Relationship Between Membranous Septal Length and the Risk of Cardiac Conduction Disturbances in Patients Who Have Undergone Transcatheter Aortic Valve Replacement

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Introduction: Complication rates of transcatheter aortic valve replacement (TAVR) have decreased. However, new-onset conduction disturbances (CDs) are still common and the incidence of CDs is said to be higher for patients with a self-expandable valve (SEV) than for those with a balloon-expandable valve (BEV). We examined the occurrence of CDs and related factors for both types of valves.

Methods: Among 190 consecutive patients who underwent TAVR, 127 (mean age, 85.5 ± 5.4 years; 98 females; 56 SEVs) were included. Cardiac CDs, defined as new-onset complete left bundle-branch block or the need for permanent pacemaker implantation, were assessed at the time of discharge.

Result: Thirty patients had new-onset CDs after the procedure, and the incidence of CDs tended to be higher in patients with a SEV (28.5% for SEV and 19.7% for BEV, p=0.24). The cutoff value of the area under the curve (AUC) for the membranous septum (MS) length was not different between SEV group (cutoff value, 6.3 mm; sensitivity, 0.81; specificity, 0.62; P<0.001) and BEV group (cutoff value, 6.4 mm; sensitivity, 0.92; specificity, 0.63; P<0.001). A multivariate analysis showed that the incidence of CDs was associated with MS length as a pre-procedure predictor (odds ratio [OR], 0.41; 95% confidence interval [CI], 0.27–0.63; p<0.001) and with ΔMSID (defined as the difference between MS length and implantation depth) as a post-procedure predictor (OR, 0.46; 95%CI, 0.33–0.63; p<0.001), but it was not related to the type of valve (OR, 0.85; 95%CI, 0.18–4.1, p=0.83).

Conclusion: MS length is a useful predictive factor for CDs, regardless of the type of valve. Pre-procedural computed tomography assessment of MS anatomy could potentially reduce the risk of CDs.