論文發表注意事項

【口頭論文發表】

- 試片室：7 樓 701C 會議室及 701G 會議室外小房間
- 口頭報告者請務必於該場次開始前 30 分鐘將隨身碟自行攜帶送至試片室進行測試，以避免中途影響會議速度進行，請先行測試檔案與隨身碟讀取正常。
- 一般論文口頭發表，每題 12 分鐘(報告 10 分鐘，討論 2 分鐘)，請各演講者務必控制報告時間，演講時間結束後即開燈結束演講。
- 學會於90年新增『年會論文優秀論文獎』，口頭發表及壁報發表分別評分。優秀論文獎得獎名單於會員大會公佈並頒獎。
- 得獎公佈—會員大會
  時間：112 年 12 月 10 日(星期日)上午 11:30 至 12:00 (請得獎者務必在現場)
  地點：701B會議室

- Our Preview Room are located outside of conference rooms 701B and 701F
- ***Oral Presentation***

Presentation Time
12 Minutes: including 10 minutes of presentation and 2 minutes of Live Q&A
Presentation Specification
***All oral presentation must Present LIVE.** File Type: **PPT or PPTX** only File Name: Oral_AbstractID_Name (e.g: OralPresentation1_25_Lin)

Oral Presentation 5 (English)

December 9 (Saturday), 2023 10:30 ~ 12:00 Room 2 (701-B)

【Clinical-3】 *Chair(s)：林志慶/ Chih-Ching Lin、周鈺翔/ Yu-Hsiang Chou*

10:30—10:42

1. Variability of Iron Status Predicts Adverse Outcomes in Chronic Kidney Disease
Yi-Hong Wu[1], Der-Cherng Tarng[1,2,3,4], Wei-Cheng Tseng[1,2,3,*]
[1]Division of Nephrology, Department of Medicine, Taipei Veterans General Hospital, Taiwan; [2]School of Medicine, [3]Center for Intelligent Drug Systems and Smart Bio-devices (IDS2B) and [4]Department and Institute of Physiology, National Yang Ming Chiao Tung University, Taiwan

10:42—10:54

2. Far-Infrared Therapy Improves Cardiovascular and Infectious Disease Outcomes in Continuous Ambulatory Peritoneal Dialysis Patients: A Prospective Clinical Trial
Fan-Yu Chen[1], Szu-Yuan Li[1], Chyong-Mei Chen[2], Shu-Ai Lin[1], Yi-Ching Chang[1], Chih-Ching Lin[1]
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[2].Institute of Public Health, College of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan

10:54—11:06

3. Semantic Segmentation of Renal Ultrasound Images Using Fully Supervised and Semi-Supervised Deep Learning Models
Yi-Chin Chen[1], Jing-Ru He[1], Yen-Hua Huang[1,*], Kung-Hao Liang[3], Wei-Cheng Tseng[4], Shuo-Ming Ou[4], Wayne Huey-Herng Sheu[5], Der-Cherng Tarng[1,2,4,*]
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11:06—11:18

4. Meta-analysis of Association between TCF7L2 rs7903146 and Risk of New-Onset Diabetes After Transplantation
Muhammad Tassaduq Khan
Dow university hospital, Pakistan

11:18—11:30

5. Frequency of Urinary Tract Infection by Multidrug Resistance Organisms and its Effect on Graft Function in Renal Transplant Recipients
Muhammad Tassaduq Khan
Dow university hospital, Pakistan

11:30—11:42

6. Mitigating Targeted Organ Injury in Type 2 Diabetic Patients with Acute Kidney Disease: A Therapeutic Inquiry into Thiazolidinediones
Li-Yang Chang [1], Hung-Wei Liao[2], Jui-Yi Chen [3], Chao-Fu Chang[4], Vin-Cent Wu[5]
[1] National Taiwan University College of Medicine, [2] Taipei Municipal Wanfang Hospital, Division of Nephrology, [3] Chi Mei Hospital Department of Nephrology, [4] Yukang Center, [5] National Taiwan University Hospital Study Group on Acute Renal Failure (NSARF)

