Electrocardiographic markers of atrial cardiomyopathy predict ineffective cardioversion: a FinCV2 cohort study.

Authors:
A Relander¹, T Hellman², T Vasankari¹, I Nuotio², KEJ Airaksinen¹, T Kiviniemi¹, Turku University Hospital, Heart Center - Turku - Finland, Turku University Hospital, Department of Medicine - Turku - Finland,

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Background: Rhythm control using electrical cardioversion (CV) is a common treatment strategy for patients with symptomatic atrial fibrillation (AF). However, little is known about electrocardiographic (ECG) markers predicting CV failure and AF recurrence.

Methods: This study included 726 patients who underwent a CV for AF lasting >48h in a referral hospital. We analysed markers of atrial cardiomyopathy in post-CV sinus rhythm ECGs and compared them with CV failure and AF recurrence rates within 30 days after CV as well as their combination (ineffective CV). Of those with failed CV the most recent sinus rhythm ECG was used.

Results: CV was unsuccessful in 66 out of 726 patients (9.09%). Advanced interatrial block (IAB) defined as P-wave duration ≥120ms and biphasic morphology in inferior (II, III and aVF) leads (OR 3.96, 95%-CI 2.09-7.52, p<0.001) was an independent predictor for CV failure. Within 30 days after CV, AF recurred in 214 (32.4%) patients. Advanced IAB (OR 2.10, 95%-CI 1.19-3.72, p=0.011) was an independent predictor for AF recurrence. In total CV was ineffective (CV failure or AF recurrence) 280 of 726 times (38.6%). Advanced IAB (OR 2.72, 95%-CI 1.64-4.51, p=0.001) was an independent predictor for ineffective CV. Partial IAB categorized as P-wave duration ≥120ms with no biphasic morphology did not predict any end points.

Conclusions: Advanced IAB predicts CV inefficacy. This study identified ECG markers of atrial cardiomyopathy for clinical use in CV patient selection.