2i (HR, 0.85; 95% CI, 0.80–0.89). No significant difference was found when compared with GLP-1RA (HR, 0.97; 95% CI, 0.91–1.03).

Conclusion
TZP was associated with a lower risk of diabetic foot complications compared with SU, DPP-4i, and SGLT2i, while showing comparable outcomes to GLP-1 receptor agonists. These findings highlight TZP as a potential treatment option for patients at elevated risk of ulceration or amputation; however, randomized controlled trials are warranted to validate these observations.

原著論文 114_A097

蛋白尿與心肌損傷對一般族群長期死亡風險的聯合影響

Joint Association of Albuminuria and Myocardial Injury with Long-Term Mortality in the General Population

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Background

Albuminuria is a well-established marker of kidney damage and is strongly associated with adverse cardiovascular outcomes and mortality, even among individuals with preserved kidney function. High-sensitivity cardiac troponins (hs-troponins) enable detection of subclinical myocardial injury and are independently associated with cardiovascular events and mortality. While both biomarkers are individually prognostic, their joint impact on long-term mortality in the general population remains unclear. This study aimed to evaluate the combined associations of albuminuria and myocardial injury with all-cause and cardiovascular mortality.

Methods

We analyzed data from 10,285 adults aged ≧18 years from the U.S. National Health and Nutrition Examination Survey (NHANES) 1999–2004, excluding participants with a history of cardiovascular disease or an estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m^2. Albuminuria was defined as urinary albumin-to-creatinine ratio (UACR) ≧30 mg/g. Myocardial injury was defined as hs-troponin concentration exceeding the sex-specific 99th percentile upper reference limit, based on four different assays (Roche hs-cTnT; Abbott, Siemens, and Ortho hs-cTnI). Mortality status through December 31, 2019, was ascertained by linkage to the National Death Index. Survey-weighted Cox proportional hazards models were used to estimate hazard ratios (HRs) for all-cause and cardiovascular mortality, adjusting for demographic, socioeconomic, lifestyle, and clinical covariates. Interaction terms were tested to assess synergistic effects between albuminuria and myocardial injury.

Results

Among 10,285 adults (mean age 43.5 years; 47.9% male), participants with albuminuria were older and had higher rates of diabetes, hypertension, and lower socioeconomic status. In multivariable logistic regression, albuminuria was independently associated with increased odds of myocardial injury across all four hs-troponin assays, with adjusted odds ratios (ORs) ranging from 1.77 (95% CI, 1.01–3.10) to 3.20 (95% CI, 1.62–6.33).

Over a median follow-up of 18 years, 2,041 deaths occurred, including 438 cardiovascular deaths. Both albuminuria and myocardial injury were independently associated with higher mortality risk. Compared with participants without either condition, those with myocardial injury alone or albuminuria alone had significantly higher risks of all-cause mortality and cardiovascular mortality. Participants with both albuminuria and myocardial injury had the greatest risk, with HRs ranging from 2.83 to 4.18 for all-cause mortality and 4.45 to 9.74 for cardiovascular mortality (all p<0.01). No statistically significant multiplicative interaction was observed for most assays. However, when

myocardial injury was defined using the Abbott assay, a significant interaction was detected for cardiovascular mortality (p for interaction = 0.03).

Conclusion

In this nationally representative cohort of U.S. adults without pre-existing cardiovascular disease or advanced kidney disease, albuminuria and subclinical myocardial injury were each independently associated with long-term all-cause and cardiovascular mortality. Individuals with both biomarkers had the greatest risk, highlighting the potential value of incorporating kidney and cardiac injury markers for comprehensive risk stratification. These findings underscore the importance of early detection and integrated management of cardio-kidney-metabolic risk in the general population.

