Variations of myocardial approaches to the atrioventricular node in the posteroinferior atrioventricular junction

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Introduction: Although the microscopical characteristics of the atrioventricular node (AVN) have been well described since the discovery of the AVN in 1906, the muscular arrangements toward the AV node have not been fully elucidated.

Methods and Results: We examined 21 postmortem human hearts without any abnormalities (9 women; mean age 68.8±14.3 years). The posteroinferior AV junction including the AVN was removed and processed for histology. Sections were cut parallel to the septum. We assessed the myocardial arrangements from the atrial septum and the coronary sinus (CS) toward the AVN, and measured the dimensions between the AVN and the CS, and the circumference of the CS. We observed 3 patterns of myocardial approaches to the AVN: extension of myocardium from the atrial septum (Group A; n = 6); extension of CS musculature (Group B; n = 6); and both septal and CS musculature (Group C; n = 9). The distance between the AVN and the CS in Group A was significantly longer than in the other groups (mean 11.5±3.1 mm, 1.7±0.6 mm, 3.8±1.5 mm,

respectively; $P < 0.0001$), and the circumference of the CS in Group B was longer than in Group A (mean 31.1±7.9 mm*, 44.4±8.4 mm*, 33.7±6.9 mm, respectively; $P < 0.05$).

Conclusion: The myocardial approaches toward the AVN are variable in normal hearts. The location and size of the CS can affect the myocardial arrangements around the AVN.