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The impact of growth –related changes in the AV node on incidence of AVNRT in children

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Atrioventricular nodal reentrant tachycardia (AVNRT) is one of the common form of supraventricular tachycardia in adult population. The presence of dual AV node physiology is one of the key factors for developing AVNRT, because the existence of the two different pathways caused passive current generated from one to the other (electrotonic interaction), causing the prolongation of the effective refractory period in the fast pathway.

Meanwhile, the incidence of AVNRT is relatively uncommon in children. The relative frequency of AVNRT increases with age, suggesting an age-dependent anatomic or functional basis for the development of the tachycardia. It is known that the incidence of dual AV node physiology increases and the effective refractory period in the fast pathway prolongs with age. Those conditions are considered to increase the likelihood of inducing the tachycardia. Morphologically, the length of the rightward nodal extension, a possible anatomic substrate for the slow pathway, also increases with age. Therefore, it is speculated that the morphologic change in the rightward nodal extension brings about electrophysiologic conditions. To verify the hypothesis, we examined the correlation between the length of the slow pathway and the effect of the electrotonic interaction, and it demonstrated that the length of the slow pathway had a strong positive correlation with the effect of the electrotonic interaction. The result supported the idea that the prolongation of the rightward nodal extension had a strong impact on the incidence of AVNRT in children.

Biography

Satoru Takeno has graduated from Akita University School of Medicine in 2001. After receiving training for general pediatrics and pediatric cardiology, he completed his postgraduate study at Mahidol University, Thailand. He is an assistant professor at Kindai University, and engages in pediatric electrophysiology and catheter ablation.

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