

Acute thrombotic occlusion of abdominal aorta: a case report

Abdominal aortun akut trombotik tıkanması: Olgu sunumu

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Acute abdominal aortic occlusion is an infrequent vascular surgical emergency condition which requires early intervention due to its fatal outcome. In this article, we presented a 44-year-old diabetic, smoker female case of acute abdominal aortic occlusion due to thrombosis and managed by an institutional policy based on the information derived from the review of literature.

Key words: Abdominal aorta; acute occlusion; lower limb paralysis.

Acute abdominal aortic occlusion is an infrequent, vascular condition that requires emergency surgery. It should be managed promptly due to its fatal outcome. Even when it is managed appropriately, the mortality rate is approximately 35-52%, and the latest literature indicates that the morbidity rate exceeds 75%. Although acute abdominal aortic occlusion can be diagnosed clinically, because the symptoms and signs at presentation are not specific to this disease, it usually takes longer in practice than it should. This delay results in the loss of precious time. This can have an adverse effect on the survival of the patients and contribute to the already high mortality and morbidity rates.

In this article, we present a case of acute abdominal aortic occlusion due to thrombosis according to the current review of the literature.

CASE REPORT

A 44-year-old diabetic (for 22 years) female smoker (30 packets/year) with poor glycemic control was admitted to our hospital with paralysis of the bilateral lower

extremities. Her physical examination revealed that her femoral pulses were both nonpalpable, the bilateral lower extremities were cold, and the left foot was cyanotic. The Doppler USG examination was unable to detect any pulse at the bilateral common femoral arteries, and the abdominal contrasted computed tomography (CT) that was subsequently conducted revealed total occlusion of the abdominal aorta (Figure 1). Angiography detected that this occlusion was approximately 2 cm distal to the renal arteries without renal or mesenteric arterial involvement (Figure 2). Routine laboratory tests, radiologic images, echocardiographic examinations, and coronary angiographic assessment were all normal.

Anahtar sözcükler: Abdominal aort; akut tıkanıklık; alt ekstremitte paralizisi.

Immediate relief of the obstruction was obtained via a partial percutaneous thrombectomy using a balloon-tipped Fogarty catheter (Edwards Lifesciences, Irvine, California, USA), and a large amount of fresh thrombus material was retrieved from the aorta during this procedure. Shortly afterward, although femoral circulation was restored, the demarcation line of cyanosis on the left foot progressed up to the knee,



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Figure 1. Hypodense thrombus material starting at the level of the renal arteries can be seen by the contrast-enhanced abdominal computed tomography.

and the gangrenous process started at the foot on the third day. Vascular surgery for removal of the thrombus along with amputation of the left leg at the knee were obligatorily performed.

DISCUSSION

Acute abdominal aortic occlusion is a catastrophic condition that requires emergent surgery. High morbidity and mortality rates occur even when treated in a timely manner, and limb loss is inevitable in more than 90% of cases.^[1]

Embolic occlusion and abdominal aortic thrombosis (in situ thrombosis) of the previously diseased aorta are the main pathophysiological mechanisms which underlie this condition. Dossa et al.^[1] reported that heart disease and female gender were risk factors for embolization while smoking, diabetes, and a history of intermittent claudication were risk factors for thrombosis. In our case, the patient was female and had a 22-year history of diabetes mellitus (DM). In addition, she was an excessive smoker.

Although occlusion may occur in any segment of the aorta, the terminal part of the abdominal aorta distal to the renal arteries (infrarenal), especially the iliac bifurcation portion, is the most frequent site of the occlusion. Total thrombotic occlusion was found in the infrarenal abdominal aorta and femoral arteries in our patient.



Figure 2. Total occlusion of the abdominal aorta 2 cm distal to the renal arteries is seen at aortography.

