Effect of cardioversion of atrial fibrillation in rheumatic heart disease on renal function

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**Introduction**: The effect cardioversion (CV) of rheumatic atrial fibrillation on renal function is unknown. To prospectively assess the renal function following CV in patients with rheumatic heart disease (RHD) with AF.

**Methods**: Renal parameters including serum creatinine, serum electrolytes were evaluated at baseline, daily for the duration of stay, seventh day, 30th day following CV. Acute kidney injury (AKI) was defined by a 2-fold increase in serum creatinine level (Cr<sub>2</sub>) or ≥ 50% decrease in estimated glomerular filtration rate (e-GFR<sub>50</sub>) from baseline as per RIFLE criteria. Patients who developed abnormal renal function post CV were monitored on a daily basis till the renal function stabilised. Patients with abnormal creatinine were called on weekly follow-up and serum creatinine and electrolytes were evaluated till they returned to normal. Predictors for the AKI were identified using multivariate analysis.

**Result**: From January 2018 to May 2019, 134 patients with mean age of 62.69 ± 9.3 years with M: F ratio of 1.79:1 underwent CV. The mean baseline e-GFR was 81.30 ± 23.31 ml/min/1.73 m<sup>2</sup> and at 24h was 78.68 ± 17.91 ml/min/1.73 m<sup>2</sup> in the overall population. AKI occurred in 17/134 (12.6%) patients at a mean of 2.39 ± 0.48 days post-CV. Pre-ibutilide CV (47.05%), Double valve disease (64.7%) and duration of AF is 78 ± 44 month in renal dysfunction group. The mean time to peak elevation of serum creatinine was 3.1 ± 1.06 days. Recovery of AKI was observed between 2nd week to one month with mean time of 17.8 ± 7.7 days. AKI was independently associated with prior use of diuretic (OR: 1.639, 95% CI: 1.309 – 2.688) (p=0.043), and prior abnormal renal function (OR: 1.512, 95% CI: 1.029 – 2.388) (p=0.041) on multivariate analysis. Persistence of AKI was seen in only 3/134 (2.2%) patients which recovered at 2 month with no patient requiring haemodialysis.

**Conclusion**: AKI following CV of rheumatic AF is seen in 12.6% patients. It is transient and recovers within 1 month in most of them. Abnormal baseline renal function, and use of diuretics pre-CV were significant predictors of AKI. Nephrotoxic drugs should be used with great caution in the aftermonth of CV.