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URINARY CYSTATIN C (UCysC) AS AN EARLY BIOMARKER OF ACUTE KIDNEY INJURY (AKI) IN CRITICALLY ILL PATIENT

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Objectives: AKI is common in critically ill patients. Inspite of advances, managing AKI, outcome continues to be bad. Early diagnosis is vital. Serum creatinine, at best, can identify renal dysfunction when eGFR is below 50 ml/mt, which is late. Sensitive marker for predicting AKI is needed. Urinary Cystatin C (UCysC), a marker of renal tubular injury precedes the elevation of serum creatinine or cystatin C.
Aim: 1. To evaluate UCysC as early biomarkers of AKI
2. Compare UCysC with serum creatinine as early biomarker for AKI.

Methods: A prospective observational study. Consecutive critically ill patient admitted into ICU of Sri Ramachandra Medical College were included. Exclusion: 1. Age <18 and > 80 years; 2. Hematuria, rhabdomylosis or polycythemia; 3. Preexisting renal failure or urine output <0.3ml/kg/hr for >6 hrs 4. Serum creatinine (day1,2), UCysC, besides routine biochmistry done. eGFR calculated by standard MDRD formula. AKI diagnosed by RIFLE criteria. Patients developing AKI compared with those who did not. Statistical analyses done.

Results: 83 patients - 57 males and 26 females. 36(43.3%) patient6s developed AKI and 47(56.6%) did not. Causes of AKI were sepsis(30.5%), acute liver disease(11.1%). Acute pancreatitis(8.3%), rhabdomyolysis(5.5%) and TB abdomen(5.5%) were the other causes of AKI(Fig.1).

The day 1 mean UCysC was 150 ng/l and 61 ng/l in AKI and non AKI group respectively.
Day 1 UCysC(p=0.001) day 3 serum creatinine(p=0.001), showed significant differences between the AKI and Non-AKI groups. Age, sex, underlying disease and other parameters were not different between the groups(Table 1).

Conclusions: Role of UCysC as marker of tubular injury and early biomarker of AKI was investigated. Day 1 UCysC concentration was elevated in AKI groups(150ng/l vs 61ng/l) which was statistically significant(p<001). Serum creatinine levels (day 1,2) and other parameters were not sensitive. Multicentric studies are warranted with larger sample size with fewer comorbidities.

Fig1

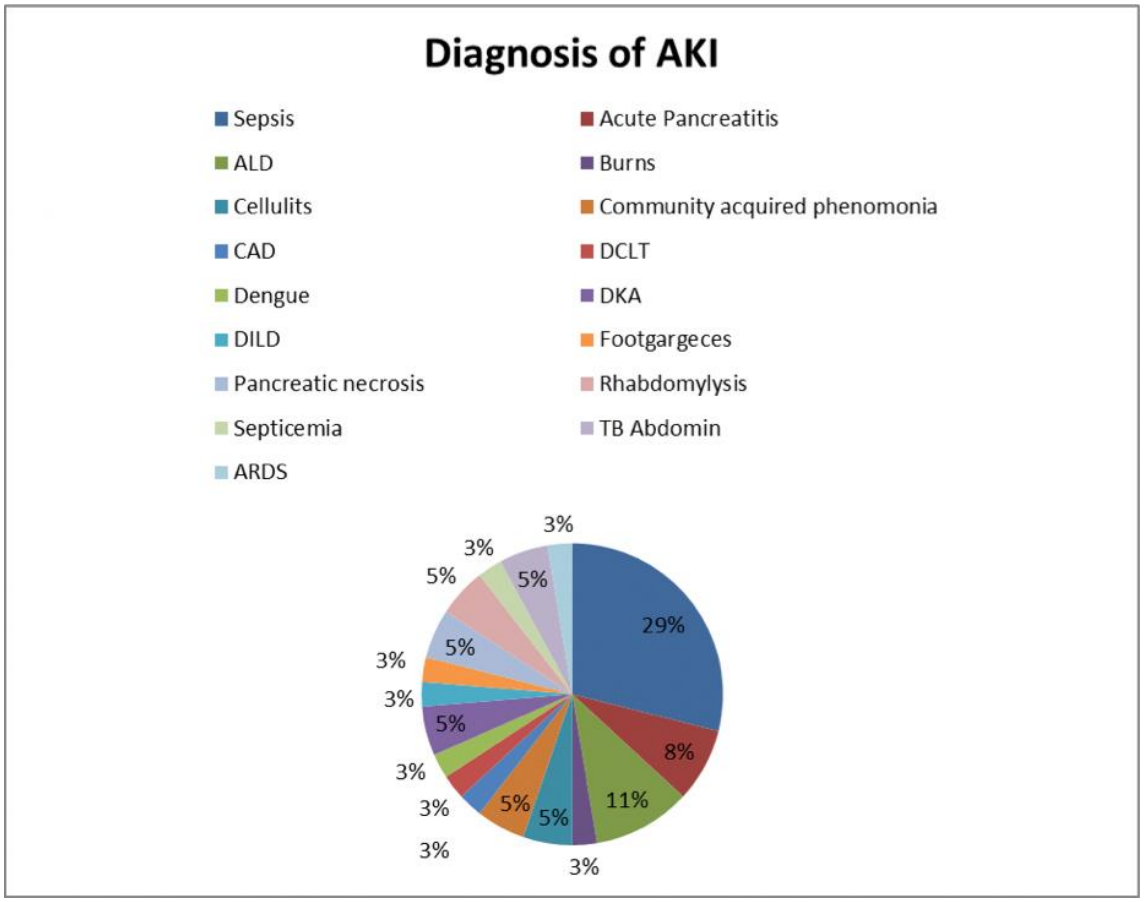

Table1

Characteristics	Non-AKI (N=47) Mean ± SD	AKI (N=36) Mean ± SD	p- Value
TC	13572.1 ± 5195.7	14980 ± 4672.8	0.198
Sodium (mmol/l)	135.5 ± 4.13	134.3 ± 5.9	0.3
Potassium (mmol/l)	4.1 ± 0.89	3.9 ± 0.58	0.267
Calcium Carbonate (mg/dl)	103.2 ± 4.1	105.1 ± 8.69	0.237
Bicarbonate (mmol/l)	23.6 ± 3.7	22.0 ± 8.3	0.083
HB (g/dl)	11.0 ± 2.5	12.06 ± 2.3	0.519
Creatinine day 1 (mg/dl)	0.8 ± 0.2	1.0 ± 0.17	0.080
Creatinine day 3 (mg/dl)	0.7 ± 0.31	1.73 ± 0.36	0.001
Urine Cystatin C (ng/µl)	**61.0 ± 20.6**	**150.4 ± 42.0**	**0.001**

p-Value; t-test