**CARDIAC AUTONOMIC NERVE STIMULATION AND ATRIAL FIBRILLATION: EFFECT OF IN VIVO SIMULTANEOUS SYMPATHETIC AND VAGAL EXCITATION**

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The autonomic nervous system is believed to play an important role in atrial fibrillation (AF) pathophysiology. Vagal stimulation (VS) or sympathetic stimulation (SS) alone has been demonstrated to facilitate AF induction by premature beat or burst pacing. In vitro work has demonstrated that autonomic stimulation could induce triggered firing within pulmonary veins, implicating that simultaneous sympathetic and vagal nerve excitation could initiate AF. However, it remains unknown whether autonomic excitation alone is enough to initiate AF in vivo. We have examined the effects of VS, SS, or simultaneous VS+SS on spontaneous AF initiation in 8 dogs in vivo. VS was delivered to the right cervical vagus nerve and the stimulation intensity was titrated to decrease spontaneous sinus rate by 50%, which is known to facilitate AF induction when atrial premature beat or burst pacing is applied. SS was delivered to the right stellate ganglion and the intensity was adjusted to increase sinus rate by 50%. When autonomic stimulations did not trigger spontaneous AF, atrial burst pacing was applied to test AF inducibility. It was found that VS decreased heart rate from 109±8 bpm at baseline to 56±5 bpm (a reduction of 53 bpm, P<0.001). SS increased heart rate from baseline to 164±10 bpm (an increase of 55 bpm, P<0.001). SS+VS (concomitant sympathetic and vagal stimulation) resulted in a heart rate of 71±4 bpm (a reduction of 93 bpm from SS, P<0.001), confirming accentuated antagonism when both sympathetic and vagal nerves were excited. However, no spontaneous AF was triggered neither during VS, SS, nor SS + VS. When atrial burst pacing was applied, VS+SS increased AF inducibility to a similar level seen during VS alone. Thus, autonomic nerve stimulation itself cannot trigger spontaneous AF in healthy animals in vivo, though it does facilitate AF induction.