adjusted accordingly to achieve normalization of thyroid function over months. She underwent 3 sessions of hemodialysis during her hospitalization. Her renal function improved to normal after 11 months of thyroxine replacement (Figure 1). Thyroid peroxidase and thyroglobulin antibodies were strongly positive at 849 IU/ml and 7730 IU/ml respectively. A very high level of TSH and reduced free T4 confirm primary hypothyroidism and antithyroid antibody profile was compatible with autoimmune thyroiditis.

Conclusion: Clinical signs and symptoms of hypothyroidism can be subtle in patient with chronic kidney disease (CKD). In our case, pre-existing CKD and severely deranged renal function are suggestive of end stage renal disease. Therefore, attending physicians should have a high index of suspicion for hypothyroidism as thyroid hormone replacement can result in complete renal recovery. Thyroid function should be assessed in patients with unexpected deterioration of renal function including those with underlying CKD.

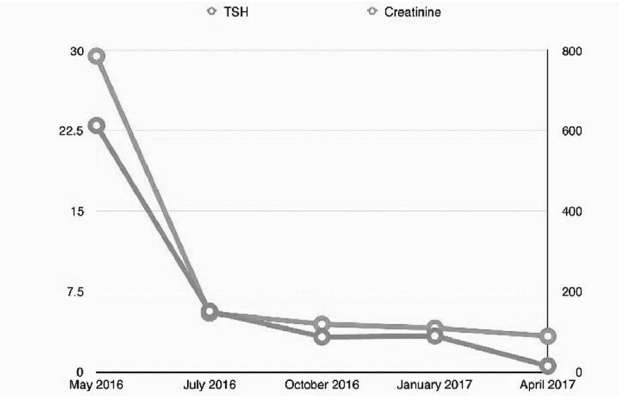

Figure 1: Patient's serum creatinine levels in relation to TSH levels in a 11-month period. Serum TSH progressively declined and was normal after 4 months of thyroxine replacement. In parallel, renal function improved with normalisation of serum creatinine to 90 umol /L (eGFR: 57.6 ml/min/1.73m^2) after 11 months.

Time	March 2015	May 2016 (Admission)	May 2016 (Discharge)	July 2016	October 2016	January 2017	April 2017
Urea (2.8-7.8 mmol/L)	10.6	27.3	20 HD X 3 times	8.0	4.7	4.8	3.3
Creatinine (61-124 umol/L)	146	786	390 HD X 3 times	147	120	110	90
TSH (0.27-4.2 mIU/L)	-	23	-	5.7	3.3	3.4	0.6
Free T4 (12-22 pmol/L)	-	5.3	-	16.7	16	11.2	11.3
L-Thyroxine dose (µg)	-	25 µg for 5 days then 50 µg	50 µg	75 µg	75 µg	75 µg	75 µg

TSH: Thyroid stimulating hormone; Free T4: FreeThyroxine; HD: Hemodialysis.

Table 1: Renal function, thyroid function and thyroxine replacement dosage pre-admission and during follow-up.

025

ESTIMATES OF GLOMERULAR FILTRATION RATE IN THE CRITICALLY ILL WITH SEPSIS

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Category: Research in AKI (Basic, translational, clinical including clinical trials)

Presenter: Assoc. Prof Azrina Md Ralib

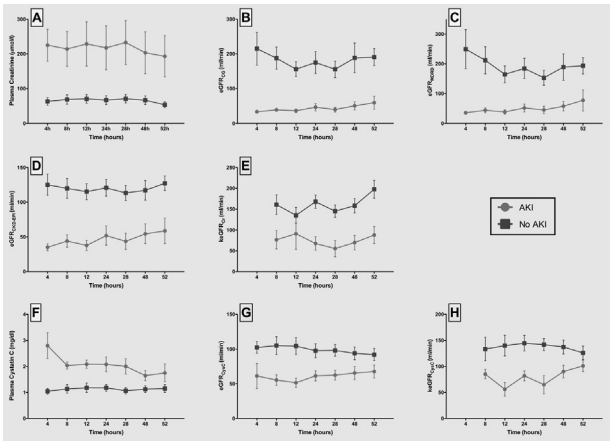
Keywords: Glomerular Filtration Rate, Cystatin C, Creatinine

