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Case report / Olgu Sunumu

Rupture of isolated inferior thyroid artery aneurysm leading to life-threatening hemothorax

Yaşamı tehdit eden hemotoraksa neden olan izole inferior tiroid arter anevrizması rüptürü

Gökhan Lafçı,[1] Sinan Sabit Kocabeyoğlu,[1] Adnan Yalçınkaya,[1] Ersin Kadiroğulları,[1] Aysel Türkvatan,[2] Mehmet Ali Özatik[1]

[1]Department of Cardiovascular Surgery, Türkiye Yüksek İhtisas Training and Research Hospital, Ankara, Turkey
[2]Department of Radiology, Türkiye Yüksek İhtisas Training and Research Hospital, Ankara, Turkey

The true aneurysms of thyrocervical trunk are rarely seen. Some of these aneurysms are asymptomatic, while others may present with dyspnea, hoarseness and dysphagia. In this report, we present a spontaneous rupture of isolated inferior thyroid artery aneurysm leading to life-threatening hemothorax and successfully treated with surgical approach.

Key words: Hemothorax; inferior thyroid artery aneurysm; thyrocervical trunk.

Tiroservikal dalın gerçek anevrizmaları nadiren görülür. Bu anevrizmaların bazıları semptomsuz iken, diğerlerinde nefes darlığı, ses kısıklığı ve yutma güçlüğü belirtileri eşlik edebilir. Bu yazıda yaşamı tehdit eden hemotoraksa neden olan izole inferior tiroid arterinin spontan rüptürü ve başarılı cerrahi yaklaşımı sunuldu.

Anahtar sözcükler: Hemotoraks; inferiyor tiroid arter anevrizması; tiroservikal dal.

Although pseudoaneurysm of the thyrocervical trunk (TCT) has been seen with increasing frequency as a result of trauma or central venous cannulation, true aneurysm of the TCT and its branches is a rare condition.[1] A spontaneous rupture of an inferior thyroid artery (ITA) aneurysm occurs even less frequently.

We present an unusual case of a spontaneous rupture of an ITA aneurysm causing life-threatening hemothorax that necessitated surgical intervention.

CASE REPORT

A 60-year-old female with a three-day history of dyspnea and fatigue was referred to our emergency department because of a suspicion of acute aortic dissection. At admission, the patient had severe dyspnea and chills and was in poor condition. The patient informed us that she also had hypertension. A physical examination revealed a systemic arterial pressure of 80/50 mmHg and a pulse rate of 110 beats per minute. The patient's respiratory rate was 30 breaths per minute, and she had severe dyspnea. Furthermore, her skin was wet, and all peripheral pulses were weak. On auscultation, the respiratory sounds of the right chest were extremely depressed. There was no pulsatile mass, but there were bruises on the right neck area.

Laboratory tests revealed a hemoglobin level of 5.5 g/L, and chest radiography identified a hemothorax. A diagnostic thoracentesis was performed in the emergency room and detected hemorrhagic fluid. Echocardiography determined that there was no ascending or arcus aortic dissection. Two units of erythrocyte suspension was then transfused. Thoracic aorta computed tomography angiography (CTA) was immediately performed, revealing a 2x2 cm ruptured aneurysm of the right ITA associated with active extravasation of contrast media (Figures 1a, b). In addition, the CTA pointed out a large hematoma in the right hemithorax (Figure 1c).

The patient was transferred to the operating room for emergency surgery. During the anesthetic induction,

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Correspondence: Adnan Yalçınkaya, M.D. Türkiye Yüksek İhtisas ve Araştırma Hastanesi Kalp ve Damar Cerrahisi Anabilim Dalı, 06230 Sıhhiye, Ankara, Turkey.
Tel: +90 312 - 306 18 16 e-mail: adnanyalcinkaya@gmail.com

