

Background:

Urinary neutrophil gelatinase-associated lipocalin (NGAL) is a novel, sensitive and specific biomarker that is rapidly released after kidney injury. It predicts acute kidney injury (AKI) in multiple clinical scenarios. We hypothesized that urinary NGAL can predict AKI after circulatory shock in intensive care unit (ICU).

Methods:

Urine was collected in 45 patients whom presented with circulatory shock during their ICU stay to estimate urinary NGAL level during the first 6 hours following shock and after 24 hours using enzyme linked immunosorbent assay technique (ELISA). Out of the 45 patients; 11 responded to fluids infusion and/or vasopressors and were considered as a separate control group. AKI was defined by acute kidney injury network criteria – Stage 1 (increase of serum creatinine by > 0.3 mg/dl).

Results:

Our results confirm that urinary NGAL at day 1 was considered as early predictor of AKI presented at day 2 & 3 (P value < 0.05 , < 0.001 respectively) and urinary NGAL at day 2 was considered a good predictor of AKI presented at day 3 & 4 (P value < 0.001 , < 0.001 respectively).

The best cut off value of urinary NGAL at day 1 was 26 ng/ml at which sensitivity was (62%, 69%) and specificity was (75%, 80%) for prediction of AKI presented at day 2 & 3 respectively, while the best cut off value of urinary NGAL at day 2 was 29 ng/ml at which sensitivity was (70%, 74%) and specificity was (90%, 80%) for prediction of AKI presented at day 3 & 4 respectively.

There were no significance correlations of urinary NGAL with conventional kidney parameters while there was only a significant correlation of urinary NGAL at day 1 & 2 inversely with corresponding UOP in patients group (P value < 0.05 , < 0.001 respectively).

In our study, urinary NGAL at day 2 could predict mortality complicating AKI better than urinary NGAL at day 1 (P values are < 0.05 , 0.00 for urinary NGAL at day 1 & 2 respectively).

Conclusions: We conclude that urinary NGAL is a good early predictor of AKI following shock and urinary NGAL at second day following shock could predict mortality complicating AKI.

(Keywords): – Neutrophil gelatinase-associated lipocalin (NGAL).
– Acute kidney injury (AKI). – Shock.
– Urine output (UOP).

