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SHORT REPORT

Double Right Bronchial Artery Aneurysm Treated with Combined Procedures

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Purpose. *Bronchial artery aneurysms occur rarely. We present an unusual case.*
Case report. *We present a patient with double right bronchial artery aneurysms that were treated with a combination of endovascular and surgical procedures.*
Conclusion. *This case report illustrates the treatment options for this unusual problem.*

Keywords: Bronchial artery aneurysm; Embolization; Thyreo-cervical trunk; Combined procedures.

Case Report

A 76-year old woman was referred to our Unit after being diagnosed with double right bronchial artery aneurysms identified incidentally on chest CT. She had signs of severe chronic obstructive pulmonary disease caused by bilateral bronchiectasis and interstitial fibrosis. The thoracic contrast-enhanced CT scan revealed two mediastinal aneurysms of the right bronchial artery (Fig. 1). There were also dilation of mediastinal arteries and signs of bronchiectasis especially in the inferior lobes. Selective bronchial arteriography confirmed the CT diagnosis (Fig. 1). Endovascular repair was felt to be appropriate in view of the patients severe respiratory problems. Nevertheless, transcatheter embolization of the bronchial artery was not feasible due to the absence of an adequate aneurysm neck. Therefore a thoracic aortic stent graft (GORE TAG 3415) was placed via femoral artery access under general anaesthesia in order to exclude the aneurysms (Fig. 1E). The intraoperative angiogram demonstrated the correct placement of the stent (Fig. 1E) but also late perfusion of the second aneurysm through afferent branches of the thyro-cervical trunk (Fig. 1F). Selective catheterization and embolization of this branch with coils and micro spheres (500–700 μm) was successfully performed via brachial access (Fig. 1G). The post-operative course was uneventful.

One month after discharge a CT scan showed that both aneurysms were not perfused. However, a second CT scan, carried out ten months later, revealed an endoleak within the second aneurysm (Fig. 2A,B). Selective angiography demonstrated the endoleak to be arising from a branch of the previously embolized thyro-cervical trunk. The thyro-cervical trunk was ligated through a right supra-clavicular incision. The post-operative course was uneventful and the patient was discharged on the forth post-operative day. Four months after surgery, CT scan showed no evidence of endoleak and complete thrombosis of both aneurysms (Fig. 2C, D). The patient still remains under close follow up in our Unit.

Discussion

Bronchial artery aneurysms (BAA) occur rarely and, although the aetiology is unknown, they are frequently associated with pulmonary agenesis, chronic inflammation of the lung, bronchiectasis and vascular

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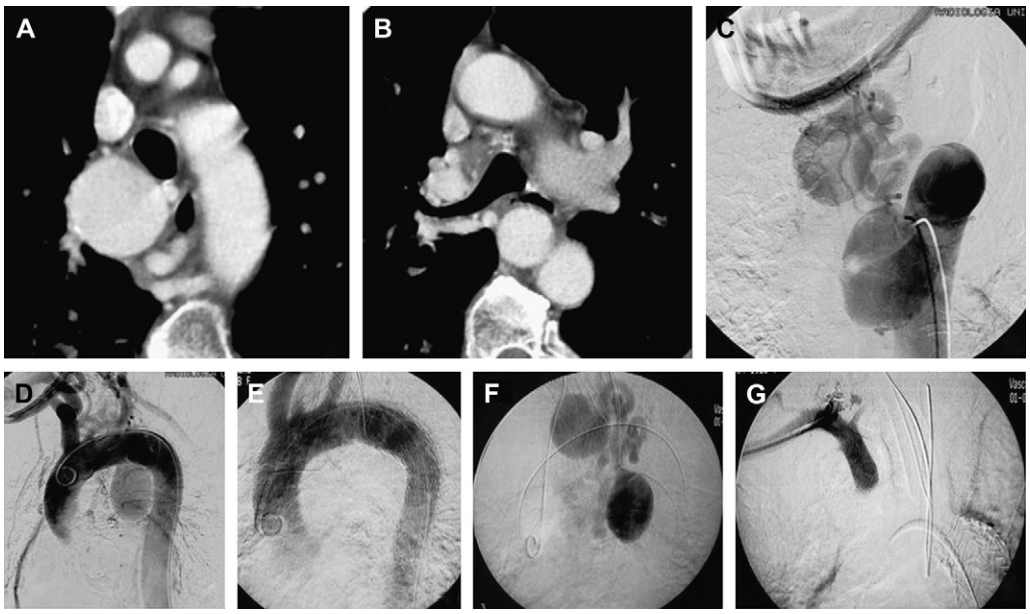

