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Case Report

Right subclavian artery true aneurysm: A rare cause of dyspnea

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Abstract

Subclavian artery aneurysm (SAA) is a rare condition seen in less than 1% of peripheral artery aneurysms. It is usually asymptomatic. However, it may become symptomatic as a result of pressure on the surrounding organs due to the progressive growth of the aneurysm. The standard treatment for SAA is surgery. In this article, we wanted to present a 63-year-old male patient who presented with the complaint of shortness of breath and was operated on with the diagnosis of Right Subclavian artery true aneurysm on thoracic CT angiography.

Keywords: Subclavian artery, aneurysm, dyspnea, tracheal compression, aneurysmectomy

INTRODUCTION

Subclavian artery aneurysm (SAA) is a rare condition seen in less than 1% of peripheral artery aneurysms [1]. The causes of most true SAAs are thoracic outlet syndrome and atherosclerosis, and rare causes include congenital anomalies (such as aberrant subclavian artery), fibromuscular dysplasia, cystic medial necrosis, infection, etc. [1,2]. It is usually asymptomatic. However, it may become symptomatic as a result of compression on the surrounding organs due to the progressive growth of the aneurysm [1]. Dyspnea due to tracheal compression, dysphagia due to esophageal compression, hoarseness due to right recurrent laryngeal nerve compression, Horner's syndrome due to stellate ganglion compression, and sensory and motor nerve deficits due to brachial plexus compression may be seen [3]. Its complications are thrombosis, distal embolization, massive bleeding due to rupture, and sudden death [1,3]. In this article, we wanted to present a 63-year-old male patient who presented with the complaint of shortness of breath and who was operated on with the diagnosis of right Subclavian artery true aneurysm on thoracic CT angiography.

CASE REPORT

A 63-year-old male patient presented with the complaint of progressive dyspnea. In the patient's anamnesis, it was learned that he had surgery for aortic dissection and ascending aorta replacement was performed at another health center 5 years ago. Again, 8 months ago, tube graft interposition (to eliminate branching) was performed between the right carotid artery and the left carotid artery due to right CAA at the same health center. In the right SAA, it was aimed to place a stent graft with the endovascular method, but endovascular procedure could not be performed because the aneurysm could not be crossed with the guide wire. Meanwhile, the enlargement of the SAA and shortness of breath due to tracheal compression started to increase gradually. On physical examination, a palpable pulsatile mass was detected in the right supraclavicular region. Thoracic CT angiography showed a 56 mm (5.6 cm) right SAA with severe compression on the trachea and Stanford type A chronic aortic dissection. (Figure 1A, 1B, 1C, 1D). Aneurysmectomy and graft interposition to the SAA were planned for the patient with an open surgical method. Surgical consent was obtained from the patient. An upper J mini sternotomy was performed with a redo

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saw under general anesthesia. Fibrous adhesions were carefully dissected, nerves were preserved, and the proximal part of the LAA was rotated and suspended with vascular tape (Figure 2A).

Then, the distal part was turned through a mid-subclavicular incision and the vessel was suspended with tape. After intravenous administration of 5000 IU Heparin and cross clamping, the aneurysm sac was opened with a linear incision (Figure 2B). It was observed that there was a dense mural thrombus in the sac. Mural thrombi were removed. The proximal and distal parts of the SAA were ligated with sutured silk. Three lateral branches connected with the aneurysm sac were ligated and the sac was isolated from the arterial system. Then, tube graft interposition was performed between the 8 mm PTFE graft and the mid segment from the proximal to the subclavian artery (Figure 2C). In the postoperative physical examination, it was observed that the pulsatile mass disappeared on palpation and the complaint of dyspnea no longer existed. The patient was prescribed Clopidogrel 75 mg once a day and was discharged without any problems.

