

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

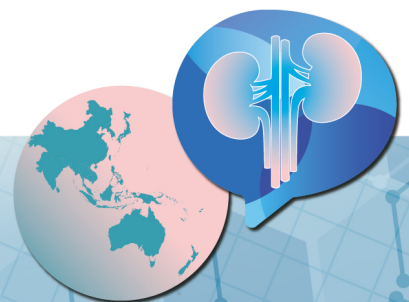
***All oral presentation must Present LIVE.**

File Type: **PPT or PPTX** only

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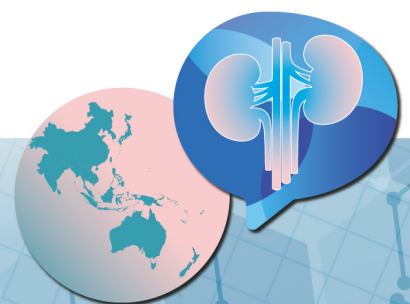
Oral Presentation 9 (Chinese)

December 9 (Saturday), 2023 10:30 ~ 11:30

Room 7 (701-F)

【Clinical-7】 Chair(s) : 陳呈旭/ Cheng-Hsu Chen · 賴台軒/ Tai-Shuan Lai

- 10:30—10:42 1. Biosimilar recombinant human erythropoietin (UB-851) versus Reference Eprex® in Hemodialysis Patients with Renal Anemia: A Multicenter, Randomized, Double-Blinded, Phase III Trial In Taiwan
Chien-Hsing Wu^{*1}, Chih-Chung Shiao^{*2}, Hsien-Yi Wang^{#1}, Der-Cherng Tarn^{#2}
Division of Nephrology, Kaohsiung Chang Gung Memorial Hospital^{*1}, Division of Nephrology, Camillians Saint Mary's Hospital Luodong^{*2}, Department of Nephrology, Chi Mei Medical Center^{#1}, Division of Nephrology, Taipei Veterans General Hospital^{#2}
- 10:42—10:54 2. Circulating Osteocalcin Fractions are Associated with Vascular Calcification and Mortality in Chronic Hemodialysis Patients
Ruei-An Lin^{1,2}, Chih-Yu Yang^{1,3*}, Yao-Ping Lin^{1,3}, and Der-Cherng Tarn^{1,3}
¹ Institute of Clinical Medicine, School of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan, ² Department of Medical Education, National Taiwan University Hospital, Taipei, Taiwan, ³ Division of Nephrology, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan
- 10:54—11:06 3. The aid of artificial intelligence in the diagnosis of exit site infection in peritoneal dialysis patients
I-Kuan Wang^{1,2}, Kuan-Chi Chen², David Ray Chang¹, Ping-Chia Lai¹, Chun-Yuan Lin³
¹Divisions of Nephrology, China Medical University Hospital, Taichung, Taiwan, ²Department of Medicine, College of Medicine, China Medical University, Taichung, Taiwan, ³Computer Science & Information Engineering, Asia University Hospital, Taichung, Taiwan
- 11:06—11:18 4. The association of glycemic control with patient survival and technique survival in incident diabetic peritoneal dialysis patients
Hsin-Ju Huang¹, I-Kuan Wang^{1,2}, Hei-Tung Yip³, Ping-Chia Lai¹
¹ Divisions of Nephrology, China Medical University Hospital, Taichung, Taiwan, ²Department of Medicine, College of Medicine, China Medical University, Taichung, Taiwan, ³Management Office for Health Data, China Medical University Hospital, Taichung, Taiwan
- 11:18—11:30 5. A Comparative Study of Lifetime Productivity Loss in Hemodialysis and Peritoneal Dialysis Patients in Taiwan
Chieh-Hsin Huang¹, Fuhmei Wang², Jing-Shiang Hwang³, Jung-Der Wang⁴, Wen-Yen Huang⁴, Tsai-Chieh Ling¹, Chien-Yao Sun¹, Wei-Ren Lin¹, Yu-Tzu Chang¹
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1**Biosimilar recombinant human erythropoietin (UB-851) versus Reference Eprex[®] in Hemodialysis Patients with Renal Anemia: A Multicenter, Randomized, Double-Blinded, Phase III Trial In Taiwan****複製人類重組促紅血球生成素生物相似藥 UB-851 對照於 Eprex[®] 在腎性貧血血液透析患者中的比較:一項在台灣多中心、隨機、雙盲、第三期臨床試驗**Chien-Hsing Wu^{*1}, Chih-Chung Shiao^{*2}, Hsien-Yi Wang^{#1}, Der-Cherng Tarn^{#2}吳建興^{*1}, 蕭志忠^{*2}, 王憲奕^{#1}, 唐德成^{#2} (*第一作者, # Corresponding author)

