Pacemaker dependency after transcatheter aortic valve implantation: incidence, predictors and long-term outcomes

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Background
Pacemaker implantation (PPI) after transcatheter aortic valve implantation (TAVI) and its consequence remains an issue of debate in real-setting practice. To date, few studies reported on PM dependency after TAVI exploring small samples of patients.

Methods
From June 2007 to February 2018, 1116 consecutive patients without prior PM underwent TAVI in our Institution, receiving both self- and balloon-expandable valves. We assessed incidence and predictors of PM dependency of in-hospital survivors who underwent PPI within 30 days at 1-, 6- and 12-month follow-ups. Long-term (6-year) outcomes among patients who underwent and did not undergo PPI at 30 days.

Results
At 30-day PPI was reported in 141 patients (11.4%). Rates of PM dependency were 35.7%, 35.8% and 33.3% at 1-, 6- and 12-month, respectively. Analysing the timing of PPI, implantation on day 1 was found a predictor of PM dependency at 6 months (OR 20.7 [CI 3.4-126.7]; p=0.001) and 12 months (OR 7.5 [CI 1.4-40.2]; p=0.019). An interaction between PM dependency and the presence of baseline right bundle branch block (RBBB) at 6 months (pinteraction=0.024) and 12 months (pinteraction=0.028) was reported when PPI was performed on the same day of TAVI. At 6-year, patients who received a PM at 30 days showed a higher all-cause death rate (KM estimate 41.7% vs. 57%; plog-rank=0.034), with a major impact within PM dependent patients (KM estimate 28.3% vs. 49.1%; plog-rank=0.068).

Conclusion
Among patients receiving PPI after TAVI, PM dependency rates were about 33-36% at 1-year. Patients experiencing severe conduction disturbances (CD) persisting for 24 hours had higher chances to be PM dependent if PPI was carried out at day 1 after TAVI or even at day 0 only if baseline RBBB was present. Patients with severe CDs and no RBBB undergoing same-day PPI, and patients with transient or intermittent CDs undergoing PPI after day 1 had higher possibilities to be found PM not-dependent at follow-up. Finally, PPI after TAVI was associated with increased 6-year mortality, particularly in patients who were PM dependent.