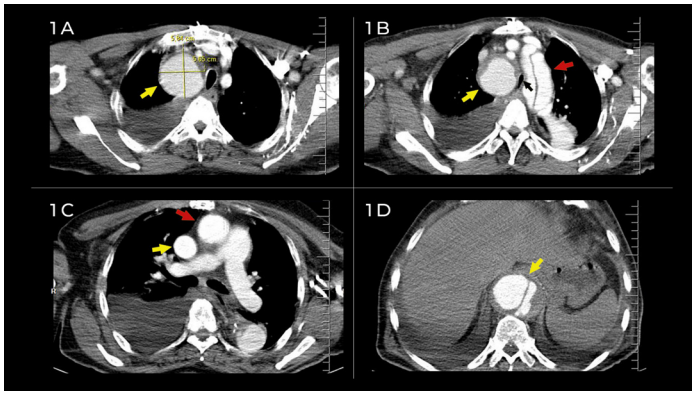

Figure 1. A. Giant Subclavian Artery True Aneurysm (yellow arrow), **1B.** Giant Subclavian Artery True Aneurysm (yellow arrow), chronic aortic dissection (red arrow), severe tracheal compression (black arrow), **1C.** ascending aorta gerfti (red arrow), Subclavian Artery True Aneurysm (yellow arrow), **1D.** chronic aortic dissection (yellow arrow)

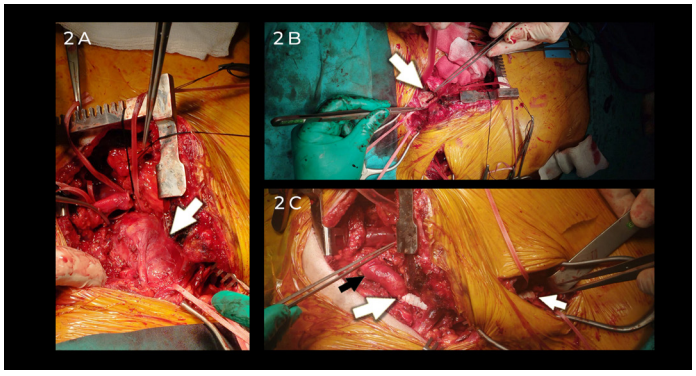

Figure 2. A. Intraoperative view of giant Subclavian Artery True Aneurysm (white arrow), **2B.** Intraoperative view of the aneurysm sac and thrombus in the sac (white arrow), **2C.** Truncus brachiocephalicus (black arrow), Proximal anastomosis of subclavian artery with graft (big white arrow), Distal anastomosis of subclavian artery with graft (small white arrow)

DISCUSSION

SAA is a rare clinical pathological condition. Its symptoms include dyspnea, dysphagia, hoarseness, Horner's syndrome, deficits in sensory and motor nerves due to brachial plexus compression (paresis, plegia, paresthesia), superior vena cava syndrome, ischemia in the upper extremity due to thromboembolism or infarction due to cerebral embolism [1-3]. In our case, due to tracheal compression dyspnea was prominent. SAA is mostly located in the extrathoracic region [3]. However, the aneurysm in this case was located intrathoracically. SAA usually develops secondary to atherosclerosis and Thoracic outlet syndrome (TOS) [4]. There was no TOS finding in our case. However, there was HT as a risk factor. The history of aortic dissection in our case suggests that SAA may be related to HT and atherosclerosis. In these cases, the supraclavicular approach is preferred if the SAA is located in the extrathoracic region, and the combined supraclavicular and transsternal approach is preferred if the SAA is located in the intrathoracic region [3]. In our case, we preferred upper J mini sternotomy and subclavicular approach due to intrathoracic SAA. We performed aneurysmectomy + thrombectomy and graft interposition. In these cases, it is important to pay attention to the surrounding anatomical structures. In particular, nerve injury and permanent nerve deficits should be avoided. Resection of the aneurysm together with the thrombus is important in terms of eliminating the pressure and preventing thrombic complications. Endovascular treatment is recommended for anatomical reasons and to prevent possible complications, especially in high-risk patients with intrathoracic SAA [5].

CONCLUSION

Our patient had previously been operated on at another health center. Ascending aortic replacement was performed due to aortic dissection. An endovascular procedure was planned for LAA and debranching was performed. However, since the guide wire could not pass the aneurysm, endovascular procedure could not be performed. That's why we applied surgical treatment. In SAA cases, it is important to pay attention to the surrounding anatomical structures. In particular, nerve injury and permanent nerve deficits should be avoided. The proximal and distal regions of the aneurysm and its lateral branches should be ligated, resected together with the thrombus inside the aneurysm, and interpositioned with a graft.

Patient Consent for Publication: Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: All authors contributed equally to the article.

Conflict of Interest: The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

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