Impact of contrast media use during cardiac resynchronization therapy implantation for renal dysfunction

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Introduction: Renal dysfunction is often associated with chronic heart failure. It is well known that cardiac resynchronization therapy (CRT) improves renal function in long term outcome. However, the use of contrast agents during CRT implantation may worsen renal failure and also can cause contrast-induced nephropathy (CIN).

Methods: We analyzed 39 patients who underwent CRT implantation (mean age 69.7±14.2 years; 29 male; mean EF 27.6±9.1%; all patients in NYHA≧III). Normal saline started 12h before procedure with an infusion rate of 1ml/Kg of body weight per hour and be continued for 24h. CRT was implanted using standard technique and 20-40ml contrast was used to enhance the coronary sinus. Renal function was compared before and a day after CRT.

Result: Twenty-nine patients had stage3 CKD or greater: Stage3a was 12 (30.7%), stage3b was 10 (25.6%) and stage4 was 7 (17.9%). Acute CRT responders (defined by increase in LVEF≧5% within a week after operation) were 43.5%. When analyzed based on the stage of CKD, there was significant improvement of renal function in stage3 CKD regardless of acute CRT responder. eGFR showed a trend towards ameliorated even in stage4 CKD (Table1). Furthermore, there was no CIN.

Conclusion: There was no worsening renal function with the use of <40ml contrast during CRT implantation in patients with advanced renal dysfunction.