Rare disease

Multiple gunshot carotico-jugular fistulas

Orcun Unal,¹ Bulent Citgez,² Muharrem Battal,² Oguzhan Karatepe³¹Department of Cardiovascular Surgery, Bakirkoy Research Hospital, Istanbul, Turkey;²2nd General Surgery Department, Sisli Etfal Training and Research Hospital, Istanbul, Turkey;³General Surgery Department, Bezmialem University, Istanbul, Turkey**Correspondence to** Dr Bulent Citgez, bcitgez@yahoo.com**Summary**

The development of post-traumatic fistula between the carotid artery and jugular vein is an extremely rare clinical condition. The authors present a 28-year-old patient, who sustained a gunshot injury to the right side of the neck 6 years ago, with undiagnosed contralateral carotico-jugular fistula.

BACKGROUND

Arteriovenous fistulas (AVF) are abnormal connections between the arterial and venous system that bypass the normal anatomic capillary beds. They can be located anywhere in the body, single or multiple, and congenital or acquired (eg, trauma or penetrating injuries). Although the physiological effects of traumatic fistulas have been well characterised, their clinical manifestations are quite variable due to differences in location, size and duration. When left untreated late-onset, they can cause heart failure and delayed ischaemic stroke, atrial fibrillation or embolisation.¹ We present a case of chronic multiple gunshot Carotico-jugular fistulas (CJFs) and describe their diagnosis and surgical treatment.

CASE PRESENTATION

A 28-year-old man, was referred to our facility because of headache and continuous thrill at the left side of the neck. The medical history of the patient: in 2005, the patient was acutely admitted to another hospital with gunshot injury to the right side of the neck and underwent surgical wound exploration. Clinical examination showed that the young man's general physical condition was normal. He had good exercise tolerance. Moreover, his ability to function, to keep his job was normal. On admission, the patient was haemodynamically stable with blood pressure of 130/80 mm Hg and heart rate of 90. A further clinical examination revealed a continuous thrill and bruit in the left side of the neck. There was no cardiac murmur or neurological deficits. Colour duplex ultrasound further demonstrated flow between the carotid artery and the jugular vein. Carotid angiography (figure 1) confirmed the two position of a high-flow fistula between the left common and internal carotid artery and the adjacent internal jugular vein and occlusion of left external carotid artery.

We diagnosed caroticojugular fistulas and decide to the operation. The patient was placed under general anesthesia for exploration of the left side of the neck. A longitudinal neck incision was made anterior to the sternocleidomastoid muscle, and the sternal head of the muscle was divided (figure 2A,B). During the neck exploration, we use intraoperative duplex ultrasonography.

After exposure of the internal jugular vein, the left common carotid artery, and the internal and external carotid arteries, control of these vessels was achieved by use of vascular clamps. The first fistulous track was divided, and the openings in the common carotid artery and the internal jugular vein were closed with continuous 5/0 polypropylene sutures. Other fistulous track, which was not seen in the angiography was very close to skullbase and was just ligated. The thrill dissappeared. Postoperative period was uneventful.

Figure 1 Preoperative angiographic view, shows that first carotico-jugular fistula but in the skull base we did not see second arteriovenous fistula.

Figure 2 (A, B) Intraoperative demonstration of the fistula. Black arrow shows fistula tract.

DISCUSSION

The incidence of AVF is quite rare in the head and neck region comprising less than 4% of all the traumatic AVF encountered elsewhere in the body.² The diagnosis can be missed for months or years. A high index of suspicion is necessary for the diagnosis.³ Often the fistula is missed during the acute phase of injury; as a result, most patients are not treated for weeks or months after the initial injury. If the patient diagnosed late, scarring of soft tissues around the fistula made surgical treatment difficult. In our case, the patient was not diagnosed for 6 years. In literature, one case has been reported who was diagnosed 28 years later, while being investigated for heart failure.⁴ The most important finding in physical examination in patients with caroticojugular fistulas is the continuous thrill on the neck.⁵ Severity of patient's symptoms is largely determined by the size of AVF and fistula flow-rate, but in patients with congestive heart failure even a small AVF can significantly decrease exercise tolerance and worsen heart failure.⁶

The current treatment of long-standing AVFs includes endovascular and surgical options. The surgical treatment of the post-traumatic fistula ranging from simple ligation to resection and anastomosis of the vessels. Direct surgical repair of long-standing traumatic AVF can be challenging due to the obvious venous hypertension and the surrounding scar tissue. Catheter-directed methods of AVF closure are widely used and have their own indications depending on the location of the AVF.^{6,7}

A careful physical examination should be done and CT angiography of the neck should be routinely performed in patients with acute gunshot trauma in the follow-up of period.

Learning points

- ▶ The development of post-traumatic fistula between the carotid artery and jugular vein is an extremely rare clinical condition.
- ▶ Methods of long-standing penetrating neck AVF closure should be personalised depending on patient's anatomy and treatment preferences.
- ▶ CT angiography of the neck should be routinely performed in patients with acute gunshot trauma.

Competing interests None.

Patient consent Obtained.

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