原著論文 114_A098

高劑量與標準劑量 Cefoperazone-Sulbactam 用於嚴重感染之療效與安全性：多中心回溯性研究

Effectiveness and Safety of High-Dose versus Standard-Dose Cefoperazone-Sulbactam in Severe Infections: A Multicenter Retrospective Study

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Background

Cefoperazone-sulbactam, a third-generation cephalosporin and beta-lactamase inhibitor, is widely used to treat severe bacterial infections. However, the adequacy of standard dosing regimens in critically ill patients remains uncertain, particularly for the management of multidrug-resistant organisms (MDROs). This study compared the clinical effectiveness and safety of high- and standard-dose cefoperazone-sulbactam.

Methods

This multicenter retrospective cohort study was conducted at four hospitals between January 2020 and October 2024. Patients receiving cefoperazone-sulbactam for severe infections or MDROs were categorized into high-dose (2 g/2 g every 8 h) and standard-dose (2 g/2 g every 12 h) groups. The primary outcome was the clinical cure rate on day 14. Secondary outcomes included microbiological eradication, all-cause mortality, and adverse events (AEs). Logistic regression and subgroup analyses were performed to identify factors associated with treatment outcomes.

Results

Among 383 patients, the high-dose group (n=141) showed a significantly higher clinical cure rate at day 14 compared with the standard-dose group (49.7% vs. 38.8%; adjusted odds ratio [aOR]: 1.61; 95% CI: 1.05-2.50). Microbiological eradication rates were also higher in the high-dose group (46.1% vs. 20.3%; aOR: 3.85; 95% CI: 2.37-6.26). Subgroup analyses revealed higher cure rates in patients with pneumonia, acute respiratory failure, ICU admission, and higher Charlson Comorbidity Index scores. Safety assessments revealed no significant differences in liver or renal function abnormalities, coagulation parameters, or adverse events between the groups.

Conclusion

High-dose cefoperazone-sulbactam demonstrated superior clinical and microbiological effectiveness compared with the standard dose, without additional safety concerns. These findings support the use of high-dose regimens in patients with severe infections or MDROs, and offer valuable guidance for optimizing antimicrobial therapies. Further prospective studies are warranted to confirm these results and inform clinical guidelines.

原著論文 114_A099

第二型糖尿病急性透析後患者，早期使用 SGLT2 抑制劑可降低腎臟不良事件風險：目標試驗模擬研究

Early SGLT2 Inhibitor Use Reduces Risk of Adverse Kidney Events in Type 2 Diabetes Patients Recovering from Acute Dialysis - A Target Trial Emulation Study

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Background

Patients recovering from dialysis-requiring acute kidney injury (AKI), particularly those with type 2 diabetes mellitus (T2DM), are at high risk for progression to chronic kidney disease (CKD), end-stage renal disease (ESRD), and mortality. Although sodium-glucose cotransporter-2 inhibitors (SGLT-2i) provide established renal and cardiovascular benefits, earlier users in patients after dialysis-requiring AKI remains underexplored due to safety concerns.

Methods

We conducted a multicenter cohort study via the TriNetX Global Network, enrolling hospitalized adults with T2DM who required but discontinued dialysis before discharge (2015–2024). Patients were stratified by early (≦30 days) vs late (>30 days) post-discharge SGLT2i initiation. Propensity score matching balanced baseline covariates. Primary outcomes included MACE, all-cause mortality, and adverse kidney events (dialysis re-initiation, eGFR <15 mL/min/1.73 m^2, or ESKD). Secondary outcomes assessed SGLT2i-related adverse effects.

Results

Among 4,406 SGLT2 inhibitor users (mean age 63.1 years; 57.8% male), 2,268 (51.5%) initiated therapy early (≦30 days post-discharge) and 2,138 (48.5%) initiated late (31–90 days). After 1:1 propensity-score matching, 1,912 patients were retained in each group, yielding well-balanced cohorts. Early initiation was associated with a lower risk of adverse kidney events compared with late initiation (aHR 0.62, 95% CI 0.46–0.83; p=0.001), with consistent benefits at 1, 2, and 3 years of follow-up. The effect was primarily driven by preservation of eGFR, with no excess in safety outcomes such as urinary tract infection, ketoacidosis, or volume depletion. In subgroup analyses, the renoprotective association was particularly pronounced among patients receiving concomitant GLP-1 receptor agonists (interaction p<0.05).

