

Floating thrombus of the ascending aorta after treatment of ureteral carcinoma: A case report

Üreteral karsinom tedavisi sonrasında çıkan aortun serbest yüzen trombüsü: Olgu sunumu

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ABSTRACT

An asymptomatic 59-year-old female patient presented with a large floating mass, presumably a thrombus, in the distal ascending aorta. It developed during chemotherapy following nephrectomy for ureteral carcinoma. Due to embolic risks, surgery was indicated. Epi-aortic echography revealed embolic risks upon aortic cross-clamping. Aortotomy was performed during brief circulatory arrest under mild hypothermia, followed by safe aortic cross-clamping under direct vision and aortic thrombectomy. The postoperative course was uneventful. Malignancy- and chemotherapy-induced hypercoagulation probably favored thrombus formation. In conclusion, epi-aortic echography and short circulatory arrest under tepid hypothermia help to avoid embolic events during ascending aorta thrombectomy.

Keywords: Aorta, aortic surgery, cancer chemotherapy, circulatory arrest, epi-aortic echography, floating thrombus.

ÖZ

Elli dokuz yaşında asemptomatik kadın hasta, distal çıkan aortta muhtemelen bir trombüs olan büyük serbest yüzen bir kitle ile başvurdu. Kitle, üreteral karsinom nedeniyle yapılan nefrektomi sonrasında verilen kemoterapi sırasında gelişmişti. Emboli riski nedeniyle cerrahi önerildi. Epi-aortik ekografide aortik kros klemplemeye ilişkin emboli riski izlendi. Hafif hipotermi altında kısa süreli dolaşım arresti ile aortotomi yapıldı ve ardından doğrudan görüntüleme ve aortik trombektomi ile güvenli bir şekilde kros klempleme gerçekleştirildi. Ameliyat sonrası dönem sorunsuz idi. Malignite ve kemoterapiye bağlı hiperkoagülasyon, muhtemelen trombüs oluşumu lehineydi. Sonuç olarak, epi-aortik ekografi ve hafif hipotermi altında kısa süreli dolaşım arresti, çıkan aortik trombektomi sırasında emboli olaylarını önlemeye yardımcıdır.

Anahtar sözcükler: Aort, aort cerrahisi, kanser kemoterapisi, dolaşım arresti, epi-aortik ekografi, serbest yüzen trombüs.

Floating thrombus of the ascending aorta (FTAA) is a rare disease with potential life-threatening embolic complications. It has been reported in patients with aortic wall disease, thrombophilia, malignancies, immunological disorders, or a history of aortic instrumentation.^[1,2]

In this article, we report a surgically treated case of floating thrombus in the distal ascending aorta.

CASE REPORT

A 59-year-old female patient was referred to our clinic with a floating intra-aortic mass incidentally

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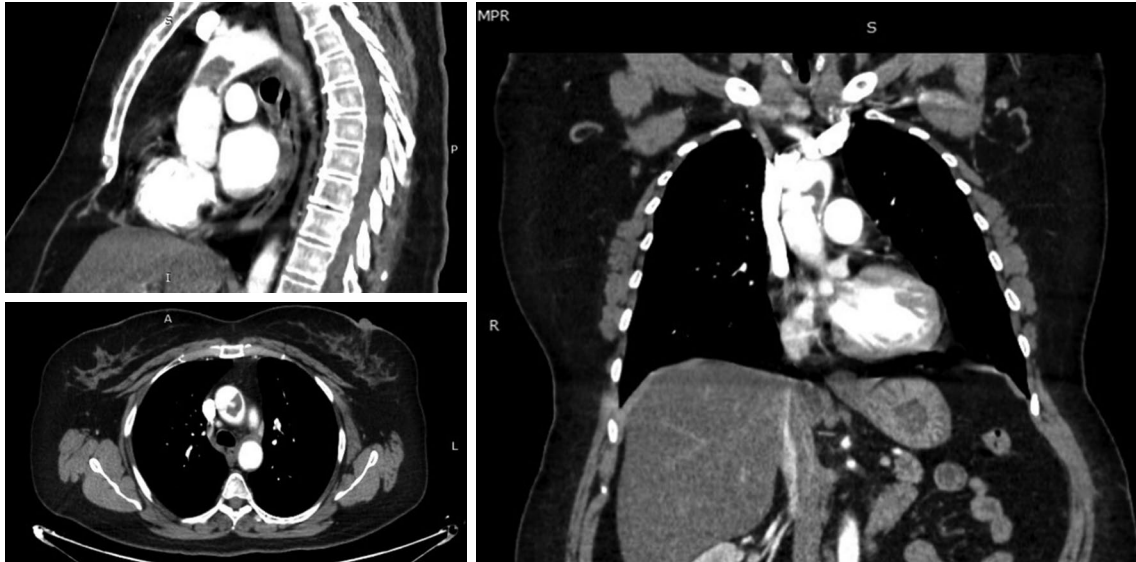


Figure 1. Contrast-enhanced computed tomography with multiplanar reconstruction demonstrating the floating thrombus of the ascending aorta.

detected on a contrast-enhanced computed tomography (CT) which was performed six months after nephrectomy for ureteral carcinoma (following chemotherapy with gemcitabine and cisplatin). This mass was fixed to the wall of the distal ascending aorta by a thin pedicle (Figure 1); it was not detected on a previous CT scan performed days before nephrectomy. The patient was asymptomatic and had normal blood tests. Transthoracic echocardiography (TTE) revealed a non-homogenous, very mobile, 25×16-mm floating

mass, attached by an 8-mm pedicle to the left-posterior aortic wall (Figure 2a). The presumed diagnosis was FTAA. Transesophageal echocardiography (TEE) and TTE showed no cardiac abnormality. Coronary angiography seemed hazardous due to the intra-aortic mass; consequently, coronary CT angiography was performed which revealed patent arteries. Surgery was indicated due to the high embolic risks of an FTAA; however, the patient refused the procedure; instead, a conservative treatment (unfractionated heparin) was

