

Transcatheter Bronchial Artery Aneurysm Embolization with Onyx

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Abstract

Purpose: Report a case of transcatheter embolization of a Bronchial Artery Aneurysm (BAA) using Onyx.

Case report: A 60 years-old man was hospitalized because mediastinum hematoma related to BAA. Left trans-succlavian approach was conducted and the microcatheter was used to reach the BAA. Because vessel caliber and tortuosity aneurysm packing was not possible, so why Onyx 34 was released as close as possible to the aneurysmatic sac with "plug and push" technique. The clinical condition of the patient immediately improved and the 1-month CTA confirmed the complete exclusion of BAA; patient did not claim any particular disturbs after 7-month follow-up.

Conclusions: Embolization of BAA using Onyx 34 is feasible and viable.

Keywords: Bronchial artery aneurysm; Embolization; Onyx; Endovascular approach; Transcatheter embolization; Hemomediastinum

Introduction

Bronchial Artery Aneurysm (BAA) is a rare entity, reported in less than 1% of all selective bronchial arteriograms [1]. BAA etiology is unknown but it has been described an association with chronic inflammatory lung disease, infective diseases and trauma [2-4].

BAA can be located in the intraparenchymal bronchial branches leading to hemoptysis or in the mediastinal segment with symptoms related to the compression or rupture into contiguous structure [1-4].

Due to its rarity BAA treatment has not yet standardized. Therapies options are up to patient condition and operator ability so why surgery, endovascular techniques or both have been described as therapeutic options for BAA [1-7].

The present case reports the first Bronchial Artery Embolization (BAE) with Onyx 34 (Micro Therapeutic Inc., ev3 Neurovascular, Irvine, CA, USA).

Case Report

A 60 years-old man was hospitalized because chest pain after seatbelt fastens. An angiography with Computed Tomography (CTA) was performed in order to evaluate a possible aortic rupture.

Mediastinum hematoma (8 cm×4 cm) with BAA was reported in CTA (Figure 1) and endovascular approach was preferred to surgical one because patient instability.

The Digital Subtraction Angiography (DSA) described an

enlarged left bronchial artery (3 mm) with a BAA (2 cm), just below the carina level, with direct inflow from an aberrant right bronchial artery, originated next to the left subclavian ostium (Figure 2).

A left trans-succlavian approach was conducted with guiding catheter (UF 4F, Cordis, Miami Lakes, FL, USA) then the microcatheter (Prograte alfa 2.7F, Terumo, Japan) was used to reach the BAA.

The aneurism was unpacking because of vessel caliber and tortuosity, so why we decided to embolize with Onyx 34 because its capability of occluding feeding vessels, preventing retrograde filling of the aneurysm. In order to avoid vessel dissection, Onyx was released as close as possible to the aneurysmatic sac with "plug and push" technique [8]. A safe injection rate of dimethyl sulfoxide (DMSO) <0.14 mL/min longer than 40 seconds was performed in order to avoid vasospasm and necrosis. The control angiogram showed complete exclusion of BAA (Figure 3).

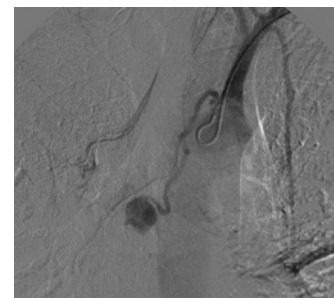


Figure 2: DSA showed the BAA direct inflow from an aberrant right bronchial artery, originated next to the left subclavian ostium.

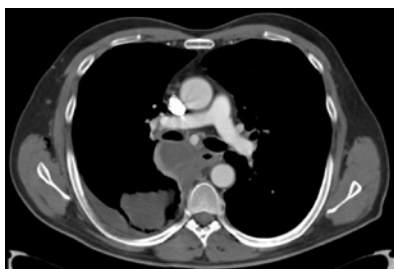


Figure 1: Axial CTA showed a large mediastinum hematoma and a BAA.

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Figure 3: Fluoroscopy demonstrated complete exclusion of BAA with Onyx.

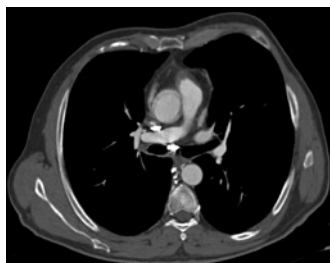


Figure 4: 1-month follow-up CTA showed no endoleak and mediastinum hematoma regression.

No endoleak and mediastinum hematoma regression were reported in the CTA, performed one month later (Figure 4). The patient did not report any particular discharges after 7-month follow-up.

Discussion

Few cases of hemomediastinum because of BAA have been reported in literature with different therapeutic approaches depend mainly on patient comorbidities, bronchial artery anatomy.

Surgical approach, basically consists in open ligation of BAA can be also associated with endovascular approach [5-6].

BAE can be performed with gelatine sponge, detachable coils, steel coils, glue and N-butyl-2-cyanoacrylate and combined treatment [1,7,8]. Whatever embolic material is used, most authors emphasize the importance of occluding not only the feeding vessels but also efferent branches to avoid retrograde filling of the aneurysm [9].

We decided to treat our patient using an endovascular approach because he was unsuitable for surgery. Gelatine sponge was discarded because it offers a temporary embolization while detachable coils were abandoned because of vessel tortuosity. We used Onyx 34, a bio-compatible injectable liquid polymer, with “push and plug” technique to get distal distribution of the embolic agent [8,9]. Onyx was initially injected as slow as possible, allowing the formation cast around microcatheter tip with a small amount of reflux; ones an adequate plug was form, Onyx was injected in a control fashion to form a lava-like

mass, which follow the feeding vessel, allowing a complete exclusion of the BAA confirmed after seven-month follow-up.

Conclusion

Onyx 34 could be used as embolic agent in selected cases of BAA.

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