Most emboli large enough to occlude the terminal aorta originate from the heart, especially from the left atrium, in the setting of atrial fibrillation. Atrial myxoma, vegetations in bacterial or fungal endocarditis, and prosthetic valve thrombus can also be infrequent causes of embolization. Abdominal aortic thrombosis was considered in this case because of the patient's sinus rhythms and the echocardiographic finding of no enlargement of the left atrium. The patient had no other possibilities to account for the embolization.^[2-4]

In situ thrombosis occurs in the setting of severe atherosclerotic occlusive disease in approximately 75% of the cases and is precipitated by conditions such as dehydration, diabetic ketoacidosis, and heart failure that slow the circulation at the vicinity of the stenosis.^[5] Additionally, our patient's poor blood glucose regulation may be a triggering and predisposing factor for her thrombosis.

Different clinical presentations may be observed in patients with involvement of arterial branches of the abdominal aorta. A full-blown case is characterized by the sudden onset of sharp pain located mainly in the lumbar area, abdomen, perineum, and bilateral lower extremities. Later in the course, weakness, numbness, paresthesia, and dysesthesia occur, and in the end, paralysis of the lower limbs may dominate the clinical picture. In the literature, only a few cases have been found that present with the sudden onset of paraplegia or paralysis of the lower extremities without pain due to the occlusion of the Adamkiewicz artery, the major artery supplying blood to the inferior part of the spinal cord.^[5-7] Our patient was admitted to the hospital complaining of the development of paralysis of the bilateral lower extremities, thus revealing that she had Adamkiewicz artery involvement.

Although the major determinant of the mortality rate has been stated as the time elapsed until revascularization

at the previous studies,^[5] Dossa et al.^[11] reported that the neurological state of the extremities had a more significant effect on the mortality rate than the ischemia time in their study.

Our patient's physical examination revealed cold, pale, cyanotic lower extremities with an absence of femoral and distal pulses. Muscle weakness, absence of deep tendon reflexes, and loss of sensation are some of the manifestations of ischemic neuropathy associated with significant mortality.^[1] The presented case had a gangrenous cyanotic left foot and paralysis of bilateral lower extremities that necessitated the amputation of her left leg at the knee level.

Although aortography is the gold standard test, the use of Doppler USG, contrast-enhanced CT and magnetic resonance angiography (MRA) can also provide additional information to confirm the diagnosis.^[8,9] Since aortography is beneficial for determining the involvement of the renal and mesenteric arteries, it is suggested that patients should have this procedure done preoperatively, especially for those with abdominal pain, hypertension, or anuria.^[10] The definitive diagnosis in our case was confirmed by angiography.

Since inadequate collateral arterial development occurs, immediate revascularization is necessary for both survival and limb salvage. An embolus can be removed by using balloon-tipped Fogarty catheters through transverse arteriotomies made on common femoral arteries under local anesthesia.

In patients with thrombotic occlusion, decisions should be made based on the patient's clinical status and comorbidities. Aortic reconstruction or femoral revascularization via aortofemoral bypass may be undertaken. Several reports^[5,6] have advocated aortic reconstruction for all patients with infrarenal aortic occlusion due to the potential risk of propagation of thrombosis at the distal aorta up to the renal and mesenteric arteries; however, McCullough^[10] reported in a four-year follow-up study that there was no significant deterioration in the cumulative survival in patients that did not have aortic reconstruction. In patients with renal artery involvement, revascularization by reconstruction or an aortofemoral bypass should be performed promptly.^[11]

In order to maintain sufficient circulation to the distal extremities, relieve the symptoms, and preserve the limbs, an embolus was removed from our patient using a balloon-tipped Fogarty catheter via a transverse arteriotomy conducted on the femoral artery. Although this restored femoral circulation,

the demarcation line of cyanosis on the left foot progressed up to the knee, and on the third day, gangrene was seen on the foot. That precipitated the vascular surgery for removal of the thrombus and the amputation of the left leg at the knee.

In conclusion, patients promptly admitted to the hospital because of paralysis of the bilateral lower extremities should be examined there for pulses. If pulselessness or acute aortic occlusion is suspected, additional imaging procedures, including angiography, should be undertaken. In order to prevent the higher rates of morbidity and mortality in cases who develop paralysis in their lower extremities, immediate removal of the obstruction via a percutaneous thrombectomy should be performed using a balloon-tipped Fogarty catheter, and the thrombus material should be retrieved from the aorta. In patients with renal artery involvement, revascularization by reconstruction or aortofemoral bypass should be performed as quickly as possible.

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