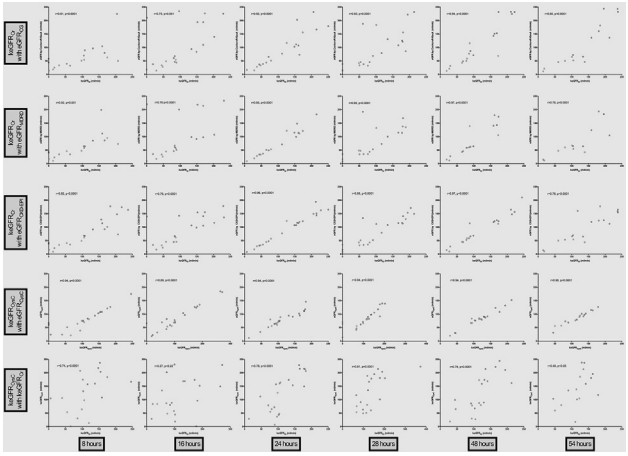
Introduction: Accurate assessment of glomerular filtration rate (GFR) in ICU patients is very important for institution of supportive therapy, preventive therapy, early renal support, drug dosing modification or avoidance of nephrotoxic drugs. Kinetic estimate of GFR (keGFR) takes into account the changes of creatinine over time, creatinine production rate, and the volume of distribution, hence postulated to be a more accurate estimate of GFR in the acute setting, where there are rapidly changing kidney functions as in the critically ill. We evaluated the association of the keGFR with estimated GFR (eGFR) by conventional method.

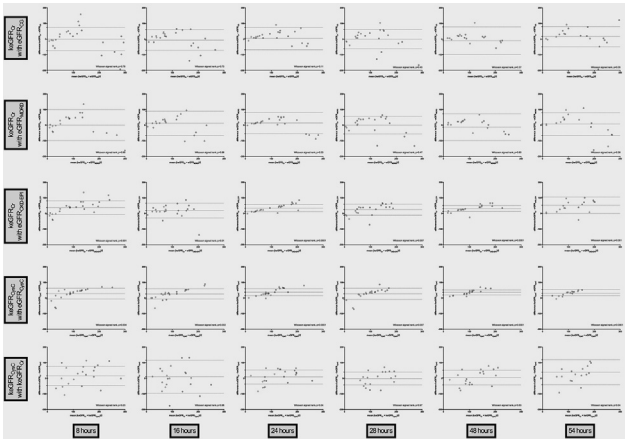
Methods: This is an interim analysis of a single centre, prospective observational study of critically ill patients. The study has been registered with the National Medical Research Register (NMRR-14-1897-21447) and has obtained ethics approval. Inclusion criteria were patients older than 18 years old with sepsis, defined as clinical infection and acute increase in SOFA score>2, and plasma procalcitonin>0.5ng/ml. Plasma creatinine and Cystatin C were measured at seven time points, and eGFR were calculated by the Cockcroft-Gault, MDRD, CKD-EPI, and $eGFR_{CysC}$ and they were compared to their keGFR equations.

Results: Twenty four patients were recruited so far, of which 10 (41.7%) had AKI. Two patients needed dialysis, and one died. $keGFR_{Cr}$ strongly correlated with $eGFR_{CKD\text{-}EPI}$ equation in all patients at all time points (all $r \geq 0.76$, $p < 0.0001$). On the other hand, $keGFR_{Cr}$ only correlated well with $eGFR_{MDRD}$ and $eGFR_{CG}$ in AKI patients but less in patients without AKI. $keGFR_{CysC}$ strongly correlated with $eGFR_{CysC}$ in all patients at all time points (all $r \geq 0.89$, $p < 0.0001$) $keGFR_{Cr}$ and $keGFR_{CysC}$ were not strongly correlated (min $r = 0.29$) $eGFR_{CKD\text{-}EPI}$ distribution had the greatest precision depicted by the narrower SD lines. Similarly, $keGFR_{CysC}$ had higher precision when compared to $eGFR_{CysC}$. $eGFR_{MDRD}$ and $eGFR_{CG}$ had the least bias depicted by the mean difference nearest to zero. Both $eGFR_{CKD\text{-}EPI}$ and $eGFR_{CysC}$ distribution differed significantly from the $keGFR_{Cr}$ and $keGFR_{CysC}$, respectively (Wilcoxon sign rank test, $p < 0.0001$).

Conclusions: The new equation, keGFR strongly correlated with the eGFR by the CKD-EPI equation with the highest precision. In the absence of serial plasma creatinine measurement, eGFR is best estimated by the CKD-EPI equation. eGFR of Cystatin C also correlated well with its keGFR. Further study would involve analysis of their association with urinary creatinine clearance.







