EDITORIAL COMMENT

Some Air for Closure of the Patent Foramen Ovale*

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The patient is 56 years old. He likes sports, in particular deep-sea diving. After 2 decompression incidents, he was worked up by a cardiologist and a patent foramen ovale (PFO) was found. Incidentally, he mentioned that he has been increasing his breath during physical exercise. The PFO was closed (Fig. 1) in an outpatient procedure, and the next day, already, he enjoyed an improved exercise capacity when jogging. This effect proved to be sustained and diving has remained uneventful since.

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It has been known but hardly discussed that a PFO can not only produce systemic arterial desaturation in elderly people sitting upright (platypnea-orthodeoxia) but also during exercise as in the patient described. What has not been known but is nicely shown by Devendra et al. (1) in this issue of JACC: Cardiovascular Interventions is that it may do so much more commonly than previously thought. The investigators found provoked exercise desaturation in every third patient. This percentage depends heavily on the indications for PFO closures and the referral pattern and appears much smaller in our personal experience. Nonetheless, it adds to the already lengthy list of possible indications for PFO closure (Table 1).

The focus around PFO closure has always concentrated too much on patients with prior stroke or transient ischemic attacks. Notwithstanding, these are the most devastating problems a PFO can mediate and their issue may be lethal. However, paradoxical myocardial infarction may also bring about death and severe disability.

The reticence to implant a device into the middle of the heart just for preventive reasons is understandable and has recently grown when the results of the yet unpublished CLOSURE I (A Prospective, Multicenter, Randomized, Controlled Trial to Evaluate the Safety and Efficacy of the STARFlex Septal Closure System vs. Best Medical Therapy in Patients with Stroke or Transient Ischemic Attack due to Presumed Paradoxical Embolism through a Patent Foramen Ovale) trial failed to prove an advantage of PFO closure over medical therapy during the first 2 years of follow-up. This may change should one or both of the controlled randomized trials on that topic that are expected to be published next meet their primary endpoints of superiority of PFO closure over medical treatment. The PC-Trial (Patent Foramen Ovale and Cryptogenic Embolism) (NCT00166257) is in the analysis phase and encompasses roughly 400 patients followed-up for a minimum of 2 and a maximum of 10 years. The RESPECT (Randomized Evaluation of Recurrent Stroke Comparing PFO Closure to Established Current Standard of Care Treatment) trial (NCT00465270) is about to be analyzed with a comparable follow-up duration in about 1,000 patients. Both trials exclusively used Amplatzer PFO occluders (St. Jude Medical, St. Paul, Minnesota), representing the state-of-the-art devices. Meanwhile, the results of a propensity matched analysis of about 300 patients with either PFO closure using a variety of devices or medical treatment and a median follow-up of about 10 years supports the procedure by showing even a mortality benefit when comparing follow-up years with a closed PFO to those with an open PFO (3).

To place a device into the heart for therapeutic reasons is a much more palatable situation as witnessed in the realm of interventional cardiology with coronary stenting and percutaneous valve replacement. The migraine indication has lost steam secondary to the negative MIST (Migraine Intervention with STARFlex Technology) trial (4). Yet, PFO closure does tame migraine symptoms in real life (5). Closing a PFO for platypnea-orthodeoxia is an uncontested but rare indication. The opposite is true for closing a PFO for sleep apnea. Now we do have the newcomer, provoked exercise desaturation. I suggest that we look for a PFO in patients complaining about unexplained exertional dyspnea and to close it when present, crossing our fingers that the symptoms will improve. If they do not, the patient will still enjoy the collateral benefit of not being at risk any longer for paradoxical embolism be it to the brain, the heart, or elsewhere. Leaving the PFO open means missing the chance of symptom improvement and leaving the patient exposed to rare but serious risks for the rest of his or her life, well aware of the fact that these risks increase with age in parallel to the increase of venous thrombosis (6). Should we go as far as to test symptomatic PFO carriers for provoked exercise desaturation as described by Devendra et al. (1)? Probably not, as we usually have a more compelling indication at hand.

We are indebted to Devendra et al. (1) for opening our eyes to a fact that was there all the time but was just overlooked. Their original and insightful study on a small group of patients with a particular medical situation may help to open the door to what some day may become some

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kind of a PFO closure campaign. For the time being, their study gives PFO closure some direly needed but well-deserved air.

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REFERENCES


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