

n-3 (omega-3) polyunsaturated fatty acids prevent acute atrial electrophysiological remodeling.

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BACKGROUND AND PURPOSE: Recent reports suggest that n-3 (omega-3) polyunsaturated fatty acids (PUFAs) may reduce atrial fibrillation (AF). Reduction of the atrial effective refractory period (ERP) is believed to be an important early remodeling event that favors the development and perpetuation of AF. We hypothesized that n-3 PUFAs would attenuate early atrial electrophysiological remodeling in a canine model of acute atrial tachypacing. **EXPERIMENTAL APPROACH:** Adult dogs of either sex received n-3 PUFAs (n=6), n-6 PUFAs (n=6), or saline (n=6) infused over 1 h. After a stable ERP was established, treatment was initiated concurrently with 6 h of rapid atrial pacing (400 b.p.m.). Serial right atrial ERPs were measured during rapid atrial pacing, and induction of atrial tachyarrhythmias was attempted at the conclusion of each study. **KEY RESULTS:** There was no change in P wave duration or in the PQ, QRS, QT or QTc intervals in any of the treatment groups. N-3 PUFA treatment significantly reduced the shortening of atrial ERP, compared to both control groups (P<0.05). In separate experiments, the same n-3 PUFA infusion was given to dogs remaining in normal sinus rhythm. During sinus rhythm, n-3 PUFA infusion did not alter any electrocardiogram (ECG) parameter or the atrial ERP. **CONCLUSIONS AND IMPLICATIONS:** We conclude that acute n-3 PUFA treatment prevents acute atrial electrophysiological remodeling during high rate activity, which may minimize the self-perpetuation of AF.

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