



Clinical Outcomes of Cardio-renal Syndrome: A Retrospective Observational Study

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Abstract:

Introduction: Cardiorenal syndrome (CRS) is a spectrum of disorders wherein acute or chronic dysfunction of either the heart or kidneys leads to acute or chronic dysfunction of the other.¹ Robert Bright first described the relationship between the heart and the kidney among patients with chronic kidney disease (CKD).²

Methods: A retrospective study was conducted on all adult patients with cardiorenal syndrome admitted in a tertiary care centre between July 2017 to June 2019. Patients were divided into groups depending on the type of cardiorenal syndrome 1-5. Acute Kidney Injury (AKI) was defined using the KDIGO criteria and glomerular filtration rate (eGFR) was estimated using the CKD-EPI equation. Patient outcomes such as death, progression to chronic kidney disease (CKD) or complete renal recovery were recorded.

Results: Of 137 patients meeting the study inclusion criteria, 16.8%, 8%, 15.3%, 21.2% and 38.7% had CRS type 1, 2, 3, 4 and 5 respectively. The mean age of the population was 53.6 ± 12.3 years, with 57.7% being male. Among patients with CRS 1, the mean follow up period was 160.4 ± 54.8 days with a mortality rate of 8.7%, while 13% progressed to CKD. In patients with CRS 2, the mean duration from diagnosis of cardiac disease to diagnosis of CKD was 776.1 ± 292.9 days, while the mean follow up was 123.6 ± 60.6 days, with a mortality rate of 18.2%. The mean follow up duration in patients with CRS 3 was 110.8 ± 52.6 days, with 61.9% patients having dialysis requiring AKI, and a mortality rate of 9.5%. The mean follow up duration in patients with CRS 4 was 310 ± 154.6 days, with a mean duration from CKD diagnosis to CRS being 694.6 ± 421 days, mortality rate of 10.3%, and 69% being dialysis dependent. In CRS 5, the mean follow up was 144.6 ± 113.6 days, with a mortality rate of 39.6%, of which 61.9% were in-hospital deaths, while complete renal recovery was seen in 39.6%. There was significant difference in outcome based on CRS types ($p < 0.0001$), with CRS type-5 having higher in-hospital and short term mortality compared to other types. The major cause for cardiac dysfunction was congestive cardiac failure (73%), for AKI was pre-renal AKI (56.8%), for CKD was chronic interstitial nephritis (55%), and commonest cause for CRS type 5 was Diabetic nephropathy (54.7%). The distribution of age and eGFR was significantly different across the types of CRS. Mortality was significantly higher in patients with CRS type 5, dilated cardiomyopathy, elevated creatinine at onset and need for dialysis ($p < 0.05$ for all).



Conclusions: Patients with CRS type-5, elevated creatinine at onset and dilated cardiomyopathy have higher mortality compared to other types. Further long term studies are needed to better outline the long term outcomes, and also studies are needed to evaluate difference in outcomes compared to patients without CRS.

Biography:

Dr. Anvita Anne completed her MBBS from the prestigious Dr. Pinnamaneni Siddhartha Institute of Medical Sciences, India in July 2020 and is currently working as a public health practitioner in her hometown. She is interested in pursuing post-graduation in Internal Medicine in the USA. She has special interest in nephrology and teaching methods and presented many papers at international level. The recent conferences where her abstracts were selected include: 1. International Society of Nephrology- World Congress of Nephrology, 2020 (Ultrasound based assessment of the variations of internal jugular vein anatomy in relation to the common carotid artery). 2. Leadership in Healthcare conference, BMJ associated event, London, September 2020 (Turning adversity into opportunity: Undergraduate led improvisation in teaching methods). She has also sent many papers for publication, which are currently under review process.

Recent Publications:

1. Cardiorenal Syndrome: Classification, Pathophysiology, Diagnosis, and Treatment Strategies. A Scientific Statement From the American Heart Association. *Circulation*. 2019;139:e840-e878.
2. Bright R. Cases and observations illustrative of renal disease accompanied by the secretion of albuminous urine. *Guys Hospital Reports*. 1836: 338-400.

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