Oral Presentation 5 (English)

December 9 (Saturday), 2023 10:30 ~ 12:00 Room 2 (701-B)

11:42—11:54

7. Nirmatrelvir-ritonavir or molnupiravir among US non-hospitalized patients with chronic kidney disease: one to six months mortality and renal outcomes

Chien-Liang Chen[1], Renin Chang[1], Yao-Min Hung[2], Yu-Hsun Wang[3], James Cheng-Chung Wei[3]
[1]Kaohsiung Veterans General Hospital, [2]Division of Nephrology, [2]Taipei Veterans General Hospital Taitung Branch, [3] Chung Shan Medical University Hospital

【Oral Presentation 5】
【Clinical-3】 Room 2 (701B)

1

Variability of Iron Status Predicts Adverse Outcomes in Chronic Kidney Disease
鐵質變異性可預測慢性腎臟病之重大不良事件

Yi-Hong Wu[1], Der-Cherng Tarng[1, 2, 3, 4], Wei-Cheng Tseng[1, 2, 3, *]
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Background：
Chronic inflammation links to increased morbidity and mortality in chronic kidney disease (CKD) patients. Serum ferritin is a well-known inflammatory marker and elevated variation in iron status may be correlated with adverse events in patients with end-stage kidney disease. Nonetheless, the detailed relationship between ferritin variability and mortality in CKD patients remains obscure.
Methods：
We analyzed a longitudinal cohort of 9440 CKD patients with ferritin data at a tertiary medical center between 2013 and 2021. Iron status variability was determined by coefficient of variation (CV) and percentage change (PC) of serum ferritin within 180 days. Afterwards, 3,910 CKD patients with two or more ferritin levels were enrolled and categorized into high (CV≧40% or PC ≧60%), medium (40%> CV≧ 20% or 60%> PC ≧30%) and low (CV<20% or PC <30%) ferritin variability groups. Cox regression was used to estimate the hazard of iron variability on study outcomes (all-cause mortality, major cardiovascular events [MACE: cardiovascular death, myocardial infarction, ischemic stroke, heart failure hospitalization]).
Results：
During a median follow-up of 641.5 days, 768 patients died, 362 patients had MACE and 122 patients had cardiovascular death. Kaplan-Meier survival analysis showed that high ferritin variability group (CV≧40% or PC≧60%) had a higher chance of all-cause mortality. Multivariable Cox regression further validated that both high CV (HR: 1.42, 95% CI: 1.20-1.68, $p < 0.001$) and high PC (HR: 1.34, 95% CI: 1.13-1.59, $p < 0.001$) variability of ferritin groups were associated with higher all-cause mortality risks. There was also a trend for higher risks of MACE and cardiovascular death. The results were consistent in the subgroup and sensitivity analysis.
Conclusions：
Higher ferritin variability of CKD patients is associated with elevated risk of mortality.
Key words：Chronic kidney disease; Ferritin; Coefficient of variation; Percentage change

2

Far-Infrared Therapy Improves Cardiovascular and Infectious Disease Outcomes in Continuous Ambulatory Peritoneal Dialysis Patients: A Prospective Clinical Trial

遠紅外線治療改善連續性腹膜透析病患心血管和感染併發症的預後：一項前瞻性臨床試驗

Fan-Yu Chen[1], Szu-Yuan Li[1], Chyong-Mei Chen[2], Shu-Ai Lin[1], Yi-Ching Chang[1], Chih-Ching Lin[1]
陳範宇[1]，黎思源[1]，陳瓊梅[2]，林淑愛[1]，張伊菁[1]，林志慶[1]
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[2] 國立陽明交通大學醫學院公共衛生研究所

Background：
Continuous ambulatory peritoneal dialysis (CAPD) patients are susceptible to cardiovascular and infectious complications. The effectiveness of far-infrared (FIR) therapy in this population remains unknown.

