Percutaneous Closure of Patent Foramen Ovale Performed Under Hypnosis: A Case Series

Cordone Stefano1, Bacino Luca1, Buscaglia Elisa1, Ghione Matteo1, Somaschini Alberto1, Cornara Stefano1,2, Matteo Astuti1, Pentimalli Francesco1, Broda Marta1, Botta Marco1, Marin Paolo2, Bellone Pietro1

1Cardiologia, Ospedale San Paolo, Savona, Italy
2Anestesia e Rianimazione, Ospedale San Paolo, Savona, Italy

Introduction

The presence of a Patent Foramen Ovale (PFO) could be one of the leading causes of left circulation thromboembolism. Recent studies confirmed that in selected subset of patients with embolic stroke of undetermined source, PFO closure could reduce the risk of new ischemic events on top of medical therapy [1,2].

Percutaneous closure of PFO is a procedure commonly performed in almost all cath-lab. The most used techniques is performed through femoral venous access and under guidance of Transesophageal Echocardiography (TEE). Pharmacological deep sedation and often general anesthesia with oro-tracheal intubation are necessary to allow a safe procedure with a continuous TEE guide. General anesthesia or deep sedation are not completely free from complications.

Over the last years, the clinical use of hypnosis for analgesic and sedative purposes has showed important benefits [3].

Cases

In this Article, we would like to present a case series of six patients which underwent PFO percutaneous closure admitted at the Emergency Department from October 2020 and November 2021.

A cerebral Magnetic Resonance Imaging was performed in all patients and all showed an ischemic lesions. The neurologist confirmed the diagnosis of ischemic stroke. In all patients a weekly Holter electrocardiography monitoring excluded cardio-embolic arrhythmias such as atrial fibrillation. Transcranial Doppler detected the presence of a right to left shunt. Transesophageal Echocardiogram (TEE) confirmed the presence of a Patent Foramen Ovale (PFO) in all patients and an atrial septal aneurysm was documented in four of them. Multidisciplinary team evaluation judged the PFO as the most likely cause of recurrent ischemia, thus, the indication to PFO percutaneous closure was given. The possibility of hypnотic analgo-sedation was offered to and accepted by the patient. Patients were prospectively assigned to Group A and Group B in a sequential, prospective 1:1 ratio. No pre-procedural tests were used to identify patients more suitable for hypnosis. In Group A patient were treated with hypnотic induction and analgo-sedation if necessary and Group B treated with analgo-sedation only. A multidisciplinary team of interventional cardiologists, echocardiographists and anesthesiologists performed the intervention. Hypnotic status was induced by a cardiologist with certified and experienced hypnology education. Fluoroscopic guidance was used together with TEE monitoring. In all patients an Amplatzer PFO Occluder St.Jude-Abbott was delivered through percutaneous right femoral approach. Before the procedure, the patients qualified their pain and anxiety status using the pain and anxiety scales (figure 1). The hypnologist induced hypnotic status using internal focusing technique. Firstly, the patients focused attention on our breath, the hypnologist then gave to the patient’s suggestions aiming to lower critical thinking and leading mind toward a pleasant situation. At the end of induction total muscle relaxation was obtained. Hypnotic conditioning allowed the patients to lose attention towards the TEE probe and to tolerate all the procedure. Local xylocaine was injected in the groin region to allow percutaneous right femoral venous approach.

In all Group A patients, no other local or systemic anesthetic or sedative drug had been administered throughout the procedure. In Group B conventional anesthetic drugs according to our anesthetic protocol was used (Table 1). With regards to antithrombotic and anti-platelets therapy, intravenous heparin (100 UI/kg) was administered during the procedure and acetylsalicylic acid (100 mg) and Clopidogrel 75 mg were administered with the indication to be continued for six months according to our local protocol. At the end of the procedure the patients qualified their pain localized in the femoral region and their anxiety on the respective scales (figure 2). The anxiety state of pre-treatment period was similar in two groups, and obviously reduced in post-treatment phase, but the patients induced with hypnotic state had a more significant reduction of the anxiety state and pain compared to control Group. The following day, all patients induced with hypnotic state reported a pleasant memory of the procedure.

Table 1: Anesthetic drugs used during the procedural in Group A (hypnosis), and Group B (analgo-sedation).

<table>
<thead>
<tr>
<th>Drug Somministration</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam (mg)</td>
<td>0</td>
<td>8,3 ± 2,8</td>
</tr>
<tr>
<td>Fentanyl (mg)</td>
<td>0</td>
<td>0,1</td>
</tr>
<tr>
<td>Propofol (mg)</td>
<td>0</td>
<td>253 ± 26</td>
</tr>
</tbody>
</table>

Conclusion

To the best of our knowledge, this is the first case series of PFO closure under hypnotic analgo-sedation. This approach appears promising as it can lead to a more positive experience for the patient and it is considered as an adjunctive analgo-sedative technique which could reduce the use of conventional drugs.

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Keywords
Transesophageal Echocardiography; Anesthesia; Ischemic Stroke; Acetylsalicylic Acid; Echocardiographists

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*Corresponding author
Cornara Stefano, Ospedale San Paolo, Via Genova 3017100, Savona, Italy.
Phone: +390198404709.

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Declarations

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