Management of the isolated supraceliac dissection of the abdominal aorta; a case report and review of the literature
Y Arslan, M Dumantepe, M Yilmaz, S Sanioglu, K Berköz, A özler

Citation

Abstract
Isolated abdominal aortic dissection is a rare clinical entity. Their anatomic and clinical features are different from those of atherosclerotic aneurysms. Computed tomography scan of the thoracic and abdominal aorta was the main diagnostic tool in all patients. Although natural history and treatment strategies of isolated abdominal aortic dissection have not been well-defined, accurate clinical diagnosis and prompt management are essential to prevent adverse complications. We report here our experience with this rare pathology. The anatomic and clinical features and a review of the literature are also presented.

INTRODUCTION
Spontaneous isolated dissection of the abdominal aorta (IAAD) is a rare pathology and may be associated with high morbidity and mortality rates. The disease usually occurs in male patients over the age of fifty with a history of hypertension [1]. The reported rate of IAAD is less than 2%, compared with that of ascending aortic dissection (70%), descending aortic dissection (20%), and aortic arch dissection (7%) [2]. These patients commonly present with sudden onset of severe abdominal and back pain. Deaths occur as a result of end organ ischemia or aortic rupture. It may be classified as iatrogenic, traumatic or spontaneous [1]. The anatomic and clinical features of this entity are different from the classical dissection originating from the ascending or descending thoracic aorta.

We report the experience of our institution in the diagnosis and management of spontaneous IAAD. Special emphasis is given on the clinical presentation of this rare entity and the treatment options that can be applied to in order to avoid adverse complications.

CASE REPORT
A 74-year old woman suffering abdominal pain radiating to the back and to the buttock for one-month was admitted to our hospital on November 2008. She had no history of ischemic rest pain in the past medical history. Physical examination revealed 165 cm lady who had a blood pressure of 120/80 mmHg in bilateral arm. Heart sounds, respiratory sounds or neurological system were normal. The electrocardiogram and the chest roentgenogram did not demonstrate any sign of abnormality. Peripheral pulses were palpable bilaterally over the lower limbs. Thoracoabdominal aortic aneurysm (widest diameter, 5 cm) was present at enhanced computed tomographic (CT) scanning without contrast which was taken a week ago. The patient has been in hemodialysis programme for the last five year because of the cronic renal insufficieny. Contrast enhanced CT angiography was planned for the patient and it was taken after the nephrological preparation. At the supraceliac segment, under the diaphragm, isolated abdominal dissection fleb, which were 2cm. lenght, was established. In this case, where the classic appearance of the ‘double- barreled’ abdominal aorta was identified (Figure 1).
Management of the isolated supraceliac dissection of the abdominal aorta; a case report and review of the literature

Figure 1
Figure 1: CT-scan with IV contrast of the abdomen that shows double-barrel appearance of a dissected supraceliac aorta transvers (A) and sagittal (B) plane associated with an isolated abdominal aortic dissection.

In our case, medical following decision was taken through hospitalizing because of the lack of malperfusion on the patient, the fact that the blood pressure was stable, the existence of chronic renal insufficiency and the fact that the patient was not in acute phase. In the CT which was taken 1 month after the application, no increase in the size of the aneurysm or a progress in the dissection flap was observed. The patient has still been followed by antihypertensive treatment.

DISCUSSION

Spontaneous IAAD (not associated with trauma or with descending thoracic aortic dissection) is rare; it accounts for less than 2% of all aortic dissections [1]. However, the wide use of CT scanning in cases of nonspecific abdominal pain has begun to reveal this condition with increasing frequency. In the International Registry of Acute Aortic Dissection (IRAD) 1.3% of the enrolled patients were identified as having IAAD [1]. The clinical experience on this condition is based on case reports and small case series, the largest of which is the IRAD cohort that consists of 18 patients. A review of the literature by Farber et al. in 2004 identified 51 cases in the English literature [1]

In cases of IAAD, the dissection flap generally originates below or at the level of the renal arteries; less often, the intimal tear is in the suprarenal aorta [5]. In the series of Farber and coworkers [1] the dissection flap originated below the renal arteries in 9 cases and at the level of the superior mesenteric artery in 1 case. Similar findings had previously been reported by Becquemin and co-authors [6] in a series of 7 patients affected by acute or chronic dissection of the abdominal aorta. In that study, 6 of 7 patients had infrarenal dissection.

