Migraine accompagnée after transseptal puncture

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Migraine has never been reported as a complication of transseptal puncture for ablation of atrial fibrillation. We studied its incidence before and after such procedures after observing some striking new migraine in several patients. A total of 8% of procedures for pulmonary vein isolation with a 15 Fr sheath used for transseptal puncture were associated with new headache with ocular symptoms or migraine within three months. Exacerbation of pre-existing migraine was reported in another 7% of procedures. More complaints were seen in redo procedures. The questionnaires were performed at three months after the intervention and there was no more evidence of persisting flow over the atrial septum at that time, when most complaints had already disappeared. This has important implications for follow-up after ablation for atrial fibrillation. (Neth Heart J 2010;18:374-5.)

Keywords: Atrial Fibrillation; Catheter Ablation; Migraine Disorders; Heart Septum; Punctures

A patent foramen ovale (PFO) has been associated with cryptogenic stroke and migraine.^{1,2} Closure of the PFO has been advocated by some to treat migraine if conventional therapy fails, but the real benefit remains unclear.² Today, an increasing number of cardiac interventions are done with transseptal puncture (TSP) of the interatrial septum. It is assumed that this puncture hole closes after the intervention. Most electrophysiologists use multiple sheaths through the septum to perform

pulmonary vein isolation. Migraine has never been reported as a complication of this procedure,³ but has been observed occasionally when TSP was used in conditions with a high right-sided pressure, creating a real right-to-left shunt.⁴ Nowadays, we treat paroxysmal atrial fibrillation (PAF) with pulmonary vein isolation, using a cryothermal balloon, inserted through a single 15 Fr transseptal sheath.⁵

Methods

The ablation procedure has been described in detail, and was followed with a structured follow-up of at least one year including a repeated questionnaire, to which all patients consented. Antiarrhythmic drugs, including β -blockers and anticoagulant drugs, were not changed from the pre-ablation dosages until month 3. During the regular medical check-up at three months after the procedure, we submitted 87 consecutive patients (58 male, 29 female; mean age 55 ± 10 years; persistent atrial fibrillation 11/87) to a systematic questionnaire (a copy of the questionnaire can be obtained from the author) on having de novo, or exacerbated migraine or headache with ocular symptoms as scotoma, before the formal consultation was continued. We did the same after 13 re-interventions (11 male, 2 female) performed with the same technique during this time frame. De novo patients with headache were sent to the ophthalmologist and the neurologist to confirm the diagnosis, and to exclude ocular problems and embolism. A further work-up was left to the discretion of the attending cardiologist, in agreement with the patient.

Results

The prevalence of previous migraine or headache with ocular phenomena, as shown in table 1, was 16%. This concerned nine male patients and six female patients, with a mean age of 52 ± 9 years. A total number of 15 patients reported new symptoms or exacerbations within three months. The patients with new symptoms (8% of the procedures) were four males and one female with a mean age of 46 ± 11 years. Exacerbations were almost as

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Table 1. Migraine or headache with ocular symptoms after pulmonary vein isolation.

Procedure type	Pre-existing	New	Exacerbation
First (n=87)	16	5	4
Redo (n=13)	3	3	3
Total (n=100)	16	8	7

common as de novo symptoms in the three months after ablation (7%). Symptoms occurred more often after a redo procedure ($p < 0.05$). Most complaints had disappeared when patients visited the outpatient clinic at three months after the ablation. 'Migraine accompagnée' was formally diagnosed in this way in one new patient, and in one with an exacerbation. Transoesophageal echocardiography, performed after three months in still symptomatic patients could not show a persistent hole with flow through the septum. One of the patients reported his symptoms spontaneously with a drawing of the ocular signs he had developed before he was interviewed (figure 1).

Discussion

This observation certainly contributes to the ongoing controversy on the association of a PFO and migraine. The time course and the repetitive character of exacerbation in some patients with a redo procedure were very convincing. It has to be noted that we only report on patients treated with a new cryo-ablation system with a 15 Fr sheath. We have observed headache during cryo-energy applications mainly at the left upper pulmonary vein as well, without a clear relation with the phenomena as described in this report.

We are aware that these results are not the result of data which were sampled with a questionnaire specifically designed to approach migraine in a scientific way, and we realise there is some bias after we had observed some patients with de novo headache. However, the questionnaires (based upon a validated screening test) were collected prospectively, and were part of a larger interview.⁶ The reported prevalence (16%) is in line with existing data in the general population.⁷ We believe this study should be repeated with a well-structured questionnaire based on the International Headache Society Criteria.

Further, we are now screening all our patients with intracardiac echocardiography at the end of the procedure to assess whether the puncture site still shows transseptal flow.

Figure 1. Drawing of a scotoma by a patient who developed visual phenomena preceding severe attacks of headache, after transseptal puncture for pulmonary vein isolation. Initially, the scotoma is small and centred in his visual field, to expand later and drift away to the lateral side of his vision over a course of 30 minutes.

Conclusions

We would like to emphasise that in the follow-up after isolation of the pulmonary veins for atrial fibrillation, attention should be given to the occurrence of migraine, ocular symptoms or headache. This is especially necessary after a re-intervention. This finding has consequences for the policy on anticoagulation after ablation. However, when studied at 3 months, no patients with manifest transseptal flow were detected. The higher occurrence of headache/migraine after a second procedure suggests that a scarred or previously damaged septum closes with more difficulties. Further neurological research on the effect of TSP in general, with the potential of silent embolism and stroke, is still needed. ■

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