Fig. 1. The thoracic contrast-enhanced CT scan revealed two voluminous aneurysms of the right bronchial artery, almost 4 cm each in size, the first right para-tracheal, the second one on the right of the thoracic descending aorta below the level of the carina (A, B). Selective bronchial arteriography showed that the first aneurysm was located at the origin of the right bronchial artery, with no adequate neck for embolization and also connected to a second aneurysm (C, D). The intraoperative angiographic control after placement of a thoracic aortic stent graft demonstrated the exclusion of the first aneurysm (E) but also a late perfusion of the second aneurysm through afferent branches of the right thyreo-cervical trunk (F). Selective embolization of these vessels was successfully performed, excluding the aneurysm (G).

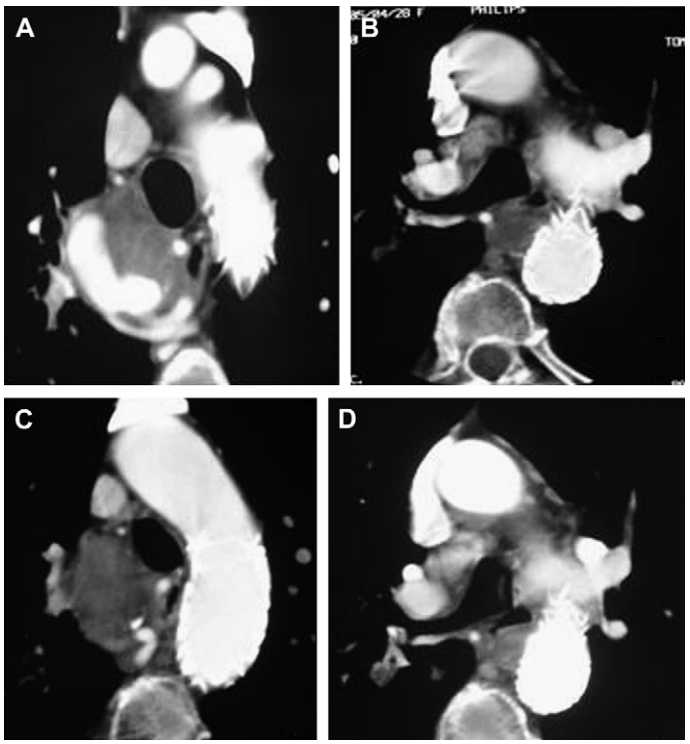

Fig. 2. The ten months CT scan, revealed an area of partial re-vascularization of the second aneurysm at the external side of the thrombus (A) although it was also evident a reduction of the dimension of the first aneurysm (B). Four months after ligation of the right thyreo-cervical trunk, CT scan documented complete thrombosis of both aneurysms without enhancement at any stage (C, D).

abnormalities such as Oslu-Weber-Rendu and Behcet diseases. Increase blood flow and blood pressure are believed to play a role in aneurysm formation.[1] BAA are rarely symptomatic. Thoracic contrast-enhanced CT scan and selective bronchial arteriography are required for the diagnosis and important for the study of the bronchial and intercostal vessels anatomy.[1,2] Immediate treatment after diagnosis is recommended because of the risk of rupture which does not seem to be related to the aneurysm's dimensions.[3]

Treatment options for BAA may include open surgery or endovascular procedures. In the last few years transcatheter embolization has become the treatment of choice for this disease offering successful aneurysm exclusion with lower cost and shorter hospital stay. This is not possible when the segment between the thoracic aorta and the aneurysm is short, as was the case in our patient. In such cases the origin of the bronchial artery is covered by a thoracic aorta stent graft and occlusion of the outflow vessels is subsequently performed.[4] Furthermore, attention should be paid to the collateral vessels which feed the aneurysm sac. Pre-operative embolization or post-operative surgical treatment can be performed in these cases.[4] Operative aneurysmectomy is carried out in low risk patients and when endovascular procedures are contraindicated or not feasible. In addition, surgery can also be complementary to the endovascular procedures.[5] However, it is important to note that the choice of treatment depends mainly on the patient's other medical problems and the anatomy. Long-term follow-up is recommended after endovascular procedures in order to identify endoleaks or aneurysm growth.[6]

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