As opposed to the more common atherosclerotic aneurysms, IAADs are often evident clinically, although the symptoms are nonspecific. The fast expansion of the false lumen of the aneurysm produces early clinical symptoms. The most common presenting symptom is sudden onset of abdominal pain radiating to the back and to the buttock. This was recorded in all patients in our series. Acute lower limb ischemia and intermittent claudication are also encountered.

Diagnostic studies include CT-scan, ultrasound, MRI and angiography [7]. CT with IV contrast can be easily performed in the acute setting and can identify the characteristic double aortic lumen, patency of both lumens, aortic dilatation and the presence of calcification or possible extravasation of blood due to rupture.

Indications for operative intervention in patients with IAAD include aortic rupture, lower extremity ischemia, unremitting pain, associated aortic aneurysm and prevention of future aneurysmal degeneration [1]. Asymptomatic patients with a non-dilated aorta should be treated with antihypertensive medication. Spontaneous healing of aortic dissection has been reported during medical therapy, but it is rarely occurring event since continuous flow through large entry
Management of the isolated supraceliac dissection of the abdominal aorta: a case report and review of the literature

tears seems to prevent spontaneous healing. The false lumen disappears and circumscriptive wall thickening develops [4].

Operative intervention includes open or endovascular repair of the abdominal aorta. This decision is greatly influenced by anatomical conditions together with the surgeon’s experience. As dissection may extend to the iliac arteries, aortobifemoral grafting is the operation of choice. Endovascular treatment of IAAD has been associated with a high rate of technical and clinical success with reduced morbidity and mortality rates in experienced centers [9].

Patients with abdominal aortic dissection may be presented with visceral malperfusion symptoms. Mortality of patients with renal ischemia is reported to be 50 to 70% and mortality figures in mesenteric ischemia can be as high as 87% [10]. The surgical mortality rates in patients with peripheral vascular ischemic complications also amounts to up to 87% of those with mesenteric ischemia with an 89% hospital mortality rate [10]. In our case, medical following decision was taken through hospitalizing because of the lack of malperfusion on the patient, the fact that the blood pressure was stable, the existence of chronic renal insufficiency and the fact that the patient was not in acute phase. In the CT which was taken 1 month after the application, no increase in the size of the aneurysm or a progress in the dissection fleb was observed (Figure 2). The patient has still been followed by antihypertensive treatment.

**CONCLUSIONS**

IAAD is a rare clinical condition that may have a number of clinical presentations with potential serious adverse effects. Although the natural history of this process is not yet clearly described, early diagnosis and prompt initiation of treatment are key components in avoiding lethal complications. We think that in the patients with advanced comorbid, lack of malperfusion and especially in the isolated dissections with supraceliac positioning, the medical treatment is a better option and that in follow up period, it is more useful to behave as type-B abdominal aort dissection.

**REFERENCES**


**CORRESPONDENCE TO**

Mert Dumantepe Address: Atif bey sokak, Derya 85 sitesi, 2. Kısım A blok, Kat: 3, D: 11 Acibadem, 34660, İSTANBUL Tel: +90 216 5452858 Mob: +90 532 3771872 E-mail address: mdumantepe@gmail.com

**Figure 2**

Figure 2: (A) Abdominal CT-scan shows a dissected infradiaphragmatic supraceliac aorta. (B) The infrarenal part of the aorta is non-dissected and with a normal diameter.
Management of the isolated supraceliac dissection of the abdominal aorta; a case report and review of the literature

Author Information

Yücesin Arslan
Dr.Siyami Ersek Thoracic and Cardiovascular Surgery Research and Training Hospital

Mert Dumantepe
Dr.Siyami Ersek Thoracic and Cardiovascular Surgery Research and Training Hospital

Mehmet Yılmaz
Dr.Siyami Ersek Thoracic and Cardiovascular Surgery Research and Training Hospital

Soner Sanioglu
Dr.Siyami Ersek Thoracic and Cardiovascular Surgery Research and Training Hospital

Kazım Berköz
Dr.Siyami Ersek Thoracic and Cardiovascular Surgery Research and Training Hospital

Azmi özler
Dr.Siyami Ersek Thoracic and Cardiovascular Surgery Research and Training Hospital