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 as 2-fold increase in serum creatinine level (Cr2) or ≥ 50% decrease in estimated glomerular filtration rate (e-GFR50) 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)-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 m² and at 24h was 78.68 ± 17.91 ml/min/1.73 m² 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 ± 6.7 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 aftermath of CV.