

## Abstract

**Background**— Changes in kidney function in heart failure patients convey important prognostic information. We investigated the role of the urea-to-creatinine (BUN/Cr) ratio and subsequent declines in kidney function in acute decompensated heart failure patients, the fractional excretion of urea (FeUr), and the fractional excretion of sodium (FeNa) also be investigated.

**Methods and Results**— We prospectively enrolled adult patients with ejection fraction (EF)<40% at ICU units and measured serial measurements of laboratory values from June 2015 to march 2016. The study outcome was changes in the estimated glomerular filtration rate (eGFR). In 54 patients contributing follow-up outcome of ADHF, we found that The mean eGFR at baseline was  $57.58 \pm 13.92 \text{ mL min}^{-1} 1.73 \text{ m}^{-2}$ . The mean base line of BUN/Cr ratio, FeUr, and FeNa were  $50.13 \pm 5.69 \text{ mL/min}^{-1} 1.73 \text{ m}^{-2}$ ,  $37.42 \pm 5.18\%$ , and  $0.83 \pm 0.10\%$  respectively. Our study showed that there was a negative correlation between GFR1 and FeNa1, FeUr1. and there was a positive correlation between GFR1 and U-C Ratio1 however stat nonsignificant. There was a positive correlation between (GFR2 and FeNa 2) (P= 0.000), (GFR3 and FeNa3) (P = 0.000), and also between (GFR3 and FeUr3, U-C ratio3 (P = 0.000)). and there was a negative correlation between GFR2 and FeUr2 (P = 0.001), U-C ratio 2 (P = 0.008). In our study there was a non significant correlation between NYHA score and FeNa 2 & U-C ratio 2 but there was a significant correlation between NYHA score and GFR2 & FeUr2 also there was a highly significant correlation between NYHA score and GFR3, FeNa3, FeUr3 & U-C ratio3

**Conclusion**— In a prospective cohort of ADHF ,The BUN/Cr ratio is associated with worsening kidney function and adds incremental risk prediction information of ADHF . BUN/Cr ratio was highly associated with declines in eGFR and also FeNa and FeUr were. BUN/Cr ratio added incremental information regarding the risk of a decline in eGFR relative to traditional risk factors and is a simple and routinely available measure. External validation of the prognostic value of BUN/Cr ratio in other clinical centers is needed.

**Key Words** : Urea-to-Creatinine - acute decompensated heart failure .