Bronchial Artery Embolization in Tuberculosis Patient with Massive Hemoptysis: A Case Report

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Abstract

A 25-year-old male with history of mild asthma presents with 4-month history of productive cough and weight loss accompanied with progressive shortness of breath. Patient was admitted, his CXR and CT scan of the lungs suggested active TB in the right lung. An acid-fast bacillus smear was positive for TB, which confirmed the CXR findings. Patient experienced sever hemoptysis of 620 ml of blood within 24 hours and underwent successful bronchial artery embolization using polyvinyl alcohol spheres.

Keywords: Asthma; Embolization; Hemoptysis; Carcinoma

Introduction

Hemoptysis can be a serious condition that can result in death secondary to massive blood loss [1]. Pulmonary TB is one of the most common causes of massive hemoptysis, which can be successfully treated with BAE (bronchial artery embolization). BAE is a procedure where X-rays are used to examine the bronchial arteries by injecting intravenous contrast material to define the intended arterial circulation (bronchial, pulmonary, or systemic) and thus identifying the potential bleeding site [2]. The next step is then inserting occlusive material into either the bleeding vessel itself or the proximal vessels that supply the bleeding vessel [2].

Case Report

A 25-year-old male with history of mild asthma presents with 4-month history of productive cough and weight loss accompanied with progressive shortness of breath. Five days prior to his admission, patient had hemoptysis of approximately 2 tablespoons of blood. In the ER, physical examination was pertinent positive for Right lung crackles; his CXR and CT scan of the lungs suggested active TB in the right lung (Figures 1 and 2). An acid-fast bacillus smear was positive for TB, which confirmed the CXR findings. Subsequently, patient was admitted and placed on proper isolation and TB medication was started.

In the second day of admission, patient experienced sever hemoptysis of 620 ml of blood within 24 hours. Patient was then transferred to ICU and scheduled for radiological guided embolization of the right bronchial arteries.

Embolization was successful using polyvinyl alcohol spheres and the patient recovered with hemodynamic instability completing his TB medication treatment course. Figures 3a and 3b shows the right bronchial arteries before embolization and the Figure 4 shows the artery s/p embolization.

Discussion

Successful BAE improves symptoms, achieve success in controlling the bleeding and prevent mortality in emergency cases [3]. BAE has been the first line treatment for moderate to massive hemoptysis [2]. Recent studies have shown the BAE has up to 94% success rate [3]. It is safer and minimally invasive than emergency surgery and has been well established in the management of hemoptysis. The indications for BAE include serious bleeding which is unlikely to be controlled by expectant management, bleeding from large bronchial arteries, and bleeding which may cause death or permanent disability [4].

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response. Serious complications are subintimal dissection, spinal cord ischemia, arterial perforation by guide wire and reflux of material into the aorta. Cannulation or proximal embolization of the bronchial artery may block flow to the anterior spinal cord resulting in paraplegia [2]. This is a not very common complication as anterior spinal artery arises from a bronchial artery in only 5% of the population [2].

Some common materials used in closure of bronchial artery are Gelfoam, polyvinyl alcohol (PVA). Gelfoam is associated with recurrent bleeding whereas PVA provide permanent occlusion. Although, targeted embolization using polyvinyl alcohol foam particles ≥ 355 µm have demonstrated to be safe, rapid, and effective in achieving occlusion but in patients with pulmonary tuberculosis is not very well documented in the literature and the results are variable [2,3].

Conclusion

In conclusion, BAE in TB patients with life threatening hemoptysis controls the bleeding but the long-term outcome is not well defined as the recurrence bleeding is in variable high rates. The experience that we obtained from the present case may serve as a preamble for upcoming studies trying to evaluate this technique in this group of patients.

References