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Regadenoson use in patients with end-stage renal disease: Single center experience

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Background: Regadenoson has become the most commonly used vasodilator agent for pharmacologic myocardial perfusion imaging (MPI). Early trials of regadenoson excluded patients with end-stage renal disease (ESRD).

Methods: We identified 799 consecutive patients who underwent pharmacologic stress MPI using regadenoson over a one year period at our institution. Stress MPI was performed with intravenous bolus injection of 0.4 mg of regadenoson. Patient demographics, clinical variables, hemodynamic data, symptoms during the test, aminophylline use for reversal of side effects, MPI results and left ventricular ejection fraction (EF) from gated myocardial perfusion images were analyzed. These variables were compared between patients with ESRD and those without (control).

Results: A total of 208 (26%) patients had ESRD. ESRD were younger (55 ± 13 vs. 63 ± 12 ; $p < 0.0001$). Cardiovascular evaluation for renal transplant was the most common indication (83%). ESRD had a higher resting systolic blood pressure (SBP) (152 ± 26 mmHg vs. 143 ± 23 mmHg; $p < 0.0001$) and a greater reduction in SBP with regadenoson (7 mmHg vs. 3 mmHg; $p = 0.017$). Heart rate increase with regadenoson was higher in the control group (27 bpm vs. 21 bpm; $p < 0.0001$). 39% of patients in the control group had tachycardic response compared to 31% in the ESRD group ($p = 0.036$). Shortness of breath, dizziness, headache, chest discomfort and arrhythmias were similar between the two groups. Patients with ESRD experienced more nausea compared to the control. None had sustained ventricular tachycardia or high degree AV block. Aminophylline use was similar between the two groups. There were no serious adverse events. ESRD patients had a lower rate of abnormal MPI (3% vs. 8%; $p = 0.0044$) but similar left ventricular ejection fraction ($62 \pm 12\%$ vs. 63 ± 15 ; $p = 0.17$).

Conclusion: ESRD comprises a significant proportion of patients undergoing radionuclide MPI using regadenoson. Regadenoson is safe and well tolerated in ESRD with minor differences in symptoms and hemodynamic profile as compared to the control group. Lower rate of abnormal MPI in ESRD may be attributed to younger age and selected subset of patients considered for renal transplant.

Biography

Mahek Shah did his Medical Graduation at Seth GS Medical College, India. And after he moved to US and he is currently doing his Internal Medicine resident at Einstein Medical Centre, Philadelphia. His main research area is Cardiology and he had done many projects in Cardiology during his training period.

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