Conclusion

Early initiation of SGLT2 inhibitors in patients with T2DM recovering from dialysis-requiring AKI was associated with sustained renal benefits and no excess safety risks. These findings support timely initiation as a disease-modifying strategy in this high-risk population.

原著論文 114_A100

高惡性度骨髓性疾病患者接受 Azacitidine 治療之免疫學特徵與監測

Immune landscape profiling of patients with advanced myeloid malignancy treated with Azacitidine

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Background

Azacitidine (AZA) has been approved for the treatment of advanced myeloid malignancies, including high-risk myelodysplastic syndrome (MDS) and acute myeloid leukemia (AML). Apart from its effect on the leukemia cells, AZA has been proven to modulate the function of immune cells. However, the immune landscape following treatment with AZA in these patients remains poorly characterized.

Methods

We collected primary bone marrow samples from 32 MDS/AML patients at initial diagnosis. Bone marrow samples from 5 healthy controls were also obtained during the stem cell harvest procedure. Single cell mass cytometry and RNA sequencing were employed to depict the immune landscape in these patients. For RNA sequencing, the sequencing libraries were prepared by using the TruSeq Stranded mRNA Library Prep Kit (Illumina, San Diego, CA, USA). The qualified libraries were then sequenced on Illumina NovaSeq 6000. Antibodies in carrier-free PBS were conjugated to metal-chelated polymers for antibody conjugations in mass cytometry.

Results

Compared to healthy donors (HDs), AML patients exhibited significantly higher percentage of CD8+ T cells, particulary the CD8+CD7+, CD8+PD1+ subsets within the immune cell compartment. Expression of TLR4, PD1, and IRF7: a key transcriptional regulator of the (IFN) system, was significantly higher in AML patients. Furthermore, AZA responders displayed a significantly higher percentage of CD8+CD7+ T cells, and higher TLR4 expression in hypermethylated CD8+ T cells compared to non-responders (NRs).

Next, immune landscape following AZA treatment was profiled. Among responders, CD8+ T cells exhibited significantly increased expression of PDL1, TRAF6, and TLR4 after treatment. CD8+CD7+ T cells, characterized by higher expression of a senescent marker, CD57, significantly decreased. In contrast, NR showed a significant decrease in IRF7 and TLR4 expression. In bulk BM RNA-seq data, responders at diagnosis were characterized by significantly enriched TNF-alpha, and IFN signalings. When focusing on the myeloblasts by analyzing sorted CD34+ cells, an increased senescence signature, and TLR4 signaling were wintessed following response.

Conclusion

In conclusion, an CD8+ T cell-specific signature correlates with AZA response. Innate immune signaling pathways converge similarly in $CD8^+$ T cells and myeloblasts but diverges with different AZA responses.

原著論文 114_A101

未分化型早期胃癌內視鏡黏膜下剝離術與手術之預後比較：台灣多中心研究

Prognostic Comparison of Endoscopic Submucosal Dissection versus Surgery for Undifferentiated Early Gastric Cancer: a Taiwan Multicenter Study

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Background

Although endoscopic submucosal dissection (ESD) is widely accepted for early gastric cancer (EGC), its role in managing undifferentiated-type EGC (UD-EGC) is still debated. This multicenter study investigates whether ESD offers comparable outcomes to surgery in patients with UD-EGC.

Methods

We retrospectively analyzed patients with UD-EGC who underwent ESD or surgery at 11 tertiary centers in Taiwan between 2007 and 2025. Inclusion criteria included intramucosal tumors ≦20 mm without ulceration or lymphovascular invasion. Demographic, endoscopic, and pathological data were collected, and long-term outcomes were compared.

Results

A total of 37 ESD and 42 surgery patients were analyzed. En-bloc resection was achieved in all cases, with R0 resection rates of 86% for ESD and 98% for surgery ($P = 0.06$). The ESD group demonstrated significantly shorter procedure times (84.6 vs. 285.7 minutes, $P = 0.04$) and hospital stays (6.8 vs. 17.6 days, $P < 0.01$). Complication rates were comparable between groups (11% for ESD vs. 14% for surgery, $P = 0.86$). While recurrence rates at 1, 3, and 5 years did not differ significantly, survival analysis revealed a significantly higher proportion of recurrence-free patients in the surgical cohort ($P = 0.02$). Five-year overall survival rates were similar between groups (89% for ESD vs. 88% for surgery, $P = 0.92$).