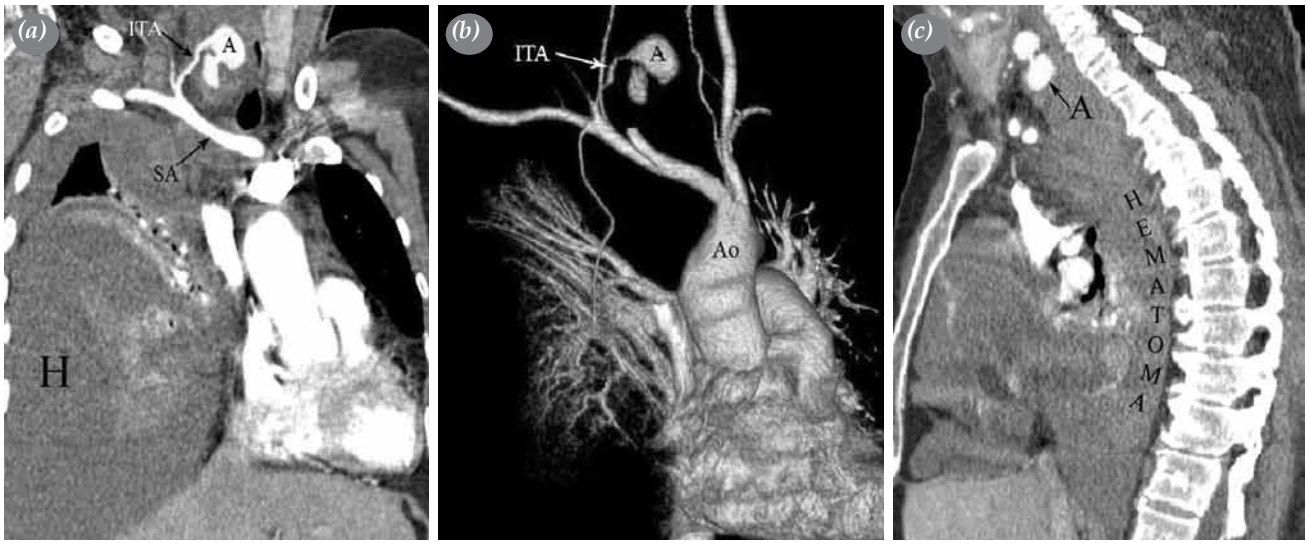

Figure 1. (a) Preoperative computed tomography angiography demonstrating the ruptured aneurysm of the right inferior thyroid artery and extravasation of contrast media. The right hemithorax was filled with hematoma. **(b)** The right pulmonary arteries and bronchus extending upward due to hematoma. **(c)** Sagital view of the right hemithorax showing a large hematoma. ITA: Inferior thyroid artery; A: Aneurysm; SA: Subclavian artery; H: Hematoma.

cardiac arrest developed. However, she recovered after a short time via cardiopulmonary resuscitation. An incision between the midpoint of the right clavicle and the suprasternal notch was performed, and the right subclavian, right internal thoracic, and thyrocervical arteries were identified. The medial and lateral branches of the TCT were ligated from its proximal level with silk sutures, and a Penrose drain was inserted in case of distal backbleeding. After closure of the incision, a right chest tube thoracostomy was performed, and about 2100 cc of hemorrhagic fluid was drained. Two units of erythrocyte suspension and fresh frozen plasma were then administered. After transfusion, her hemoglobin level remained stable at 10 g/L, and it gradually increased over the next several days.

Postoperatively, the patient was hemodynamically stable. Another control CTA was performed on the eighth postoperative day, which revealed a smaller hematoma than was seen on the original CTA. Additionally, the aneurysm was no longer present (Figure 2). The patient was discharged in good health without complications on the 15th postoperative day.

DISCUSSION

The TCT is the second superior branch of the subclavian artery, and aneurysms of the TCT are rare. The ITA is the most common site for TCT aneurysms, suggesting the presence of favorable anatomical characteristics of this vessel for the development of pathological dilatation.[1]

Peripheral arterial aneurysms are mainly caused by arteriosclerosis, blunt, penetrating trauma, and iatrogenic injuries, but inflammatory vasculitis and syphilis are also occasionally responsible.[2] In cases where rupture has occurred Ehler-Danlos syndrome should be considered.[3] Our patient had no risk history, but her hypertension could have contributed to the pathogenesis of the aneurysm.

The first report of an ITA aneurysm and rupture was in 1959.[4] Of the 29 cases that have been reported since then, nine patients (32.2%) presented with spontaneous rupture, and three (9.6%) of these died as a consequence.[5] Our patient is the 30th overall reported case and the 10th that presented with spontaneous rupture.

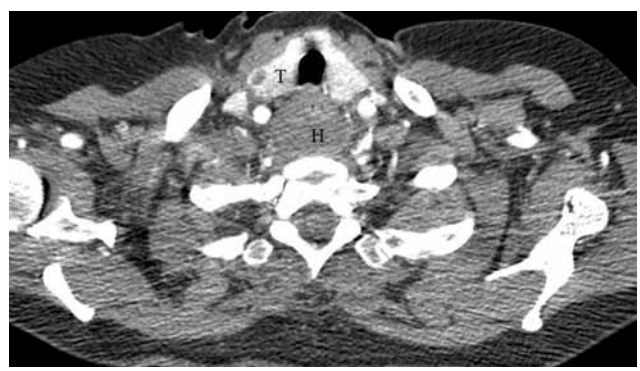

Figure 2. Postoperative control computed tomography angiography demonstrating that the reduced hematoma. The aneurysm is no longer visible. T: Thyroid; H: Hematoma.

The ITA may present as asymptomatic, or it may have a pulsatile mass at the neck. Furthermore, it can also clinically appear as hoarseness due to pressure on the vagus nerve or direct pressure on the larynx, dysphagia as a result of compression of the esophagus, and respiratory distress due to compression of the trachea or hemothorax.[1] Our case presented with respiratory distress caused by a massive hemothorax pressuring the right lung.

An aneurysm can be seen as a mass on a chest radiograph while Doppler ultrasound reveals turbulent flow in an aneurysm sac. Computed tomography angiography is a noninvasive diagnostic modality that provides an accurate anatomic assessment of both the right and left TCT and their association with other structures. Selective angiography has been reported as the diagnostic modality of choice as it can be promptly transformed into a therapeutic procedure, particularly in an urgent situation.[1,3] We preferred CTA because of the suspicion of aortic dissection.

Surgical techniques include arterial ligation with or without resection of the aneurysm sac for treatment. Coil embolization could also be considered as an alternative therapeutic procedure in elective or urgent conditions to avoid the risk of nerve injury, including Horner syndrome and vocal cord paralysis.[1,3] We chose surgical management because of the patient's poor condition due to respiratory and hemodynamic instability.

If an ITA aneurysm ruptures spontaneously, it can be life-threatening; thus, surgical or radiological intervention must be performed as soon as possible.

Declaration of conflicting interests

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