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Floating Tumor of the Aortic Arch: A Case Report

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ABSTRACT

Background: Neoplasms of the aortic arch are rare tumors presenting a diagnostic challenge, regardless of whether they are benign or malignant. The most effective treatment method is surgical resection of the tumor.

Case presentation: This case presents a 62-year-old woman with cerebrovascular ischemia and right-sided hemiparesis. Further medical treatment showed a CT scan of a floating mass in the aortic arch. The patient underwent surgery after the initial diagnosis.

Conclusion: In most patients, these types of tumors are detected after a peripheral arterial embolism. Surgical resection of the tumor is the most effective treatment method. The symptoms and presentation of this patient can be beneficial for future diagnosis of this type of tumor.

INTRODUCTION

Successful diagnosis of aortic arch tumors is infrequent. Diagnosis is challenging, due to the low incidence of thrombosis, complex body position, asymptomatic growth period, and diagnostic indicators of thrombosis. In a retrospective study carried out with 87 patients diagnosed with a primary tumor, 29% were histologically diagnosed with sarcoma, 17% with malignant fibrous histiocytoma, 11% with angiosarcoma, 10% with leiomyosarcoma, and another 10% with a fibrosarcoma [Seelig 1998]. Benign tumors, of which myxomas and fibromyxomas are the most common, are much less common than their malignant versions. Secondary aortic tumors are more common than primary. These mainly are thoracic and abdominal malignancies caused by aortic invasion [Restrepo 2012]. Owing to diagnostic obstacles and the rarity of the aortic tumor, the diagnosis of these tumors usually takes place after the extirpation of the aortic mass or at autopsy. Case reviews to date have concluded that more than 50% of patients are diagnosed with a malignant disease after developing symptoms [Sebernik 2005]. Patients can be asymptomatic and present with severe symptoms, such as peripheral embolism, mesenteric arterial embolism, and localizing signs of arterial occlusion [Sebernik 2005]. With a differential diagnosis, we may suspect other conditions: aneurysm dissection, coarctation, intrathoracic, abdominal, or retroperitoneal tumor and any of the peripheral vascular diseases [Mason 1982]. The only efficacious option is surgical extirpation. In the case of malignancy, adjuvant therapy, such as chemotherapy and radiation therapy, is an option. They are non-surgical medical procedures of uncertain efficacy [Kato 2008]. In this case, we had a female patient diagnosed with a brain insult and a tumor in the aortic arch found after further processing.

CASE PRESENTATION

The 62-year-old female patient was admitted to the emergency department with speech impairment and right-sided hemiparesis. We learned from the patient's personal history that she suffered from carcinoma of the rectosigmoid infiltrating the pelvis, bladder, and uterus, which was diagnosed and operated on 12 months prior. After palliative surgery, a colostomy and chemotherapy with capecitabine were performed. The patient was a diabetic with hypertension, chronic obstructive pulmonary disease (COPD), and persistent myocardial infarction (MI) six years earlier. We learned through heterogeneous memory that the patient was functioning normally five hours earlier. After the initial physical examination and lab tests, a CT scan and CT angiography were performed, allowing us to see the ischemic brain area, middle left cerebral artery (arteria cerebri media sinistra), and a large intramural floating tumor attached to the broad base of the caudal part of the aortic arch, both with a diameter of 2 centimeters, opposite the cranial spur of truncus brachiocephalicus (brachiocephalic trunk) and arteria carotis communis sinistra (left common carotid artery). After a neurological examination, the patient was transferred to the Department of Cardiac and Thoracic Surgery. The patient underwent emergency surgery to remove the aortic arch tumor. A median sternotomy was performed, and extracorporeal circulation was established in a deep hypothermic circulatory arrest at 22°C. After surgery, the patient was stable on a low dose (0.1 µg/kg/min) of Noradrenaline support and good diuretics. Two days post-surgery, the patient was extubated and stable, but with right-sided hemiplegia. Because

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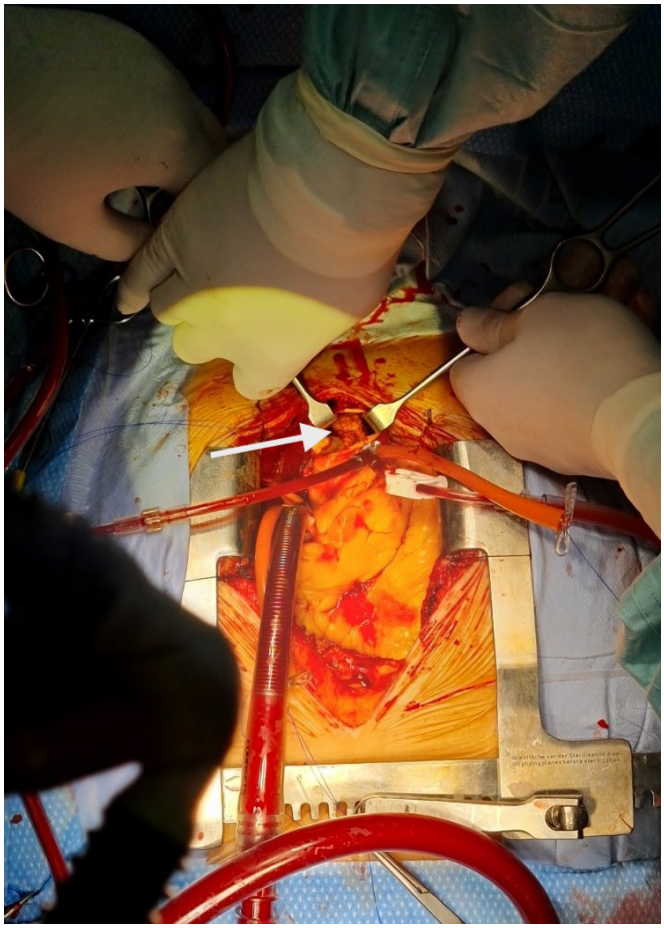

