THE EFFECTS OF DIGITALIS AND BETABLOCKER ON DUAL AV NODAL PATHWAYS AND CONDUCTION DURING INDUCED ATRIAL FIBRILLATION

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Introduction: Modification of AV nodal conduction by radiofrequency ablation (RFA) gives a variable reduction in heart rate. We wanted to test the efficacy of additional treatment with digitalis (ouabain) and betablocker (esmolol), to localize the drug effects to the fast, the slow or to the final common pathway. Induced atrial fibrillation (AF) in patients with dual AV nodal pathways was used as a surrogate model.

Methods and Results: AF was induced in 30 patients before and after slow pathway ablation. The patients were controls (group I) and examined pre RFA. Mean AF ventricular cycle length (AF CLmean) and shortest (AF CLshort) were recorded. In 10 patients slow pathway conduction was still present (group IIIB). Post RFA there was a 10% increase in AF CLmean and an 8% increase in AF CLshort, and compared to pre RFA, during isoproterenol infusion the increase in AF CLmean was 8%. After adding digitals to this increase in AF CLmean and AF CLshort post RFA were 35% and 19% respectively. Adding AF CL in group I and II after digitals and betablocker during isoproterenol infusion, the increase in AF CLmean was 36% and 45% respectively and 22% and 56% for AF CLshort (p<0.05 in all).

Conclusions: Slow pathway ablation reduces the ventricular rate during AF. Adding digitals and a betablocker during isoproterenol infusion decreases the AF ventricular rate substantially after ablation of the slow pathway compared to the control group. This suggests that the effect of betablocker on the AF ventricular rate during isoproterenol infusion is mainly mediated via the effects on the fast AV nodal pathway.

HEART RATE VARIABILITY IN PATIENTS WITH PAROXYSMAL ATRIAL FIBRILLATION

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Heart rate variability (HRV) is a powerful non-invasive tool for assessing the autonomic balance. It is well established that long chain n-3 fatty acids (primarily EPA and DHA) can improve heart rate variability (HRV) in patients (pts) at risk of sudden cardiac death. Furthermore, EPA and DHA have been successfully used to prevent episodes of paroxysmal atrial fibrillation (PAF).

In order to investigate if EPA and DHA improve HRV also in pts with PAF, 21 pts (9M and 12 F; mean age 66.9±14 years) underwent 24h Holter ECG monitoring at baseline, at 1-month and after a 6-month therapy with long chain n-3 fatty acids.

In conclusion, the use of EPA and DHA in pts with PAF does not seem to improve HRV, but a larger pool of pts is needed to achieve a better understanding.