Abstract

Introduction: Acute kidney injury (AKI) is a very common problem in critically ill patients. It represents a significant and devastating problem in clinical medicine. AKI in critically ill patients is associated with prolonged mechanical ventilation, a longer ICU stay, and increased rates of readmission . Often AKI manifests as a transient rise in serum creatinine and is managed conservatively; however a group of patients often with significant co morbidity require temporary renal replacement therapy. Serum creatinine, the currently accepted 'gold standard' to diagnose AKI, is a delayed and inadequate marker of acute changes in renal function. In AKI, serum creatinine elevation that reflects the development and severity of kidney damage does not occur until days after renal tubular injury has Begun. NGAL was identified as a 25-kDa protein bound to gelatinase from neutrophils .Early recognition of AKI based on NGAL may facilitate earlier and thus more cost-effective treatment than standard strategy . Sepsis is an important precipitant of AKI. Septic AKI carries a poorer prognosis with lower survival when compared with AKI of non-septic origin. Septic AKI may be associated with higher rates of renal recovery. Considering these differences, the early identification of primarily septic from non-septic AKI may have clinical relevance and prognostic importance. Septic AKI may be characterized by a distinct pathophysiology that differs from ischemic/toxic-induced kidney injury .These events may be reflected in unique patterns of plasma and urine biomarkers in septic AKI .As a consequence, the application of traditional urinary biochemical and microscopy-based tests in the early diagnosis and differentiation of AKI may be misleading in septic AKI.The picture in critically ill septic patients was somewhat less clear, since sepsis is an important inducer of blood and urinary NGAL expression even in the absence of changes in creatinine. In sepsis, NGAL originates not only from the injured kidney but also from leucocytes and liver.

Objective The aim of the study was to elucidate the role of plasma and urine NGAL as early marker of acute kidney injury in septic patients.

Subject and methods: The study included 40 patients with severe sepsis and septic shock followed up clincially and by laboratory data then they divided into AKI group and NON AKI group according to the RIFLE criteria.

Result :AKI was diagnosed in 17 patients (42.5 %) of the studied group. the current study found that patients with AKI had significantly higher frequency of positive isolated organisms when compared with patients without AKI. In respect to NGAL levels, we found significantly higher plasma and urinary NGAL levels at baseline and at 12 hour follow up period in patients with AKI when compared with patients without. In the present study regarding relation between serum and urinary NGAL values by timing of AKI showed that, serum NGAL at baseline and at 12 hour period values. they were higher among patients who had AKI at 12 hour; the mean measurement(391.3, 259.3 ng/ml respectively) ($p=<0.001$) than patients who developed AKI within 24 hour mean(202,286.5ng/ml respectively),whereas those who developed AKI within 48 hour had mean of(164.8, 142.2ng/ml respectively). In our study both serum and urinary NGAL were a good predictor of AKI. The ability of serum NGAL at the baseline and 12hour follow up period to predict AKI in patients with sepsis showed AUC-ROC (0.82, 0.80 respectively), Sensitivity (82.4%, 82.4% respectively) and specificity (73.9%, 60.9% respectively).The ability of urinary NGAL at the baseline and 12hour follow up period to predict AKI in patients with sepsis showed AUC-ROC (0.79, 0.82 respectively), Sensitivity (76.5%, 60.9% respectively) and specificity (73.9%, 78.3% respectively).Patients with AKI had significantly higher APACHE II and SOFA scores. AKI patients had significantly higher mortality rate and longer length of

hospital stay when compared with patients without AKI. In the present study, patients with AKI had significantly higher frequency of administration of vasoactive drugs and use of RRT

Conclusion and Recommendations:-

In conclusions, plasma and urinary NGAL maybe considered as early predictors of AKI in septic patients .. Further studies are recommended using large number of patient**.**

Keywords : NGAL , AKI , septic patients ,RRT