Abstract: P2275

Left-sided deviation and fibrous-fatty infiltration of the right bundle branch in the elderly: implication for transcatheter aortic valve implantation (TAVI) procedure

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Topic(s):
Valvular Heart Disease: Intervention

Citation:

Introduction: Permanent and irreversible damage to the conduction tissue is one of the most common complications of TAVI. Detailed knowledge of the anatomy of the atrioventricular (AV) bundle is crucial to minimize the potential for injury to the His bundle branch block or complete AV block.

Purpose: Preexisting anatomic location and damage of the right bundle branch (RBB) may have important unrecognized clinical implications.

Methods: The myocardial arrangement and the presence of fibrous and fatty tissue infiltration of the AV conduction axis and right bundle branch were examined by dissection techniques and histological sections in 57 structurally normal human heart specimens (48 males, 77±7 years).

Results: The AV conduction axis enters the AV component of the membranous septum and is encircled by the fibrous tissue of the central fibrous body. The AV bundle is divided in a non-branching portion and a branching portion. After a short distance of the non-branching component along the septal crest, the RBB arises at the end of the branching portion of the conduction axis and is located superficially in the muscular ventricular septum. The RBB takes off from the bundle at the level of origin of the superior fascicle of the left bundle, passing then through the thickness of the ventricular septum to emerge beneath the medial papillary muscle of the tricuspid valve. In 22 hearts (49%) in which we found to have a relatively left-sided deviation of the AV bundle in relation to the interventricular membranous septum the RBB runs intramyocardial along the muscular interventricular septum. In the remaining 51% of the hearts the RBB runs subendocardially in the crest of the interventricular muscular septum. We found connective tissue and fatty infiltration along the right bundle branch in 23 hearts (40%) from its origin to its distal part. A significant correlation was found between age and the presence of RBB fibrosis (85% of hearts from individuals with age >80 years). These 2 conditions may make the RBB very vulnerable to self-expanding aortic valves during or after TAVI (figure).

Conclusions: The presence of an intramyocardial location of the RBB with a left-sided deviation and the fibro-fatty infiltration found in the majority of senescent hearts are relevant anatomic determinants that may increase the risk of complete AV block following a TAVI procedure.
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