Division of Nephrology, Kaohsiung Chang Gung Memorial Hospital*1, Division of Nephrology, Camillians Saint Mary's Hospital Luodong*2, Department of Nephrology, Chi Mei Medical Center#1, Division of Nephrology, Taipei Veterans General Hospital#2

高雄長庚醫院腎臟科^{*1}, 羅東聖母醫院腎臟科^{*2}, 永康奇美醫院腎臟科^{#1}, 台北榮總醫院腎臟科^{#2}**Background :**

Erythropoietin (EPO) is responsible for the development of red blood cells, culminating in the synthesis of hemoglobin (Hb). To address anemia resulting from EPO deficiency in chronic kidney disease and to bolster erythropoiesis in autologous blood collection efforts, recombinant human erythropoietin (rhEPO) have been introduced. UB-851, represents a biosimilar rhEPO counterpart to the reference medication, Eprex[®]. This study aims to substantiate the comparable efficacy of UB-851 and Eprex[®] in sustaining target Hb levels, while establishing the absence of notable disparities in safety and immunogenicity for hemodialysis patients with anemia and chronic kidney disease.

Methods :

The phase III trial spanned 52 weeks and encompassed two parts. Part I unfolded across two stages: the initial stage (week 1 to 20) encompassed dosage calibration and Hb level maintenance, followed by a second stage (week 21 to 24) focused on efficacy assessment. Part II consisted of a single-arm phase (week 25 to 52), which sought to gauge the long-term safety and immunogenicity of UB-851.

Results :

The ANOVA model analysis unveiled that the 95% confidence interval (CI) of the mean Hb level alteration from baseline to the efficacy evaluation period (-0.4191, 0.0788)/(-0.3538, 0.1641) remained within the predetermined range of (-0.6, +0.6) g/dL for the Intention-to-treat (ITT) and Per-Protocol (PP) populations, respectively. Moreover, the ANCOVA model analysis demonstrated that the 95% CI of the difference in mean weekly epoetin dosage change from baseline to the efficacy evaluation period (-2.0297, 20.4240)/(-2.0489, 21.4425) adhered to the threshold of (-45, +45) IU/kg/week for the ITT and PP populations, respectively. These observations confirm the clinical equivalence between UB-851 and Eprex[®]. No noteworthy alterations were observed in laboratory values, 12-lead electrocardiogram (ECG), physical examination (PE) results, or vital signs for either cohort. No instances of anti-epoetin antibodies were detected in the UB-851 group.

Conclusions :

Intravenous UB-851 demonstrated favorable tolerance among patients. Its efficacy was established to be similar with Eprex[®]. Comparisons of the safety and immunogenicity attributes of UB-851 and Eprex[®] indicated a significant degree of similarity, thereby reinforcing the notion of biosimilarity between these two products.

Key words : Anemia, biosimilar, erythropoietin, hemodialysis

Circulating Osteocalcin Fractions are Associated with Vascular Calcification and Mortality in Chronic Hemodialysis Patients

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Background :

Vascular calcification, a component of chronic kidney disease-mineral and bone disorder (CKD-MBD), is prevalent in patients with end-stage kidney disease (ESKD) and contributes to high mortality. However, the association between the blood level of total osteocalcin (OC) and vascular calcification and mortality remains inconclusive. We, therefore, investigated whether different OC fractions can serve as biomarkers of vascular calcification and mortality in the ESKD population.

