

Percutaneous Embolisation and Transverse Myelitis: a Rare Association

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Introduction

Tuberculosis (TB) kills approximately 2 million people annually with the developing world bearing the brunt. Massive haemoptysis is a life threatening complication of TB. Percutaneous embolisation is an increasingly practiced method of controlling such bleeding. Most of the literature regarding this technique is based on data from developed countries. Transverse Myelitis is the most serious but a very rarely reported complication of this procedure. This is the first such report from the developing world in this regard where percutaneous embolisation may become an increasingly popular method of haemoptysis control for TB. This will result in an associated rise in procedure associated complications thus necessitating increased awareness of such complications.

Case Report

A 27 year old gentleman, on anti-tuberculous therapy for pulmonary TB, presented with a four day history of mild haemoptysis followed by one episode of massive (>300ml in 24 hours) haemoptysis. A chest radiograph revealed left mid-zone consolidation and bilateral upper lobe fibro-cavitary changes. A fiber optic bronchoscopy showed large volume of blood in the left bronchial tree and active bleeding from the superior segment of the left lower lobe.

Thoracic angiography and percutaneous embolisation (PE) with digital subtraction angiography was planned. The patient was sedated and a 4Fr Cerebral H1 catheter (Cordis, Inc; Miami, USA.) was used. It was selectively placed into each of the intercostal arteries (ICA) with non-ionic contrast (Omnipaque 300: Nycomed, Cork, Ireland). Abnormal vascularity with extravasation of the

contrast was seen on injection of left ICA at the level of the 4th thoracic vertebra (Figure). It was embolised using polyvinyl alcohol particles of size 250-355 µm (Trufill:

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Cordis, Inc. Miami, USA). Post-embolisation angiography revealed cessation of bleeding. No spinal artery branch was identified throughout the procedure.

Next morning he developed an inability to move his left leg along with urinary retention. A sensory level to pin-prick sensation, proprioception, vibration and light touch was identified at the 6th thoracic vertebra. Spinal MRI scans revealed spinal cord edema and increased signals on T2 weighted images from 2nd to 5th thoracic vertebrae.

A diagnosis of Transverse Myelitis (TM) due to spinal ischemia was made and patient started on intravenous Dexamethasone. At three months of follow-up the patient had a slight weakness in the left lower limb. Since the embolisation he has had no further episode of haemoptysis

Discussion

Percutaneous embolisation is an effective method of controlling massive haemoptysis in patients with pulmonary tuberculosis who are not good candidates for surgery or who do not respond to conservative management.¹ Complications like chest pain and transient dysphagia are commonly reported after this procedure. The most serious but fortunately a very rare complication of this procedure is TM.

Bronchial arteries (BA) are the source of haemoptysis in 90% of cases followed by pulmonary artery and non-bronchial systemic arteries, each accounting for 5% of cases.² ICA involvement along

with BA is seen more frequently in tuberculosis patients as compared to other diseases that cause haemoptysis. The incidence of isolated ICA being the only source of haemoptysis with no BA involvement, as in our case, is very uncommon. 3

The anterior spinal artery (ASA) is the artery responsible for supplying the anterior two-thirds of the spinal cord. It is dependent on feeder spinal arteries originating from the proximal part of the ICA to optimally supply the spinal cord. If the ICA or the bronchial artery, which mostly arises as a common trunk with the ICA, is embolised there is a possibility that the feeder spinal artery branches arising from the ICA may be inadvertently embolised. This leads to vascular compromise of the spinal cord culminating in neurological problems ranging from transient paraparesis to permanent disability. This involves the distribution of the ASA and spares the territory of posterior spinal artery which is manifested by intact vibration and proprioception sensations. In our case the posterior column sensations were impaired which is suggestive of TM and occurred due to the intense inflammatory reaction following occlusion of ASA that involved the whole cord cross-section. There are very few reported instances when ICA was the only vessel embolised, as in our case, and thus it is hard to comment on the incidence of complications associated with isolated ICA embolisation. 4

Even after following standard protocol the existing spinal arteries are not always identified.⁵ In our case, TM developed although no spinal branch was identified pre or post embolisation. Presently, the modality increasingly being used is super selective catheterization which employs a micro-catheter that allows distal placement in the ICA, well ahead of the origin of the feeder branches. This greatly decreases the risk of spinal ischemia by decreasing the probability of embolic particles entering these vessels. 6

Neurological complications occur even with good selective catheterization.⁷ Unlike two previous reports of TM following embolisation we do not attribute our case to contrast material because no catheter wedging or contrast over exposure occurred and the contrast used was non ionic.^{8,9} We postulate that using particles of size 250-355 µm, which in our case were used to achieve a distal level embolisation, with selective catheterization might have been the cause owing to their ability to enter the small feeder vessels. The most widely used size is 350-500µm though it is pertinent to mention that embolisations done with smaller particles have been free of complications. 10

Transverse Myelitis is a serious though rare

complication of percutaneous embolisation and can occur even with the modern diagnostic and interventional techniques. The incidence of such complications can be reduced by employing super-selective catheterization and by using larger size embolisation particles if selective catheterization has to be performed owing to financial constraints, as in the developing world.

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