Conclusion

ESD offers a less invasive alternative to surgery for UD-EGC within expanded indications. Despite a higher recurrence risk, comparable survival suggests ESD is a viable, non-inferior option with careful patient selection and follow-up.

原著論文 114_A102

探討 50 歲以下無症狀之年輕成人糞便免疫化學檢測的陽性率及大腸鏡檢查結果之探討

To Investigate the Positive Rate of Fecal Immunochemical Tests and the Subsequent Colonoscopy Findings in Adults Under 50

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Background
The incidence of colorectal cancer (CRC) in adults under 50 has been increasing. The fecal immunochemical test (FIT) has proven to be an effective screening tool for CRC in individuals over 50, with positivity rates in Taiwanese adults in this age group ranging from 5.7% to 6.7%. However, little is known about FIT positivity rates and the subsequent colonoscopy findings in asymptomatic younger adults under 50.

Methods
We conducted a retrospective study at a tertiary hospital, analyzing FIT results and the subsequent colonoscopy findings from asymptomatic individuals under 50 years old between 2011 and 2025. Binary logistic regression was performed for analysis, with statistical significance set at $p < 0.05$.

Results
A total of 202676 asymptomatic patients from the Far Eastern Memorial Hospital Health Management Center underwent FIT during the study period. Of these, 9466 (4.7%) had positive FIT results, while 193210 had negative results. The relationship between FIT results and patient factors, such as age and gender, was analyzed. The overall FIT positivity rate was higher in female (4.94% vs. 4.47%, P<0.001). Notably, a higher FIT positivity rate in males compared to females was observed only in the 45–49 age group (5.17% vs. 4.62%, P=0.005), and FIT positivity was significantly associated with age. Among 1,973 individuals with positive FIT who underwent subsequent colonoscopy, 143 (7.2%) were found to have advanced neoplasms, with 79.1% of these cases occurring in individuals aged 40 to 49 years. When comparing the 40–44 and 45–49 age groups, the latter exhibited a significantly higher prevalence of advanced neoplasms. Regarding time-period and the potential effects of birth cohort, there was an increasing trend in the detection of advanced neoplasms in the 45–49 age group.

Conclusion
The FIT positivity rate among asymptomatic adults under 50 was comparable to that of individuals aged 50 or older. In the current era, initiating colorectal cancer (CRC) screening at age 45 may be more reasonable. However, given the significant influence of birth cohort effects, it will be important to re-evaluate the future prevalence of advanced neoplasms in adults under 50, particularly in the 40–44 age group.

114_A103

大腸側向發展型腫瘤的形態學特徵與不良病理學結果之關聯性：台灣單一中心經驗

Association Between Morphological Features of Colonic Laterally Spreading Tumors and Adverse Histopathological Outcomes: A Single Center Experience in Taiwan

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Background
Colonic laterally spreading tumors (LSTs) are classified into four morphological subtypes: granular-homogeneous (LST-G-H), granular-nodular mixed (LST-G-NM), nongranular-flat elevated (LST-NG-FE), and nongranular-pseudodepressed (LST-NG-PD). This study aimed to evaluate the association between LST morphology and adverse histopathological outcomes.

Methods
We retrospectively analyzed 329 colonic LSTs resected endoscopically from 328 patients at Far Eastern Memorial Hospital between May 2010 and October 2024. Clinical, endoscopic, and pathological data were compared across groups.

