Electrocardiographic changes after TAVI: experience from a tertiary care centre in North India.

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Introduction: Transcatheter aortic valve implantation (TAVI) has become an accepted and evidence-based alternative to surgical aortic valve replacement in an increasing group of patients with aortic valve stenosis. With increasing indications TAVI volume is increasing. Hence, the complications and long-term outcomes after TAVI are becoming more important. Data about electrocardiographic changes and their long-term effects on outcomes is scant and evolving. In this study we aim to retrospectively analyse the post-procedural electrocardiographic changes in patients who underwent TAVI at our centre.

Methods: The study was done as a single centre observational retrospective analysis from hospital records of patients who underwent TAVI from Aug 2017 to May 2019. 12-lead ECGs at baseline, within 24 hours, and at discharge was analysed by a cardiologist (an EP fellow). The presence of conduction abnormalities such as first, second or third degree atroventricular block, right bundle branch block (RBBB), LBBB, left anterior hemi-block (LAHB) and left posterior hemiblock (LPHB) were recorded according to the established criteria. The demographics, clinical, echocardiographic and procedural characteristics of TAVI were also noted.

Result: Records of 50 consecutive patients were analysed. The mean age was 73.0 ± 9.9 years and 60% were males. All patients had degenerative aortic valve stenosis except two patients; one with a degenerated bioprosthetic valve and another with bicuspid aortic valve. The mean size of prosthesis used was 26.0± 3.1 mm. Post dilation of prosthesis was done in 24% patients. All patients were in sinus rhythm before the procedure except one having atrial fibrillation. New onset conduction abnormalities were found in 7 (14%) patients with CHB in 3 (6%), new-onset LBBB in 1 (2%), IVCD in 1 (2%), bifascicular block in 1 (2%), and LAHB in 1 (2%) patient. Out of the three patients who developed CHB post procedure, two had pre-existing RBBB+LAHB and one had LBBB. Two of these patients had Sapien-3 and one had Evolut R valves implanted. The mean valve size in patients with new onset conduction abnormalities was 28.8± 2.9 mm as compared to 25.5± 2.9 mm (p= 0.014) in those without. Patients undergoing postdilation of valve had an incidence of 18.2% of new onset conduction abnormalities as compared to 12.5% in those who did not undergo postdilation (p= 0.637). The median length of stay for patients requiring pacemaker implantation was 7 days as compared to 5 days in those not requiring permanent pacing (p= 0.322).

Conclusion: Significant number of patients develop new onset conduction abnormalities after TAVI. These carry clinical implications if patients develop complete heart block requiring permanent pacemaker implantation, increasing the overall hospital stay and expense. Whether other conduction
abnormalities are of prognostic value, remains to be seen on long term follow up.