

Carotid Artery Dissection: A Case Report

Muhammed Ekmekyapar¹, Hakan Oğuztürk¹, Tuba Ekmekyapar², Serdar Derya¹, Şükrü Gürbüz¹

¹Emergency Medicine Department, Faculty of Medicine, Inonu University, Malatya, Turkey

²Neurology Department, Malatya Education and Research Hospital, Malatya, Turkey

Abstract

Carotid artery dissection, firstly described by Pratt-Thomas and Berger in 1947, typically begins in inner layer of artery wall, proceeds to the middle layer, and intramurally extends along length of the artery as a result of the pressure produced by blood stream. This study aims to report a case in which internal carotid artery dissection was diagnosed as secondary to trauma. A 24-year-old male patient was brought to the emergency room by 112 emergency service team after a motorcycle accident. Physical examination of the patient revealed a painful dermabrasion in his right neck region and other system examinations were normal. Carotid-vertebral color Doppler ultrasonography was performed on the patient because he had a right neck pain. Accordingly, an intimal flap appearance compatible with dissection was observed on the right internal carotid artery (ICA) proximal segment. Then, brain+cervical CT angiography was performed on the patient, and an appearance compatible with dissection was observed in the right ICA. Therefore, the patient was referred to neurology and neurosurgery consultation and accordingly admitted to neurosurgery intensive care unit. As a result, carotid artery dissection in addition to other intracranial pathologies should be considered among differential diagnoses for patients with head and/or neck pain complaints regardless of whether or not they have a trauma history.

Key Words: Carotid artery, trauma, dissection

Introduction

Carotid artery dissection was described for the first time by Pratt-Thomas and Berger (1947) after making autopsies of two death patients¹. Arterial dissection typically begins in inner layer of artery wall, proceeds to the middle layer, and intramurally extends along length of the artery as a result of the pressure produced by blood stream. The most common type of dissection is external carotid artery dissection. The clinical condition may vary from mild symptoms (ipsilateral head and neck pain, Horner's syndrome) to more severe findings such as transient ischemic attack and cerebral ischemia. The causes of carotid artery dissection include rheumatic diseases, hypertension, migraine, fibromuscular dysplasia, and trauma². This study aims to report a case admitted to emergency service after a trauma and diagnosed of an internal carotid artery dissection.

Case

A 24-year-old male patient was brought to the emergency room by 112 emergency service team after a motorcycle accident. Physical examination of the patient revealed a

painful dermabrasion in his right neck region and other system examinations were normal. The patient's vital parameters were as follows; fever 36°C, pulse 75/min, TA 125/75 mmHg, and respiratory rate 18/min. The patient's hemogram and biochemistry values were normal. After the physical examination, the patient's radiological examinations were requested. There was no abnormal finding on his tomography, graphy and abdominal ultrasonography. Carotid-vertebral color Doppler ultrasonography was performed on the patient because he had a right neck pain. Accordingly, an intimal flap appearance compatible with dissection was observed on the right internal carotid artery (ICA) proximal segment. Then, brain+cervical CT angiography was performed on the patient, and an appearance compatible with dissection was observed in the right ICA (Figure-1). Therefore, the patient was referred to neurology and neurosurgery consultation and accordingly admitted to neurosurgery intensive care unit.

Discussion

An arterial dissection occurs as a result of the rupture of one of vein wall layers, usually the intima layer. The annual incidence of spontaneous carotid artery dissection in West-

