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Electrocardiographic and clinical predictors for permanent pacemaker requirement after transcatheter aortic valve implantation: a 10-year single center experience

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Background: As transcatheter aortic-valve implantation (TAVI) procedures have increased, the need of a permanent pacemaker (PPM) is a complication to be taken into account.

Objective: The aim of this study is to identify clinical, electrocardiographic (ECG) and procedural predictors for PPM requirement after TAVI.

Methods: The present is a single centre, retrospective study. All consecutive patients with severe symptomatic aortic stenosis who underwent TAVI had continuous ECG monitoring. Pre and post TAVI 12-leads ECG were analysed. We arbitrarily divided the patients into early and late PPM implantation (beyond the 3rd day after TAVI). The primary endpoint of the study was to identify electrocardiographic predictors of PPM implantation after TAVI, and the secondary endpoint was to identify other clinical or procedure-related predictive factors.

Results: Of 431 patients who underwent TAVI, 77 (18%) required a PPM, and 30 (7%) had late PPM implantations. Pre-operative RBBB implies more than five-fold increase of the risk of PPM implantation after TAVI (OR 5.43, CI 2.11 - 13.99, P = 0.000), whereas the history of syncope is associated with a two-fold increase of the risk (OR 2.00, CI 1.01 - 3.96, P = 0.044), and maintains its predictive value also in the late PPM subgroup (OR 2.76, CI 1.11 - 6.82, P = 0.028).

Conclusions: It is hard to predict the need of a PPM in the individual patients, but careful evaluation of pre-operative 12-lead ECG looking for pre-existing RBBB and an history of syncope, can individuate the group of patients with an increased risk of PPM requirement.