Results
Among the 329 lesions, the most common subtypes were LST-NG-FE (33.4%) and LST-G-H (33.1%), followed by LST-G-NM (22.2%) and LST-NG-PD (11.2%). Deep submucosal invasion (SMI) was observed in 5.5% of cases, with 27% of LST-NG-PD lesions showing deep SMI. Moderately or poorly differentiated adenocarcinoma was identified in 10 lesions (3%), with 7 of these patients (70%) presenting with LST-NG-PD. No cases of deep SMI or poor differentiation were found in the LST-G-H group. In Fisher's exact test, both LST-NG-PD ($P < 0.001$) and LST-G-NM ($P = 0.004$) were significantly associated with higher deep SMI rate compared with LST-G-H.

Conclusion
The morphological classification of LSTs is associated with their pathological aggressiveness. LST-NG-PD carries the highest risk for deep SMI and poor differentiation, highlighting the importance of accurate endoscopic diagnosis for guiding treatment strategies.

114_A104

重症照護之機械通氣與失智症的關聯：世代追蹤研究

Mechanical Ventilation in Critical Care Associated with Development of Dementia: A Retrospective Cohort Study

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Background

Recent cohort studies demonstrated that long-term mechanical ventilation was also associated with the increasing risk of cognitive impairment, which leads to dementia. In this study, we intended to analysis the brain-lung interactions using nationwide databases to investigate the related factors between mechanical ventilation used and dementia.

Methods

We conducted this retrospective cohort study using outpatient and inpatient of Longitudinal Health Insurance Database in 2000 - 2005 in Taiwan with follow-up until 2015. Patients with mechanical ventilators used were included. Exclusion criteria included ventilator used before 2000, dementia before screening and age < 40 years. We conducted another 4-fold propensity score matching by sex, age and inclusion year for comparison cohort as for patients without ventilator used ever. All patients were tracked over time to monitor the time-to-event for the primary outcome: the new onset of dementia. Subgroup analysis was also conducted.

Results

There is a significant overall increase in the risk of dementia in the mechanical ventilation group compared to the non- mechanical ventilation group (aHR=1.328, P=0.002). Secondly, this increased risk demonstrates a duration-dependent effect, being highly pronounced in patients receiving mechanical ventilation for four days or longer (aHR=1.769, P<0.001), while shorter ventilation periods showed no significant association. In subgroup analysis with dementia subtypes, the association was found to be strongest for vascular dementia (aHR=1.403, P<0.001).

Conclusion

Our retrospective cohort study's data analysis established a significant association between mechanical ventilation and an increased risk of developing dementia. Minimizing the duration of mechanical ventilation in critically ill patients, particularly those with existing vascular risk factors, is a critical component of a long-term neuroprotective strategy.

原著論文 114_A105

小細胞肺癌治療前 PET/CT 影像組學標誌可預測疾病早期進展與存活率

Baseline PET/CT Radiomic Markers of Tumor Burden and Heterogeneity Predict Early Progression and Survival in Small Cell Lung Cancer

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Background

To evaluate whether baseline [^{18}F]FDG PET/CT radiomic markers of tumor burden and heterogeneity predict platinum resistance and overall survival (OS) in small cell lung cancer (SCLC).

Methods

We retrospectively analyzed 45 SCLC patients who underwent baseline PET/CT before first-line platinum–etoposide. Extracted features included tumor-burden metrics (metabolic tumor volume [MTV], total lesion glycolysis [TLG]); SUV histogram features (SUVmax, SUVmean, SUVvariance, SUVkurtosis, SUVentropy); and gray-level co-occurrence matrix (GLCM) texture metrics (contrast, dissimilarity, homogeneity, angular second moment/energy). Cox regression assessed associations with progression-free survival (PFS) and OS. Receiver operating characteristic (ROC) analyses evaluated discrimination for platinum-resistant relapse (6-month PFS) and 12-month OS. Kaplan–Meier analyses used optimal cut-offs.