053

PEROXIREDOXIN 3 AS A PREDICTOR OF RENAL RECOVERY FROM ACUTE TUBULAR NECROSIS IN PATIENTS WITH ACUTE KIDNEY INJURY

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Category: Research in AKI (Basic, translational, clinical including clinical trials)

Presenter: Dr CHEN HSIU-TING

Keywords: acute kidney injury; acute tubular necrosis; peroxiredoxin 3

Peroxiredoxin 3 (PRX3) as a mitochondrial antioxidant regulates apoptosis in various cancers. Whether tubular PRX3 could predict recovery of renal function following acute kidney injury (AKI) remains unknown. A retrospective cohort study included 54 hospitalized patients who had AKI with biopsy-proven acute tubular necrosis (ATN). The study outcome was renal function recovery within 6 months. Of the 54 enrolled patients, 25 (46.3%) had pre-existing chronic kidney disease (CKD) and 33 (61%) recovered renal function. Tubular PRX3 expression was higher in patients with ATN than those without renal function recovery. In multivariate Cox regression analysis, high PRX3 expression was independently associated with a higher probability of renal function recovery (adjusted hazard ratio 8.99; 95% CI 1.13-71.52, P = 0.04). Furthermore, the discriminative analysis also showed that high tubular PRX3 expression was associated with a higher probability of renal function recovery from ATN. Therefore, tubular PRX3 in combination with conventional predictors can further improve recovery prediction and may help with risk stratification in AKI patients with pre-existing CKD.

070

ACUTE KIDNEY INJURY IN CORONARY CARE UNIT: PREVALENCE, AETIOLOGIES AND OUTCOMES

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Category: Research in AKI (Basic, translational, clinical including clinical trials)

Presenter: Dr MIN HUI TAN

Keywords: Acute kidney injury, coronary care unit, prevalence, aetiology

Introduction: Acute kidney injury (AKI) is an independent risk factor for mortality in the critically ill patients. While many studies are conducted in the Intensive Care Unit setting, little is known about AKI in the Coronary Care Unit (CCU) patients. Furthermore, data on Asian patients are limited.

Objective: To determine the prevalence, aetiologies of AKI and clinical outcomes of these patients.

Methodology: This was a prospective observational study looking at patients who were admitted in CCU and Cardiac Rehabilitation Ward (CRW) Kuala Lumpur Hospital from February 2017 to April 2017. AKI was defined by increase in serum creatinine > 0.3mg/dL (26.5μmol/L) within 48 hours.

Results: There were 195 admissions; of which 22 (11.3%) patients fulfilled criteria for developing AKI while in CCU and CRW. Two thirds were male; mean age was 53.4 years (SD 13.4). Heart failure was the main diagnosis of admission (68.2%) therefore accounted for the most common aetiology of AKI (72.7%). Although AKI resolved in 15 patients (68.2%), only 14 (63.6%) survived the hospitalisation. All 8 patients who died were male (p=0.022). Comparing patients who survived and died, length of hospital stay was longer (8 vs 19.5 days, p=0.05), glomerular filtration rate was lower (27.5 vs 18.3 ml/min, p=0.026) and more patients required renal replacement therapy (p=0.01) in the mortality group. Conversely, there were no associations between survival of the patients with mechanical ventilation, inotropic support and use of medications like renin angiotensin system blockers and diuretics.

Conclusion: AKI is common and has high mortality rate. Limited by the small sample size due to short duration, this study provides an early insight into the prevalence, aetiologies and risk factors for AKI in CCU patients.

071

ANGIOPOIETIN-2 AS A BIOMARKER FOR PREDICTION OF MORTALITY AND RENAL RECOVERY IN PATIENTS REQUIRING RENAL REPLACEMENT THERAPY

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Category: Research in AKI (Basic, translational, clinical including clinical trials)

Presenter: Dr NUTTHA LUMLERTGUL

Keywords: Angiopoietin-2, Continuous renal replacement therapy, Acute kidney injury

Background: Angiopoietin-2(ang-2), a circulating antagonistic ligand of the endothelial-specific Tie2 receptor, is a potential marker of endothelial vascular permeability. This study aimed to evaluate the role of serum ang-2 in critically ill patients with acute kidney injury requiring continuous renal replacement therapy (CRRT).

Method: This study was a substudy of a previous multicenter randomized controlled trial. Blood samples were collected on day 0, 3, and 7 after inception of CRRT for measurement of serum circulating ang-2 by enzyme-linked immunoassay. We determined association between serum ang-2 concentrations and mortality, renal recovery, and fluid overload and generated a receiver operating characteristic curve for plasma ang-2 and 28-day mortality.

Results: Eighty-seven patients were recruited in the study. Forty-five (51.7%) were male, with mean age 66.5 ± 15.8 years. Seventy-three (83.9%) patients received continuous renal replacement therapy. The initial median levels of serum angiopoietin-2 were 20,540 ng/mL, interquartile range [IQR] 11,388 to 39,326 ng/mL. Serum ang-2 were significantly elevated in non-survivors than in survivors at day 0, 3, and 7. In univariate analysis, serum ang-2 correlated with mortality, but not AKI staging, fluid overload, or renal recovery. In multivariable analysis, high levels of serum ang-2 concentrations were predictive of 28-day mortality adjusted for SOFA score, plasma neutrophil gelatinsassociated lipocalin (NGAL) levels, and serum NT-proBNP.

Conclusion: Serum ang-2 is an independent predictor of mortality in acute kidney injury patients requiring continuous renal replacement therapy.