Site localization of painful lesions during radiofrequency ablation of pulmonary veins using PVAC® multi-electrode catheter

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Background

-Previous data have demonstrated that pain sensation is relatively common during RF ablation of pulmonary veins (PVs) with an 8-mm catheter at 48W and 51ºC (1).

-No correlation was found between pain and location of esophagus, nor with generator power setting. Pain was more common in the left PVs.

- **Aim:** To characterize the site location of pain during RF ablation of PVs using the multi-electrode Pulmonary Vein Ablation Catheter® (PVAC®; Medtronic Ablation Frontiers).

(1) Alaeddini PACE 2007;30:1210-1214

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Methods

- A prospective study of 52 consecutive patients with atrial fibrillation (AF) who underwent pulmonary vein isolation (PVI) using PVAC® between July 2011 and November 2012.

- Patients were given conscious sedation using IV boluses of pethidine (12.5 mg), midazolam (1 mg), and propofol (20-40 mg bolus; 100 mg/h continuous drip), as needed.

-Each RF energy application was delivered simultaneously through 8-10 electrodes for one minute in a temperature controlled manner, with maximum power limit of 10W, a temperature range of 45-65°C and an energy mode of 2:1 bipolar to unipolar ratio, except for areas with close proximity to esophagus, where the ratio was 4:1.

-Site location of pain reaction was marked for each patient.

-Association of pain and PV size was analyzed in a subgroup of 30 patients with available PV angiograms.

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Results

-A total of 52 patients (58% men, 60±10 years, 78.8% paroxysmal AF, 5.7% redo PVI) were studied.

-47 patients (90.4%) had at least one lesion associated with pain during ablation.

-There was no significant difference in the dosage of pain medications between patients with versus those without pain (pethidine, P=0.4; dormicum, p=0.9).

-The distribution of pain was as follows: 91.5% LSPV, 6.4% LIPV, 6.4% RSPV, 2% RIPV.

-Pain was found in 31% of the largest PV (95%CI 15.3-50.8 p=0.061, Kappa=0.017).

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Conclusions

-Using PVAC® for PVI caused pain sensation more commonly in LSPV.

-There was no correlation between pain and PV size.

- Our findings are similar to PVI using an 8 mm ablation catheter, despite using a lower energy and a different pattern of energy application.

-Thus, location of pain is probably not catheter dependent but rather a reflection of autonomic physiology.