Results

In univariable analyses, logTLG predicted shorter PFS and OS. In multivariable models, logTLG remained an independent predictor of PFS (HR 2.20, 95% CI 1.12–4.30; p = 0.021) and OS (HR 2.54, 95% CI 1.24–5.20; p = 0.011). Age (per year; HR 1.07, 95% CI 1.02–1.12; p = 0.007) and stage IV vs III (HR 2.46, 95% CI 1.06–5.71; p = 0.037) were additional independent predictors of OS. ROC analyses showed strong prediction of platinum-resistant relapse by MTV (AUC 0.88) and LDH (AUC 0.74), and of 12-month OS by age (AUC 0.79), stage (AUC 0.73), and SUVentropy (AUC 0.75). Kaplan–Meier curves confirmed inferior overall survival in patients with high logTLG, older age, and stage IV disease.

Conclusion

Baseline [^{18}F]FDG PET/CT radiomics—particularly logTLG—independently predict PFS and OS in SCLC. Radiomic and clinical variables also discriminated platinum-resistant relapse and 12-month survival. These findings support the prognostic utility of baseline PET/CT radiomics and warrant prospective evaluation of radiomic–clinical models to inform risk stratification and treatment planning.

原著論文 114_A106

Ceftazidime-avibactam 引入後，醫院中 NDM 產生型抗碳青黴烯肺炎克雷伯菌取代 KPC 產生株之出現：一項需高度警覺的現象

Emergence of *bla*$_{NDM}$-producing carbapenem-resistant *Klebsiella pneumoniae* replacing *bla*$_{KPC}$-producing strains in a tertiary-care hospital after the introduction of ceftazidime-avibactam: a concerning phenomenon requiring vigilance

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Background

The aim of the study was to recognize susceptibility patterns change to varies of antibiotics among clinical carbapenem resistant *Klebsiella pneumoniae* (CRKP) isolates in our hospital during the period before and after ceftazidime-avibactam (CZA) wide use (before 2022 vs. 2023 to 2024).

Methods

Stored CRKP isolates from our hospital (before 2022 versus 2023 to 2024) were tested drug susceptibility and compared. The changes in the prevalence of five common carbapenemase genes (*bla*$_{KPC}$, *bla*$_{NDM}$, *bla*$_{IMP}$, *bla*$_{VIM}$, and *bla*$_{OXA-48}$) among CRKP isolates were assessed using a multiplex PCR method, and clonality analysis of selected isolates was performed using Enterobacterial repetitive intergenic consensus polymerase chain reaction (ERIC-PCR) technique.

Results

A total of 177 nonduplicated CRKP isolates were collected in this study, including 42 obtained between 2012 and 2022 and 135 obtained between 2023 and 2024. Of these, 112 (63.2%) were from blood samples and 58 (32.7%) from respiratory tract specimens). Compared with the period before 2023, CZA resistance rates increased significantly, whereas colistin resistance declined from 69.0% to 34.1% (both P value < 0.05 by Chi-Square test). These findings may be resulted from a shift in prescribing practices for CRKP infections treatment in our hospital, from colistin to CZA after its introduction, given the more favorable safety profile of CZA. Regarding carbapenemase gene distribution among CRKP isolates, an increase in MBL-type *bla*$_{NDM}$ gene accompanied by a reciprocal decrease in *bla*$_{KPC}$ gene was observed.

Conclusion

Introduction of CZA led to an increase in CRKP isolates with the *bla*$_{NDM}$ gene, replacing those with *bla*$_{KPC}$ and significantly altering their resistance profiles. Hospital-level monitoring is essential to guide empiric antibiotic selection and effective stewardship program implementation.

原著論文 114_A107

慢性腎臟病患者的短鏈與中鏈脂肪酸含量改變與發炎、尿毒症及腸道菌相組成相關：一項橫斷面研究

Altered Short and Middle-Chain Fatty Acids levels were associated with inflammation, uremia and microbiota composition in Chronic Kidney Disease patients: A cross-sectional study

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Background
Chronic kidney disease (CKD) is closely linked to gut dysbiosis, with changes in short-chain fatty acid (SCFA) levels implicated in disease progression. However, detailed SCFA profiling and microbial correlations in Asian CKD populations remain limited.

Methods
In this cross-sectional study, 100 adult participants (80 CKD and 20 non-CKD controls) were enrolled. Serum SC/MCFA levels—including acetic acid, propionic acid, isobutyric acid, decanoic acid—were quantified via gas chromatography-mass spectrometry. Gut microbiota composition was assessed using 16S rRNA sequencing. Correlation analyses were performed between individual SCFA & MCFA concentrations and specific bacterial taxa, metabolic markers, and CKD status.