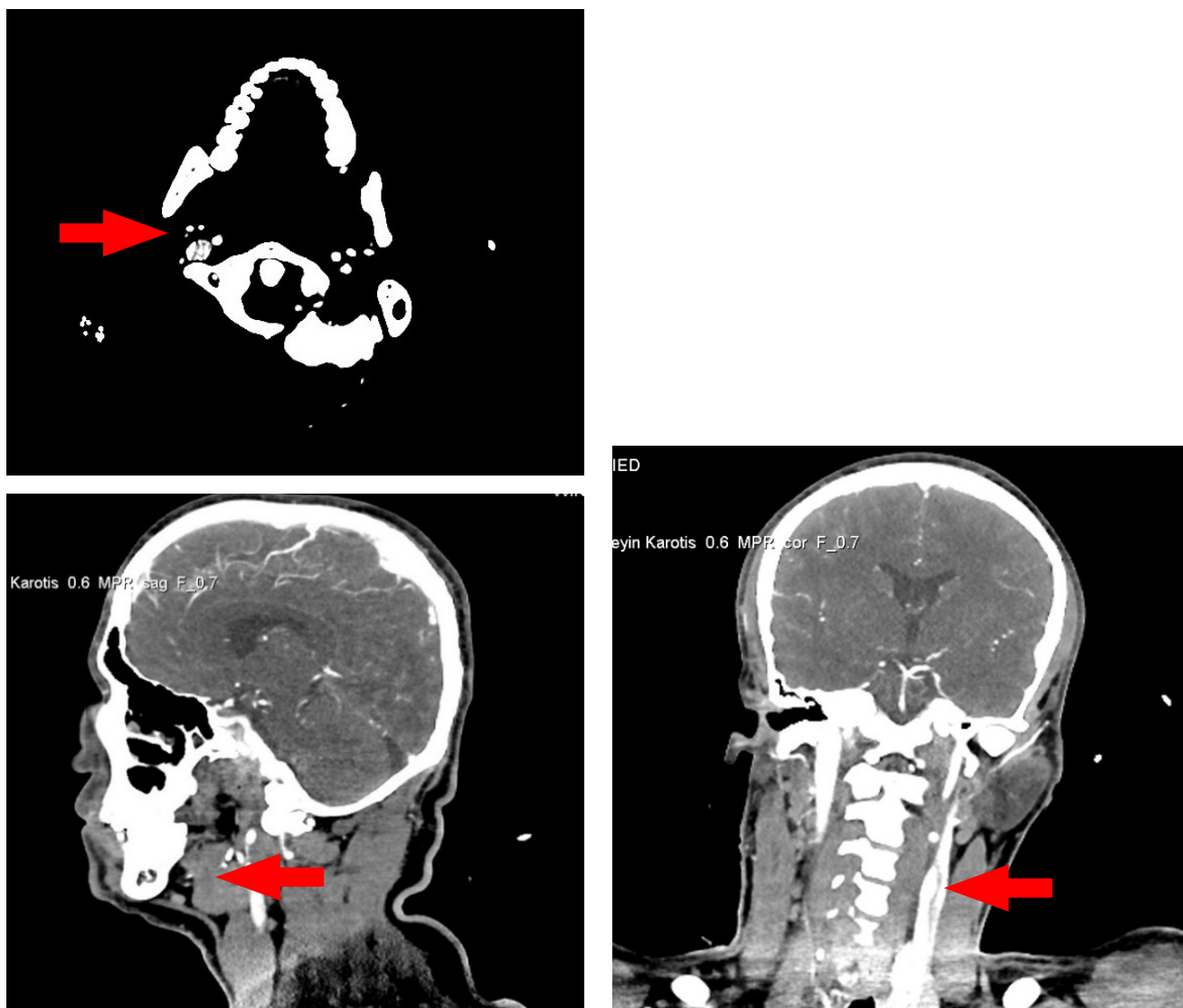


Figure 1: An appearance compatible with dissection in the patient's brain+cervical CT angiography

ern countries ranges from 2.5 to 3 per 100,000 individuals³. Spontaneous carotid artery dissection is an important cause of ischemic infarction in young adults and accounts for 10-25% of these cases⁴. It has a variety of local and clinical symptoms. The most common local symptoms of carotid dissection are acute head, face, or neck pains. The present study case had a dermabrasion in his neck region, but no additional complaints other than neck pain. Unilateral stroke and cerebral ischemic symptoms such as amaurosis fugax have been reported in 50-90% of the patients with arterial dissection⁵. The causes of carotid artery dissection can be classified as trauma including direct damage to the head and neck; underlying arteriopathy such as Marfan's syndrome; and spontaneous occurrence. Detecting the true frequency of traumatic ICA (internal carotid artery) dissection is difficult because of the absence of typical findings and sometimes asymptomatic course. Besides blunt trauma, artery stretch and exposure to

hyperextension also cause intimal rupture. Various methods are used to diagnose carotid artery dissection. Firstly, computerized tomography is used to demonstrate the presence of cerebral hemorrhage, infarct, or cerebral edema, and also it is useful in determining whether there is any contraindication to the use of systemic anticoagulants. Doppler ultrasound is useful in diagnosing extracranial carotid artery dissections⁶. MR angiography is a minimally invasive diagnostic method with high sensitivity and specificity. Despite all, no matter how helpful these diagnostic methods are, arteriography is the gold standard in diagnosing of carotid artery dissections^{7,8}. Regarding its treatment, if there is no contraindication in the acute phase, anticoagulation therapy is recommended for the risk of thrombosis. Surgical treatment or stenting may be considered as other treatment options in cases of an ongoing ischemic event despite anticoagulation treatment or in cases where anticoagulation therapy is contraindicated.

Conclusion

As a result, carotid artery dissection in addition to other intracranial pathologies should be considered among differential diagnoses for patients with head and/or neck pain complaints regardless of whether or not they have a trauma history.

References

1. Pratt-Thomas HR, Berger KE. Cerebellar and spinal injuries after chiropractic manipulation. *JAMA*. 1947;133:600–603.
2. Şengül G, Kadioğlu HH, Aydın IH. Arteriyel diseksiyon sendromları. *Turkiye Klinikleri J Surg Med Sci*. 2006; 2: 163-5.
3. Schievink WI, Mokri B, Whisnant JP. Internal carotid artery dissection in a community Rochester, Minnesota, 1987-1992. *Stroke* 1993;24: 1678–80.
4. Schievink WI. Spontaneous dissection of the carotid and vertebral arteries. *N Engl J Med* 2001;344:898–906.
5. Arnold M, Bousser MG. Carotid and vertebral artery dissection. *Pract Neurol* 2005;5:100–9.
6. Srinivasan J, Newell DW, Sturzenegger M, Mayberg MR, Winn HR. Transcranial Doppler in the evaluation of internal carotid artery dissection. *Stroke* 1996 ;27(7):1226-30.
7. Desfontaines P, Despland PA. Dissection of the internal carotid artery: aetiology, symptomatology, clinical and neurosurgical followup, and treatment in 60 consecutive cases. *Acta Neurol Belg* 1995;95(4):226-34.
8. Biousse V, D'Anglejan-Chatillon J, Touboul PJ, Amarenco P, Bousser MG. Time course of symptoms in extracranial carotid artery dissections. A series of 80 patients. *Stroke* 1995;26(2):235-9.