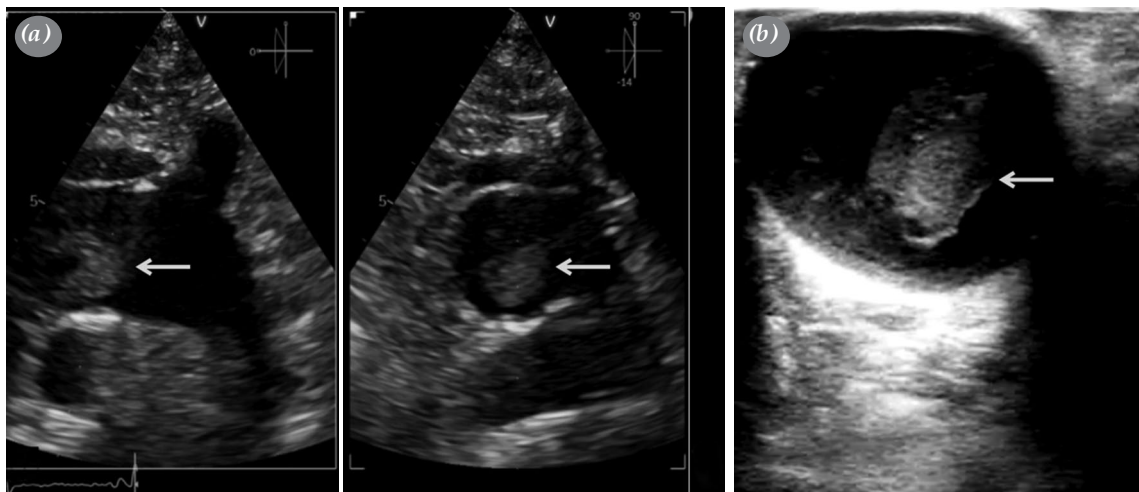


Figure 2. Floating thrombus of the ascending aorta (arrow). (a) Two-dimensional transthoracic echocardiography (multiplanar transducer, suprasternal view). (b) Intraoperative epi-aortic echography (transverse view of the ascending aorta at the most distal clamping level).

applied for two weeks, but it proved ineffective. Therefore, surgery was accepted.

We used atrial-femoral cardiopulmonary bypass (CPB) with cooling to 32°C. Epiaortic echography showed that aortic cross-clamping entailed embolic risks (Figure 2b). Thus, during a short circulatory arrest (3 min), a transverse aortotomy was performed at the level of the FTAA, and the mass was caudally pulled; this allowed safe cross-clamping of the distal ascending aorta under direct vision. Retrograde cold blood cardioplegia was used. The FTAA was resected together with 1 cm of the aortic wall surrounding its pedicle; the aorta was reconstructed with a bovine pericardial patch. Histopathology confirmed that the mass was a thrombus. The postoperative course was uneventful. The patient was prescribed vitamin K antagonists before discharge.

DISCUSSION

Floating thrombus of the ascending aorta is an uncommon disease with unclear etiology. In its pathogenesis, either an aortic wall disease or a thrombogenic state have been implied;^[1,2] however, frequently, both conditions are involved. In the present case, although the patient exhibited a small atherosclerotic plaque underneath the FTAA base, the thrombogenic state (induced by malignancy and chemotherapy) was probably the essential pathogenic factor. Both cytostatics prescribed to the patient (gemcitabine and cisplatin) are known risk factors for venous thromboembolism.^[3] Furthermore, cisplatin has been reported in arterial thrombotic events in cancer patients.^[4] The present case sustains the prophylactic use of anticoagulants during cancer chemotherapy.

There is no consensus on the optimal management of FTAA. Although good results after conservative management (anticoagulation with heparin or rivaroxaban) have been reported,^[1,2] surgery should be the first option due to the high embolic potential of the FTAA; anticoagulation remains an option when surgery is refused or contraindicated.^[2]

Minimum manipulation of the ascending aorta is required to prevent embolic events during FTAA surgery. In this respect, peripheral cannulation (axillary or femoral) is helpful; furthermore, freeing the aorta from surrounding tissues should only be accomplished on total CPB.

The position of the thrombus within the aorta is essential in choosing the surgical technique. In distally located FTAA, one should decide if, where, and when to clamp the aorta. Epiaortic echography is a valuable tool for these decisions.^[5] It showed in our patient

that the aortic cross-clamping entailed embolic risks. In such cases, deep hypothermic circulatory arrest (DHCA) was recommended.^[2] However, if FTAA resection and aortic reconstruction are feasible below a distally placed aortic clamp, mild to moderate hypothermia with a short circulatory arrest is an attractive alternative which allows safe aortic cross-clamping, under direct vision, but avoids the drawbacks of DHCA. However, selective antegrade cerebral perfusion should be available, in case quick resumption of perfusion is not possible.

The aortic wall properties underneath the FTAA attachment also impact the technical choice. In patients with evident aortic wall disease^[6] or with extensive or multiple FTAA insertions, replacing the ascending aorta is usually required.^[5] Otherwise, a conservative attitude or a limited excision of the implantation zone can be chosen. In our case, we opted for the latter due to the case's recent malignancy.

In conclusion, epiaortic echography and short circulatory arrest under tepid hypothermia are valuable techniques for avoiding intraoperative embolism during floating thrombus of the ascending aorta surgery. Prophylactic anticoagulation during cancer chemotherapy may help prevent thromboembolic complications.

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