Results
The mean age of population was 64.15 years old, 46% were man, 47% had T2DM, the mean eGFR was 59.68mL/min/1.73 m2. There is significant changes in microbiota composition and diversity between controls and CKD patients. The relative abundances of genus Alistipes, particularly Alistipes indistinctus, Alistipes obesi, Alistipes putredinis, Alistipes sp. An31A showed significant positive correlations with the serum concentrations of these four SC/MCFA. From 11 SC/MCFA, only the serum levels of Isobutyric acid, Heptanoic acid, Nonanoic acid and decanoic acid were significantly different between controls and CKD patients. Pearson correlation analysis revealed significant associations between these 4 SC/MCFA levels and clinical data, bacterial species, immunomarker and serum amino acids levels.

Conclusion
The SC/MCFA are heterogenous group of acids with distinctive roles in CKD. Isobutyric, Heptanoic and Nonanoic acid are positively correlated with renal function, inflammation and uremic toxins. Decanoid acids were decreased in CKD patients. Replacement of Alistipes sp. An31A with control of Phenylalanine, Asparagine, and Aspartic Acid may be a potential direction to increase this fatty acid.

原著論文 114_A108

加護病房之急性腎損傷患者，肌少症與主要腎臟不良事件發生率之相關性研究

Association of Sarcopenia with Major Adverse Kidney Events in Critical-ill Patients with Acute Kidney Injury

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Background

Acute kidney injury (AKI) is a prevalent and serious condition in the intensive care unit (ICU), often leading to significant morbidity and mortality. Emerging evidence suggests a link between the inflammatory state in AKI and the development of sarcopenia. However, a critical knowledge gap exists regarding how sarcopenia evolves during an AKI episode and its specific relationship with long-term kidney outcomes. Our study was designed to bridge this gap by examining the association between sarcopenia and major adverse kidney events (MAKE) in critically ill AKI patients.

Methods

In this prospective cohort study, adult ICU patients with AKI completed the SARC-F questionnaire upon ICU admission; a score ≧4 was defined as sarcopenia. Frailty was defined as clinical frailty score (CFS) score ≧5. Ultrasound was used to measure quadriceps femoris muscle thickness (QFMT) on ICU day 1 and 8. MAKE was defined as a composite outcome of all-cause mortality, initiation of renal replacement therapy, or persistent renal dysfunction within 30 days. Multivariable models adjusted for age, sex, APACHE II score, baseline and week-1 QFMT, frailty, and sarcopenia were performed to identify independent predictors.

Results

A total of 58 critically-ill patients (median age 78 years [IQR 66–86]; 62% male) were included; 17 (29%) died in hospital and 26 (45%) experienced MAKE. In multivariable logistic regression, each additional year of age was associated with 2.5% higher odds of in-hospital death (adjusted OR 1.025, 95% CI 1.001–1.050; p=0.04), and male sex more than doubled mortality risk (adjusted OR 2.33, 95% CI 1.33–4.09; p<0.01). Greater quadriceps thickness at week 1 remained independently protective against death (adjusted OR 0.52 per cm, 95% CI 0.33–0.81; p<0.01). SARC-F–defined sarcopenia conferred three-fold higher odds of MAKE (adjusted OR 3.20, 95% CI 1.52–6.76; p<0.01) but was not significantly associated with in-hospital mortality (adjusted OR 1.99, 95% CI 0.95–4.21; p>0.05).

Conclusion

In AKI, early muscle assessment identifies distinct risk profiles: loss of quadriceps thickness at one week strongly predicts in-hospital mortality, whereas sarcopenia independently forecasts MAKE. Incorporating muscle‐status evaluation into ICU care may enhance prognostic stratification and inform timely nutritional or rehabilitative interventions.