Methods：
Ninety-nine CAPD patients underwent a 40-minute FIR therapy session twice daily during the initial and final exchanges of peritoneal dialysis for 6 months. We then monitored the occurrence of cardiovascular and infectious disease outcomes in patients during the study period.

Results：
Within 6 months, FIR therapy notably reduced the risk of peritoneal dialysis-related infections (hazard ratio=0.174, P=0.023) and showed significant improvements in the composite outcomes for both cardiovascular and infectious events (hazard ratio=0.136, P=0.0083).

Conclusions：
Far-infrared therapy holds promise as a non-invasive complementary treatment that can effectively mitigate the risk of peritoneal dialysis-related infections and improve combined cardiovascular and infectious disease outcomes in CAPD patients.

Key words：
Far-infrared therapy, continuous ambulatory peritoneal dialysis, cardiovascular diseases, infectious diseases, peritoneal dialysis-related infections

3

Semantic Segmentation of Renal Ultrasound Images Using Fully Supervised and Semi-Supervised Deep Learning Models

以全監督式及半監督式深度學習模型對腎臟超音波影像進行語義分割

Yi-Chin Chen[1], Jing-Ru He[1], Yen-Hua Huang[1,*], Kung-Hao Liang[3], Wei-Cheng Tseng[4], Shuo-Ming Ou[4], Wayne Huey-Herng Sheu[5], Der-Cherng Tarng[1,2,4,*]

陳奕瑾[1], 何璟汝[1], 黃彥華[1,*], 梁恭豪[3], 曾偉誠[4], 歐朔銘[4], 許惠恒[5], 唐德成[2,4,*]

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Background：

Chronic kidney disease (CKD) is a global disease and top-ranked cause of death worldwide. Early identification of CKD is key to timely treatment and mitigation of adverse complications. Diagnosis of CKD and irreversible renal function decline usually relies on kidney ultrasound imaging. However, this diagnosis is frequently carried out by nephrologists manually. Therefore, we aimed to use deep learning's semantic segmentation technique to develop a model for automating the segmentation of kidney ultrasonography images.

Methods：

The ultrasound images from the Division of Nephrology of Taipei Veterans General Hospital were generated by multiple platforms. The research was conducted with conditions categorized as "mixed" or "single" platforms and one patient having "multiple" or "single" images, as test cases. Additionally, to address the challenge of limited data annotated by experts, image augmentation was introduced in supervised learning. Furthermore, two semi-supervised learning models, ST and ST++, were also incorporated to effectively utilize both the labeled and unlabeled images.

Results：

In supervised learning, the use of multi-platform images with the DeepLabv3 model yielded the best performance, and the application of online augmentation further improved the results, achieving a test mean Intersection over Union (mIoOU) of 0.777.

In semi-supervised learning, the ST++ (DeepLabv3+) model consistently delivered the best prediction results, and the results were the same for both multi-platform and single-platform scenarios, with a validation mIOU of 0.795. The validation mIOU in semi-supervised learning closely approached the test mIOU in supervised learning, indicating that the ST++ method has achieved excellent results. Furthermore, in multi-platform images, increasing the number of images contributed to the improvement of model performance.

Conclusions：

In summary, ultrasound images exhibit significant variations, making it challenging to select representative images for CKD and to manually label kidney regions. The present study developed an automated semantic segmentation technique to extract kidney regions from ultrasound images, which facilitate further use of segmented renal ultrasonographic images along with renal function values for model training.

Key words：Deep Learning, Kidney Ultrasonography, Semantic Segmentation

4

Meta-analysis of Association between TCF7L2 rs7903146 and Risk of New-Onset Diabetes After Transplantation

Muhammad Tassaduq Khan
Dow university hospital, Pakistan

Background: Single nucleotide polymorphisms may influence the risk of development of new-onset diabetes after transplantation (NODAT), a post-transplant clinical complication that is often implicated in allograft rejection and mortality. We performed a meta-analysis of association between TCF7L2 rs7903146 and risk of post-transplant diabetes mellitus.

