Acute Ischemic Stroke Due to Paradoxical Embolism from Spontaneous Thrombosis of Large Varicosity – A Case Report

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ABSTRACT

Paradoxical embolism can have different kinds of manifestation, with cerebrovascular accidents being the most commonly reported. Several studies have proposed that Patent Foramen Ovale (PFO) is a major risk factor for cryptogenic stroke and the mechanism is assumed to be paradoxical embolism. PFO occurs when the foramen ovale fails to close after the birth and a hole is developed between left and right atria. Many cases of embolism through PFO in patients with Deep Vein Thrombosis (DVT) and in patients who received sclerotherapy for varicose vein have been reported. But we present a rare case of spontaneous thrombosis through PFO and associated stroke in a patient with no other significant risk factor than a varicosity in the lower limb. The PFO can act as the conduit for the clot. Many a times, the causes of the stroke like paradoxical embolism may be overseen. In this case, the Trans Esophageal Echocardiography (TEE) confirmed the presence of PFO and clinical examination and doppler of the lower limb revealed the presence of enlarged varicosities. Hence, thorough workups are needed to confirm the etiology and prevent further strokes, especially in the young patients. Also, to avoid such risk, any atrial septal defects must be repaired as early as possible.

INTRODUCTION

Paradoxical embolism refers to an embolus which develops in the venous vasculature and travels through a pulmonary or intracardiac shunt like a Patent Foramen Ovale (PFO) into the systemic circulation (Windecker et al., 2014). When there is a PFO, the clot can cross from right to left side of the heart, and enter the systemic arteries and then travel to brain and block a vessel and cause a cerebrovascular event (CVA). Varicose veins, which are tortuous, enlarged veins in the subcutaneous tissues of the legs (Campbell, 2006), can be a source for such a thromboembolism. It is reported that up to 15% of men and 25% of women have varicose veins that are visible (Bradbury et al., 1999). We report the case of a patient with young stroke without any risk factors, but had a large varicosity, which got embolized through a PFO. Many cases of paradoxical embolism after sclerotherapy for varicose veins and also in patients with Deep vein Thrombosis has been reported but a CVA following paradoxical embolism through a PFO and associated stroke has not been reported previously.
CASE HISTORY

A 36-year-old male, working abroad developed an episode of giddiness followed by greying of vision, left upper and lower limb weakness and deviation of angle of mouth to the right side. He was taken to a local hospital and brain imaging done showed acute ischemic stroke. There he also developed vomiting associated with right sided headache and was hence referred to our hospital for further evaluation and management.

At our hospital, on examination, he was conscious and oriented, had Left Upper Motor Neuron (UMN) facial palsy, dysarthria left hemiparesis. His NIHSS score at the time of admission was 8 and mRS was 4. Brain Magnetic Resonance Imaging (MRI) disclosed acute infarct in the right caudate nucleus, right lenteiform nucleus and right inferior frontal gyrus with mild hemorrhagic transformation in the right caudate nucleus and right lenteiform nucleus and Magnetic Resonance Angiogram (MRA) was done and was normal. He was loaded with dual antiplatelets and high dose statin as the hemorrhagic transformation was mild. He was also started on antiedema measures in view of mild cerebral edema.

His connective tissue profile and vasculitic profile were negative. Cardioembolic workup was done and 2D ECHO was normal but Contrast ECHO with 10ml agitated saline showed contrast in Left Atrium, Left Ventricle at the end of two cardiac cycles which was suggestive of Patent Foramen Ovale (PFO). A Trans Esophageal Echocardiography (TEE) confirmed PFO with right to left shunt during Valsalva Maneuver. Clinical examination of the lower limb revealed thrombosed superficial varicosities at the level of left knee and ankle. Doppler of bilateral lower limb showed incompetent left Saphenofemoral junction.

Mechanism of stroke was considered to be Paradoxical Cardio embolism through PFO in the absence of any other obvious source. He was continued on dual antiplatelets and was given regular physical rehabilitation. He improved gradually and at the time of discharge, was able to walk with support, however left upper limb hemiparesis was the same. His NIHSS score at the time of discharge was 5 and mRS was 4.

DISCUSSION

It is a well-known fact that PFO can cause embolism through Deep Vein Thrombosis and is common during procedures for treating varicose vein. But spontaneous thrombosis of varicose vein causing paradoxical embolism and stroke is not reported. There are several reports of air embolism from sclerotherapy for varicose vein and associated stroke (Ada-tia et al., 2013; Ceulen et al., 2008). Focal motor deficit, changes in sensorium, visual and sensory deficits, loss of consciousness and hemiparesis/hemiplegia are the neurological symptoms that were reported (Murphy et al., 1985). These complications can occur at any time following sclerotherapy, ranging from minutes to days (McCarthy et al., 2016).

Our patient had a large varicosity of the left leg and had spontaneous thrombosis and embolism to the left Middle Cerebral Artery via the PFO through the perforator incompetence. During the initial evaluation of the patient, the etiology was considered to be unknown, because the due importance to the varicosity was not take care of. Clinicians oversee the presence of varicosity in young stroke patients and may miss the etiology. Here Trans Esophageal Echo showed a PFO. Hence, the only reason that can be thought of for stroke is a paradoxical embolism from the varicosity. In a study that assessed the relationship between PFO and cerebrovascular events, it was reported that 16.5% of patients with cryptogenic cerebrovascular ischemic events had a PFO (PettI et al., 2006).

There were no other significant procoagulant factors identified in the patient and other work ups for young stroke were negative. Hence, the thrombosis could be due to stagnation of blood in the large varicosity rather than a prothrombotic condition. This case highlights the fact that the varicosity should be examined closely for young stroke patients and would warrant a TEE even though Transthoracic Echocardiography is negative for any cardiac lesion.

CONCLUSIONS

Many strokes without well-known risk factors needs thorough assessment and workups, or else the fundamental cause may be overlooked. Without any known risk factors in the patient, it is important to look for conditions like varicose vein, Deep Vein Thrombosis (DVT), which can send clots into the venous circulation. Cardiac workups like a TEE can reveal intracardiac shunts like a PFO which acts a way for the clots to enter the systemic circulation. In our patient there was a thrombosed varicosity that was seen in the Doppler and TEE confirmed PFO. The diagnostic techniques helped to shed some light in understanding the root cause in such unfortunate situations.
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Conflict of Interest

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