Influence of Different Acid-Base Concentration on Cardiac Pacemaking Behavior in the Myocardium

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Objective: To investigate the effect of acid-alkali balance disorder on pacemaking of sinoatrial node in the myocardium.

Methods: by using a 2D anatomical model of the intact SA node and surrounding atrial muscle of the rabbit heart, which proposed by Zhang et al, the effect of the acid-base balance disorder on the pacemaking of SA node is investigated by computer simulation.

Results: The results show, on one hand, once the body showed acidosis or alkalosis and to a certain extent, it can be found, the pacemaking active block of sinoatrial node-atrium, verify the acid-base balance disorder can cause dysfunction of the cardiovascular system just like the clinical mentioned; On the other hand, using the model, found the different effect of pacemaking of sinoatrial node for different extent of acid- alkali balance disorder.

Conclusion: These results may contribute to the understanding about the effect of acid-base balance disorder on the complex cardiac system, and provide a theoretical guidance on the clinical diagnosis of angiocardiopathy.