Methods: A systematic search was conducted using PubMed and ScienceDirect electronic databases for studies published between January 2001 to January 2021. Case-control or cohort studies reporting association between NODAT (diagnosis based on American Diabetes Association [ADA] criteria) and TCF7L2 rs7903146 were included. MetaGenyo was used for meta-analysis (random effects model). Pooled odds ratios with 95% confidence intervals were reported to evaluate the strengths of association.

Results: Two reviewers independently screened for articles. A total of six case-control studies were included for full-text review and quantitative analysis after screening for eligibility. Genotypic distributions were in Hardy-Weinberg equilibrium for included studies. All papers reported statistically significant association of TCF7L2 rs7903146 for risk of NODAT, except for one study. There was moderate heterogeneity among studies (I^2 = 60.6%). Pooled analysis revealed 51% odds of developing NODAT with TCF7L2 rs7903146 T allele (Allele Contrast Model: OR = 1.51, 95% CI 1.13 – 2.02, adjusted p = 0.03).

Conclusion: The present meta-analysis demonstrated association between TCF7L2 variant rs7903146 and risk of developing NODAT. This finding may have clinical implications for individuals undergoing kidney transplantation.

5

Frequency of Urinary Tract Infection by Multidrug Resistance Organisms and its Effect on Graft Function in Renal Transplant Recipients

Muhammad Tassaduq Khan
Dow university hospital, Pakistan

Background and Objectives: Urinary tract infection is a recurrent complication post renal transplant. It is frequently associated with poor graft outcomes and greater health related expenditures. The objective of this study is to determine the frequency of urinary tract infection by multidrug resistance organisms and its effects on allograft function in renal transplant recipients.
Methods: In this prospective, cross-sectional study, we screened post renal transplant patients visiting outpatient department with clinical signs and symptoms of urinary tract infection (UTI), defined as fever, frequent micturition, dysuria and urine discoloration. Multidrug resistance (MDR) or extensively drug-resistant (XDR) infections were determined by culture and sensitivity (C/S) and are defined as the organisms resistant to three or more types of antimicrobial drugs.
Results: We enrolled 97 renal transplant recipients of which 72 (74.2%) were diagnosed with clinical UTI. The mean age was 50±8 years. Out of 72 UTI patients, 28 (38.9%) were positive for MDR gram-negative UTI infection. *Eschericia coli* was found to be the most frequent (*n*=13, 46.4%) pathogen of MDR UTI in post renal transplant recipients and was significantly associated with antimicrobial MDR which included amikacin, amoxicillin, ampicillin, cefixime, cefuroxime, trimethoprim/sulfamethoxazole, fosfomycin, levofloxacin, nitrofurantoin, tazobactam and vancomycin. Other gram-negative organisms were *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. Recurrent UTI occurred in 7 (9.7%) patients. Graft pyelonephritis was found to be among 3 (10.7%) patients who had creatinine above 1.5 mg/dL during the early months of post-transplant.
Conclusion: Gram-negative organisms were the most frequent pathogens associated with MDR UTI and were responsible to affect graft function in renal transplant recipients. Therefore, adequate and vigilant antimicrobial prophylaxis should be considered to minimize the risk of infectious burden and graft rejection in post renal transplant patients.

6

Mitigating Targeted Organ Injury in Type 2 Diabetic Patients with Acute Kidney Disease: A Therapeutic Inquiry into Thiazolidinediones

減少急性腎臟病第二型糖尿病患者目標器官的損傷：一個對 Thiazolidinediones 藥物的研究

Li-Yang Chang [1], Hung-Wei Liao [2], Jui-Yi Chen [3], Chao-Fu Chang [4], Vin-Cent Wu [5]

張立揚 [1], 廖宏偉 [2], 陳銳溢 [3], 張朝富 [4], 吳允升 [5]

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Background：

Diabetic patients face the heightened risk of acute kidney injury (AKI) and its potential progression into chronic kidney disease (CKD). Thiazolidinediones (TZDs), a peroxisome proliferator-activated receptor-γ agonists, are recognized for their role in enhancing insulin sensitivity and ameliorating lipid profiles. We investigate whether the strategic administration of TZDs during the AKD phase could mitigate the future risk of targeted organ injury.