Methods :

This observational cohort study enrolled patients on maintenance hemodialysis. Plasma carboxylated OC (cOC), uncarboxylated OC (ucOC), and intact parathyroid hormone (PTH) were measured. The percentage of carboxylated OC (%cOC) was calculated as dividing cOC by total OC. The vascular calcification severity was defined by an aortic calcification grade. The patients were followed for three years and one month.

Results :

A total of 184 patients were enrolled. In the multivariable logistic regression, plasma %cOC, but not cOC or ucOC, was independently associated with the severity of vascular calcification (OR = 1.019, $p = 0.036$). A significant U-shaped correlation was found between plasma %cOC and PTH ($p = 0.002$). In the multivariable Cox regression, patients with higher plasma %cOC had a higher risk of mortality (quartiles Q4 versus Q1-Q3, HR 1.991 [95% CI: 1.036–3.824], $p = 0.039$).

Conclusions :

In patients undergoing chronic hemodialysis, plasma %cOC positively correlated with vascular calcification and exhibited a U-shaped correlation with PTH. Furthermore, a higher plasma %cOC was associated with increased mortality. These findings suggest that plasma %cOC may serve as a biomarker for CKD-MBD and a predictor of clinical outcomes in chronic hemodialysis patients.

Key words :

osteocalcin; carboxylated percentage; secondary hyperparathyroidism; vascular calcification; uremia

The aid of artificial intelligence in the diagnosis of exit site infection in peritoneal dialysis patients

使用人工智能來輔助診斷腹膜透析患者的出口部位感染

I-Kuan Wang^{1,2}; Kuan-Chi Chen²; David Ray Chang¹; Ping-Chia Lai¹; Chun-Yuan Lin³

王怡寬^{1,2}, 陳冠齊², 張育瑞¹, 賴彬卿¹, 林俊淵³

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Background: Peritoneal dialysis (PD), renal replacement therapy at home, requires the placement of a catheter that traverses the patient's abdominal wall and extends into the peritoneal cavity. Infection, one of the major complications of PD, can occur at the catheter exit site, tunnel, and peritoneum, potentially leading to morbidity, mortality, and catheter removal. Exit site infection is defined as the presence of purulent discharge with or without erythema of the skin at the catheter-epidermal interface. Patients need to inspect the exit site daily to detect infections early. The purpose of this study is to utilize artificial intelligence (AI) to assist in the detection of exit site infections in PD patients.

Method: Patients or medical personnel took photos of the abdominal catheter exit site using a smartphone camera. Abnormal exit site features were defined as the presence of redness, swelling, crust, and discharge. These photos were reviewed by medical personnel and classified as normal or abnormal images. The no-code development platform AIDMS, established by Leadtek Company, was used for image classification and object detection with adopting image classification models including ResNet, Inception, and MobileNet series, and object detection models including Yolo, DETR-transformer, and Resnet series.

Results: Medical personnel reviewed a total of 220 images, of which 150 were classified as abnormal and 70 as normal. Object annotations were also performed separately. The ratios of adopted training, validation, and testing were 7:1:2. In dataset 1, original pictures with noise deleted were used. The best performance for image classification prediction was achieved using ResNet-50, with an accuracy of 0.800 and an area under the curve (AUC) of 0.835. At a probability threshold of 0.92, the positive accuracy was 0.958. In dataset 2, in which wound region of interest was selected, the best performance was achieved using Inception-V3, with an accuracy of 0.89 and an AUC of 0.934. At a probability threshold of 0.9, the positive accuracy was 0.964. In object detection, the best performance was achieved using Yolo v4, with an AP50 of 0.805 at an intersection over union (IOU) of 0.5. If object detection results were used to determine image classification, the model had an accuracy of 0.911, an AUC of 0.864, and a positive accuracy of 0.935 at a probability threshold of 0.81.

Conclusion: Given the higher accuracy, precision, and AUC, AI can be used to assist in the detection of exit site infections in PD patients. Moreover, since object detection results are more intuitive and have only slightly lower performance than image classification with wound region of interest selected, object detection technology may be employed in the future to aid in the diagnosis of exit site infections.