Figure 1. Intraoperative finding of the aortic arch tumor. The arrow points to the tumor attached to the broad base of the caudal end of the aortic arch, 2 cm in diameter.

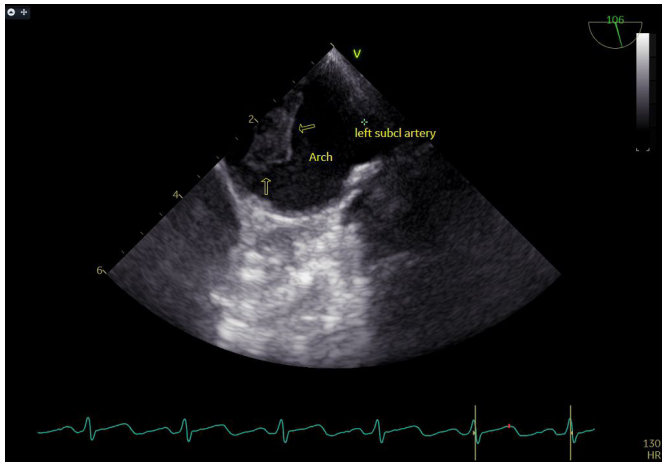

Figure 2. Preoperative TEE of the aortic arch. The arrow points to a large intramural floating tumor.

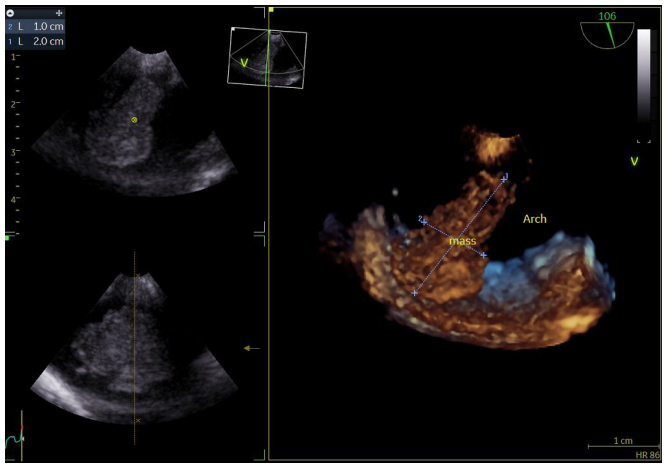

Figure 3. Preoperative TEE of the aortic arch. The TEE shows a large intramural floating tumor, 2 centimeters long and 1 centimeter wide.

of increased inflammation, three days after the surgery, the patient was febrile. Gentamicin and cefazolin were added to the treatment after blood and urine samples were collected for microbial processing. On the sixth day, post-surgery, after intensive care and every measure, the patient's condition deteriorated, and she passed away. The patient most likely died from complications of postoperative sepsis and cerebrovascular accident (CVA). Postmortem pathohistological diagnosis revealed that the tumor consisted of necrotic tissue and fibrotic components.

DISCUSSION

Although rare, floating aortic arch tumors are known contributors to systemic embolism [Arko 1997]. We were unable to diagnose the tumor via histological examination. With this in mind, the fact that the patient had no other known signs of emboli raised the hypothesis that the tumor was the cause of cerebrovascular ischemia. The clinical picture and symptoms of the tumor may vary, according to location, size, and pathophysiology of aortic tumors. It is important to be aware of the possibility of secondary tumors in the chest and abdomen and proceed with the diagnostic process accordingly [Restrepo 2012]. Transesophageal echocardiography (TEE) is a useful screening test to detect aortic disease and other heart diseases [Urrutia 2000]. An experienced radiologist then can identify whether it is a rare tumor or a metastasis. In the absence of metastatic disease, an aggressive surgical approach to palliative care is reasonable. Because of that, we opted for curative surgery, despite the assumption that it was a case of metastasis of the primary rectosigmoid tumor.

CONCLUSION

In every peripheral embolism, the presence of an aortic arch tumor should always be a possibility. CT angiography and TEE are the methods of choice for diagnosis. We believe that surgical resection of the tumor is the most effective way to reduce the risk of peripheral embolism.

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