原著論文 114_A109

比較肝硬化合併末期腎病患者接受腹膜透析與血液透析之預後分析-基於真實世界數據的研究

Prognostic Outcomes of Peritoneal Dialysis versus Hemodialysis in Patients with Cirrhosis and End-Stage Renal Disease: A Real-World Data Study.

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Background
The co-prevalence of cirrhosis and advanced chronic kidney disease is rising, yet evidence guiding the choice between peritoneal dialysis (PD) and hemodialysis (HD) for these patients remains scarce. This study aimed to compare 3-year all-cause mortality and major complications between PD and HD in adults with both conditions using a global real-world database.

Methods
We conducted a retrospective cohort study using the TriNetX Global Collaborative Network database. The study included adult patients with diagnoses of both cirrhosis and end-stage renal disease (ESRD) that progressed from chronic kidney disease. To balance baseline characteristics, we performed 1:1 propensity score matching (PSM) on variables including demographics, key diagnoses (e.g., diabetes, severity of cirrhosis), and laboratory values. The final analysis included 1,395 patients in the PD group and 1,395 in the HD group. The primary outcomes were 3-year all-cause mortality and complications, including non-fatal stroke, myocardial infarction (MI), sepsis, peritonitis, and gastrointestinal bleeding events. Kaplan-Meier and Cox proportional hazards models were used for time-to-event and risk analysis.

Results
After PSM, baseline covariates were well-balanced between the two groups. Over the 3-year follow-up, the PD group exhibited significantly higher all-cause mortality compared to the HD group (45.5% vs. 39.1%; Hazard Ratio [HR] = 1.228, 95% CI: 1.083-1.392, p=0.001). Patients on PD also faced a significantly higher hazard for non-fatal stroke (HR=1.452, p=0.017) , non-fatal MI (HR=1.353, p=0.015) , sepsis (HR=1.581, p<0.001) , and peritonitis (HR=4.497, p<0.001). No significant differences were observed in the risks of non-variceal gastrointestinal bleeding or GI bleeding requiring endoscopic hemostasis.

Conclusion
In this large, real-world cohort of patients with concomitant cirrhosis and end-stage renal disease, peritoneal dialysis was associated with a higher risk of all-cause mortality, major cardiovascular events, and infectious complications compared to hemodialysis. Bleeding risks were comparable between the two modalities. These findings can help inform clinical decision-making for this complex patient population.

原著論文 114_A110

關於 Z 世代，你需要知道的！新一代醫師學習動機與工作價值觀研究

What you got to know about Generation Z！Research on work values of Z generation physicians.

陳志弘 呂宗穎

高雄長庚紀念醫院一般醫學內科暨胃腸肝膽科

Background
新一代醫生在數位環境中擁有獨特的價值觀和技能，他們的學習動機和工作價值觀與前幾代人截然不同。為了探討個人化的教學方法和人才培育策略，研究採用訪談和問卷調查的方式。

Methods
本研究首先採取焦點團體訪談，此階段共 23 位參與者，包括來自高雄市三所醫學院的專家學者以及（PGY）代表。問卷初稿採用概念圖繪製，共計 49 位參與者完成了初始問卷。透過因素分析對問卷進行了改進，最終版本 Cronbach's alpha 達到 0.94。後續對北部、中部、南部和東部地區醫學中心的 316 名 PGY1 實習生進行正式施測。

Results
本研究發現
1. 新一代醫師的學習動機和工作價值觀在不同背景變數（例如性別、醫院位置、醫院類型、出生地或專科）之間並無顯著差異。
2. 與其他專科醫師相比，兒科醫師的學習動機和工作價值觀認知程度較低。
3. 對新一代醫師而言，學習動機與工作價值觀之間有顯著關係，即時回饋、內在目標與外在目標是整體工作價值觀的強預測因子（顯著性均<.001）。其中，外在目標對工作價值的預測能力最高。

Conclusion
對於年輕的醫師來說，學習動機的外在目標對於工作價值觀的影響還是最大，但亦發現新世代醫師人數較少的科目對於學習動機與工作價值觀的認同性較低，期待未來可以對新世代醫師的學習與工作狀況進行改善。