Key words: artificial intelligence; exit site infection; peritoneal dialysis.

The association of glycemic control with patient survival and technique survival in incident diabetic peritoneal dialysis patients

糖尿病腹膜透析病患血糖控制與病患與技術存活的相關

Hsin-Ju Huang¹; I-Kuan Wang^{1,2}; Hei-Tung Yip³; Ping-Chia Lai¹

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Background: The aim of this study to investigate the predictive values of glycemic control on prognosis in incident diabetic peritoneal dialysis (PD) patients.

Method: From medical records, 259 incident diabetic end-stage kidney disease patients undergoing PD were identified to estimate risks of mortality and technique failure by glycemic control status from 2007 to 2016 with follow-up to the end of 2018.

Results: Compared to patients with time-averaged A1c values more than 9%, the risk of mortality was lower for patients with A1c of 6-6.9% [adjusted hazard ratio (HR) =0.39; 95% confidence interval (CI) =0.20, 0.78] and 7-7.9% (adjusted HR =0.47; 95% CI =0.24, 0.91). The risk of technique failure was lower for patients with time-averaged A1c of 6-6.9% (adjusted HR =0.55; 95% CI =0.33, 0.92) and 7-7.9% (adjusted HR =0.53; 95% CI =0.31, 0.90), compared to those with time-averaged A1c values \geq 9%. Patients with baseline fasting serum glucose levels of 70-150 mg/dL had a lower risk of technique failure (adjusted HR =0.48; 95% CI =0.24, 0.97), compared to those with levels $>$ 300 mg/dL. Comparison based on time-averaged fasting serum glucose levels showed that patients with levels of 70-150 mg/dL had a lower risk of mortality (adjusted HR =0.53; 95% CI =0.29, 0.99), compared to those with levels of 200-300 mg/dL.

Conclusion: Diabetic PD patients with time-averaged HbA1c 6-8% or fasting serum glucose levels of 70-150 mg/dL and time-averaged HbA1c 6-8% or baseline fasting serum glucose levels of 70-150 mg/dL had reduced risks of mortality and technique failure, respectively.

Key words: Diabetes; glycemic control, mortality; peritoneal dialysis; technique failure.

A Comparative Study of Lifetime Productivity Loss in Hemodialysis and Peritoneal Dialysis Patients in Taiwan

台灣血液透析與腹膜透析病患終生生產力損失之比較研究

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Background:

This study aims to investigate potential disparities in lifetime productivity loss between hemodialysis (HD) and peritoneal dialysis (PD) patients, enhancing our understanding of socioeconomic burden associated with different dialysis modalities.

Methods:

We included all incident dialysis patients, aged 25 to 64, during years 2001 to 2020. HD and PD patients were matched at a 1:1 ratio based on age, sex, index year, employment status, and comorbidities. Monthly salaries, derived from National Health Insurance (NHI) premium payments, served as a surrogate for productivity. Survival functions, employment status, and average monthly salaries for the dialysis patient cohort and their referents were calculated by age strata and extrapolated up to age 65 when necessary. Lifetime productivity was calculated as the sum of the product of the survival function and average monthly salaries. The disparity in lifetime productivity between matched HD and PD patients was determined.

Results:

A total of 11,451 matched pairs of HD and PD patients were identified. There was no significant difference in life expectancy between the groups. PD patients, however, demonstrated higher employment years and productivity than HD patients across all age groups, with a more pronounced impact in those who commence dialysis at a younger age. Male PD patients have an average lifetime employment duration 1.68 years longer than HD patients, while female PD patients have 1.59 more years of employment. In terms of lifetime productivity, male PD patients outperform HD patients by 37,000 US dollars (USD), and female PD patients surpass HD patients by 202,000 USD.

Conclusions:

In comparison to PD, HD patients face a higher risk of employment challenges and unemployment. This disparity in lifetime productivity may result in elevated economic burdens, affecting both the patients and society as a whole.

Keywords: dialysis, end-stage kidney disease, productivity loss, employment