The Change of Preferential Internodal Pathways during Sympathetic Stimulation

Hee-Sun Mun, Hye Jin Hwang, Hui-Nam Pak, Moon-Hyoung Lee, Boyoung Joung
Yonsei University Health System, Seoul, Korea

Background: The preferential internodal pathways (INP), which impulses travel from the sinus to the AV node (AVN), have been contested. This study evaluated the INP at baseline and during sympathetic stimulation.

Methods: Using 3-dimensional endocardial mapping, the conduction via INP and the earliest atrial activation site (EAS) were evaluated in 57 atrial fibrillation patients without sinus dysfunction (48 men, 54±12 years) during conscious anesthesia. Anterior, middle and posterior INPs were defined as the tracts travel via the Bachmann bundle, behind superior vena cava, and along the crista terminalis (CT) to the AVN, respectively.

Results: At baseline, the location of unicentric EAS (n=42) was superior, mid and inferior parts of the CT in 28, 14 and 0 patients, respectively. The fastest INP was anterior and middle INP in 28 and 14 patients, respectively. During the isoproterenol infusion of 7-10 μg/min, 52 patients had unicentric EAS. The anterior and middle INP was the fastest INP in 43 and 9 patients, respectively. All patients having the superior CT as the EAS at baseline (n=28) and during isoproterenol infusion (n=43) had the anterior INP as the fastest INP. No patient had inferior INP as the fastest INP.

Conclusions: The preferential INP was closely associated with the location of EAS. During sympathetic stimulation, the EAS was the superior CT, making the anterior INP as the fastest preferential conduction.

Keywords: preferential internodal pathway, sympathetic stimulation