

Preface

Patent Foramen Ovale: No Longer an Innocent Remnant of Fetal Circulation



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Guest Editors

Approximately 25% of the general population has a patent foramen ovale (PFO); that percentage is higher in those younger than 35 years of age and less in those older. The absolute number varies depending both on the series and on the method used to diagnose the PFO and whether it is an autopsy series. In the vast majority of people with PFO, there is absolutely no consequence to this anatomic variant of normal. However, in some the PFO may be the pathway through which thrombotic emboli, air emboli, desaturated blood, and vasoactive substances are shunted and enter the left atrium without traversing the pulmonary circulation. Paradoxical emboli clearly play a role in the development of stroke. In other patients, the PFO has a role in the pathophysiology of hypoxia. Clearly however, the major clinical problem has been the striking association of PFO with stroke in young and middle-aged people. Hence the challenge in both daily practice and in the design and conduct of clinical trials is to determine which patients with PFO are at risk for either initial or recurrent stroke and then to try to prevent it.

While it has become clear that some PFOs should be closed, it is just as clear that not all PFOs should be closed as a prophylaxis against stroke. For those individuals who have experienced recurrent cryptogenic stroke despite optimal medical therapy and PFO, the advice

is clear: PFO closure should be strongly considered, either surgically, or more recently, by percutaneous methods. For those individuals with first-time stroke, no other clear cause (ie, cryptogenic), and PFO, the choice of treatment is much less clear. Our goal in this issue of the *Cardiology Clinics* is to shed some light on the latter group of patients; however, complete certainty with regard to treatment will not be within reach until the unveiling of studies that truly randomize patients to closure versus an accepted medical regimen. It is also disconcerting that even experts in the field cannot agree on the best medical regimen.

Next, with regard to percutaneous methods, the state-of-the-art approach to this method of closure of PFO will be discussed in some detail. The procedure involves skill sets not common in the adult interventional cardiology community. The procedure has been developed and refined through collaboration between pediatric and adult interventional cardiologists. The procedure should be performed with a very small risk of complication and a high degree of successful and complete closure of the PFO.

There are intriguing hematologic associations with stroke and PFO and indeed, PFO may be only a necessary but not sufficient reason for stroke in these patients. Hypercoagulable diseases and other measureable tendencies toward

intravascular thrombus formation have been discovered in the past few decades. The hematologist has become an important part of the professional team evaluating individual patients and designing clinical trials to better understand the pathophysiology of thromboembolic clinical syndromes such as PFO-associated stroke.

Anatomic variations and the “tunneling” affect of the PFO may also be a nidus for thrombus development. The role of echocardiography is central in studying PFO, especially transesophageal and intracardiac echocardiography, because it can characterize PFO physiology, the septum secundum and primum, and associated structures such as the Eustachian valve and Chiari network. Image guidance of percutaneous implantation of PFO closure devices is typically by a combination of fluoroscopy and ultrasound.

Finally, PFO has relevance in other medical conditions, particularly migraine headache,

platnypnea-orthodeoxia, and the decompression sickness of divers. We suspect that readers will be enticed by the discussion of these rather unique situations.

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