Methods：

Leveraging the TriNetX platform, we accrue data until September 30, 2022. Our objective was to appraise the impact of TZDs administered to patients grappling with type 2 diabetes (T2DM) within 90 days of an AKD diagnosis. The clinical endpoints scrutinized encompassed the risk of all-cause mortality, major adverse cardiovascular events (MACE), and major adverse kidney events (MAKE).

Results：

From a cohort comprising 262,217 patients grappling with AKD, a subset of 2,692 individuals were identified as TZD users, while 257,780 opted not to employ TZDs. After propensity score matching yielded equitable group sizes of 2,540 participants in each cohort. Notably, the TZD user group exhibited a demonstrable reduction in all-cause mortality (HR, 0.81; 95% CI, 0.70-0.94), MACE (HR = 0.86; 95% CI, 0.74-0.98), and MAKE (HR, 0.84; 95% CI, 0.73-0.98).

Conclusions：

Our study reveals the significant potential of TZDs in lowering overall mortality, MACE, and MAKE rates in T2DM with AKD. These results, though preliminary, offer an intriguing avenue for the potential management of complications in these patients, presenting a novel dimension in therapeutic considerations.

Key words： Thiazolidinedione (TZD), Acute Kidney Disease (AKD), Type 2 Diabetes Mellitus (T2DM)

7

Nirmatrelvir-ritonavir or molnupiravir among US non-hospitalized patients with chronic kidney disease: one to six months mortality and renal outcomes

新冠肺炎口服治療藥物在慢性腎臟病門診患者中的效果死亡率和腎臟疾病預後

Chien-Liang Chen[1], Renin Chang[1], Yao-Min Hung[2], Yu-Hsun Wang[3], James Cheng-Chung Wei[3]

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Background：

Information about the effects of oral antiviral agents in preventing short- and long-term COVID-19-related renal outcomes in outpatients with chronic kidney disease (CKD) is limited.

Methods：

Based on the TriNetX database from 2022/1/1 to 2023/04/30, we conducted a retrospective target trial emulation study by comparing CKD patients with COVID-19 who received nirmatrelvir-ritonavir or molnupiravir versus no treatment (i.e., controls), nirmatrelvir-ritonavir versus no treatment, and molnupiravir versus no treatment in an outpatient setting. Primary outcomes included all-cause mortality and incidence of hospitalization/renal replacement therapy at one- to six-month follow-ups. Subgroup analysis included age and gender.

Results：

After application of exclusion criteria followed by 1:1 propensity score matching, this study comprised three groups: (1) Patients receiving either nirmatrelvir-ritonavir or molnupiravir (Group 1, n=4858), (2) nirmatrelvir-ritonavir group (Group 2, n=3467), and (3) molnupiravir group (Group 3, n=1290). Group 1 showed lower risks of mortality [hazard ratio (HR)=0.42, 95% CI=0.27–0.66), hospitalization (HR=0.83, 95% CI=0.72–0.96), and renal replacement therapy (HR=0.37, 95% CI=0.22–0.62) compared with controls. Group 2 exhibited lower risks of all-cause mortality (HR=0.39, 95% CI=0.22–0.67), hospitalization (HR=0.77, 95% CI=0.64–0.93), and renal replacement therapy (HR=0.11, 95% CI=0.04–0.31) than in controls. However, no difference in risks of all-cause mortality, hospitalization, and renal replacement therapy was noted between Group 3 and its controls.

Conclusions：

Oral antiviral treatment with nirmatrelvir-ritonavir, but not molnupiravir, was associated with reduced risks of mortality, hospitalization, and renal replacement therapy in outpatients with CKD and COVID-19.

Key words：

Ritonavir; Molnupiravir; Oral antiviral agent; COVID-19; chronic kidney disease; mortality.