

Title: Is the intraatrial conduction delay induced by the cryoablation pulmonary vein isolation?

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Background: The isolation of the pulmonary veins is the target of AF ablation. The cryoablation lesions in the LA should disconnect the vein from the atrium on the atrial side of the orifices. We hypothesized, the isolation could result in prolongation of P-wave-duration.

The aim of the study was to assess the influence of PVI on P-wave-duration in 12-lead electrocardiogram.

Material and methods: The study included 58 patients divided into two separately assessed groups from two independent hospitals. The measurements were also taken by different doctors in order to stay as objective as possible. The first group included 29 patients (14 women, 15 men) aged 69.1 ± 7.1 , undergoing cryoballoon ablation. The other group consisted of patients with less advanced age, which allowed us to determine whether the P-wave duration after the procedure is dependent on this variable. There were 29 patients (5 women, 24 men) aged 56.0 ± 10.3 undergoing cryoballoon ablation. Measuring P-wave-duration, we used LABSYSTEM™ ProEP, magnifying the leads 64x. We calculated duration in simultaneously recorded 12-lead ECG, from the beginning of the earliest recorded P-wave deflection, until the end of latest P-wave-deflection in any lead.

Results: The results are presented in Table 1

Conclusions: Cryoballoon pulmonary veins isolation leads to the prolongation of the appropriately measured P-wave duration, however the clinical significance of the observed changes still remains unknown. It seems to result from conduction disturbances created by cryoablation, and it isn't likely to be an artifact since this phenomenon has been confirmed by two independent hospitals. The P-wave duration depends clearly on the age of the patients and not only it is shorter per se but the prolongation of the duration is also shorter in the younger group.

Table 1

	P-wave (ms)	Before	After	Significance* (p value)
Group I	N=29	144.8 ± 13.6	158.3 ± 14.5	$p < 0,05$
Group II	N=29	131.5 ± 19.5	140.0 ± 21.2	$p < 0,05$
Significance	P value	$p < 0,05$	$p < 0,05$	

* - periprocedural