

Can Aortic Root Dilatation (Ho HH 2015) be implicated in Pathogenicity of Patent Foramen Ovale

Sahar El Shedoudy, Eman Eldokhlah, Reem Rashed

Introduction:

PFO is a remnant of the fetal circulation, right to left shunt across it can be associated with different pathological conditions including paradoxical embolism. PFO pathogenicity is possibly exacerbated by the dilated aortic root by altering atrial septal geometry increasing atrial septal mobility and potentiation of PFO shunting. (1-4)

Case Presentation:

A 33 years old female complaining of chronic back pain, neck pain and arthritis, she was diagnosed as ankylosing spondylitis and she is on treatment. Her previous transthoracic echocardiography (TTE) done 5 years ago, showed no significant findings. She presented to us 2 months ago with migraine headache and TIA. TTE revealed dilated aortic root measuring 47 mm (much larger than previous study) at the level of sinus of Valsalva, aneurysmal bouncing of inter-atrial septum. TEE revealed an inter-atrial septal aneurysm, PFO with definite right to left shunt, gush of agitated saline into the left atrium immediately after its injection even without straining, a very prominent redundant whip like eustachian valve (Figure 1). TCD revealed grade IV micro-embolic signals.

Decision- making:

The decision was made to close PFO percutaneously. Eustachian valve was held by a steerable ablation catheter against the right atrial wall pulling it down into the proximal portion of inferior vena cava (IVC), limiting its mobility to prevent its interference with the device or its cable. It was successfully closed percutaneously using Occlutech PFO occluder (23/25) with no residual shunt across inter-atrial septum and with no complications (Figure 2). TCD done 1 month after closure was negative.

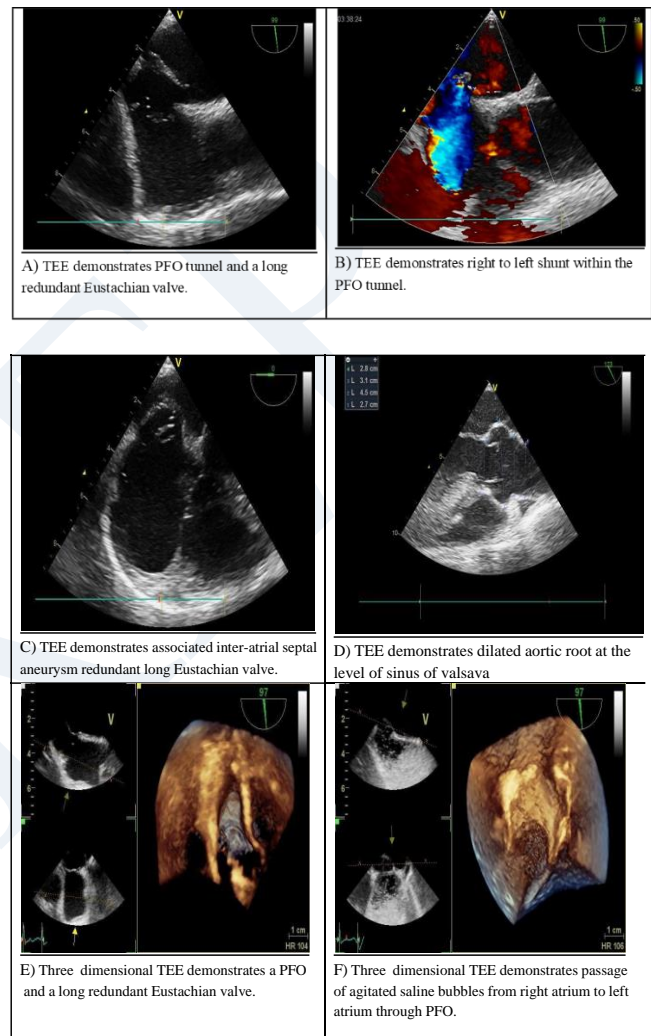


Figure 1: PFO Morphology.

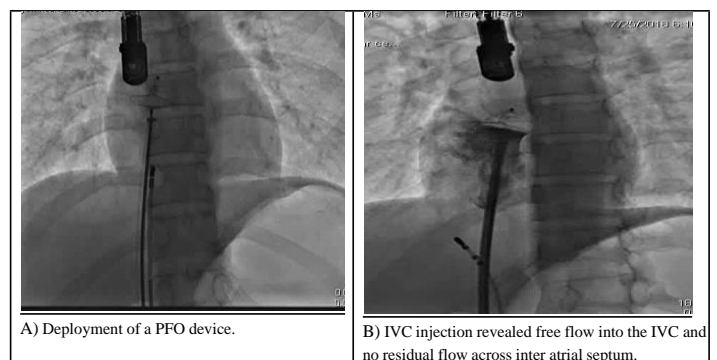


Figure 2: Device Closure.

Discussion

Left atrial pressure is higher than right atrial pressure, right to left shunt can occur with different functional circumstances e.g transient pressure elevation in the right atrium as in Valsalva maneuver and cough. Some anatomical factors can change blood flow direction through the shunt as aortic root dilatation (4, 5).

We report a patient with ankylosing spondylitis, she didn't experience any cerebral complaints for the last 7 years, then, presented to us with migraine headache and TIA 2 months ago associated with aortic root dilatation (as a part of connective tissue disorder) , aneurysmal bouncing of interatrial septum and significant right to left shunt across PFO confirmed by TCD. So, we suggest that aortic root dilatation may have a role in potentiation of right to left shunt across PFO and increasing the mobility and redundancy of inter atrial septum.

Conclusion:

Aortic root dilatation can be implicated in cerebral events induced by right to left shunt across PFO.

Declaration of patient consent:

We certify that we have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to

conceal her identity, but anonymity cannot be guaranteed.

Financial support and sponsorship:
Nil.

Conflicts of interest:

There are no conflicts of interest

References:

- 1- Eicher J-C, Bonniaud P, Baudouin N, et al. Hypoxaemia associated with an enlarged aortic root: a new syndrome? *Heart* 2005; 91:1030–1035. doi: 10.1136/hrt.2003.027839.
- 2- Chopard R, Meneveau N. Right-to-left atrial shunting associated with aortic root aneurysm: A case report of a rare cause of platypnea–orthodeoxia syndrome. *Heart, Lung and Circulation* 2013; 22:71–75.
- 3- . 2016;7(2): Keenan NG, Brochet E, Juliard JM, et al. *Archives of Cardiovascular Disease* (2012) 105, 13—17.
- 4- Bertaux G, Eicher JC, Petit A, Dobsak P, Wolf JE. Anatomic interaction between the aortic root and the atrial septum: a prospective echocardiographic study. *J Am Soc Echocardiography*. 2007; 20(4):409-414.
- 5- Carvalho M, Almeida J, Rocha G, Braz E, Urbano J, Mesquita R, Moreira-Silva S. Platypnea-Orthodeoxia Syndrome With Atrial Septal Defect and Ectatic Aortic Root: A Case Report and Review of the Literature. *J Med Cases*54-57

Cardiology Department, Tanta University Hospitals, Tanta, Egypt.