Turkish Journal of Cerebrovascular Diseases 2020; 26(2): 186-189 Türk Beyin Damar Hastalıkları Dergisi 2020; 26(2): 186-189
Turk J Cereb Vasc Dis
doi: 10.5505/tbdhd.2020.33866

CASE REPORT **OLGU SUNUMU**

ASSOCIATION BETWEEN BASILAR ARTERY FENESTRATION AND ISCHEMIC STROKE: A CASE REPORT

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ABSTRACT

Intracranial artery fenestrations are congenital malformations that diagnosed rarely. Occasionally they are diagnosed incidentally. It is thought that they could be associated with different vascular pathologies such as aneurysms and arteriovenous malformations. The association between aneurysm and fenestration is well described in literature. However, there are few case reports that mention the presence of an ischemic stroke due to basilar artery fenestration. Here, we purposed to discuss a patient who presented with vertigo and diagnosed with stroke caused by anterior inferior cerebellar artery infarction. The patient benefited after thrombolytic therapy. We did not detect any traditional vascular risk factors or any other reason which might cause stroke. Magnetic resonance angiography revealed a fenestration in the proximal portion of the basilar artery. The patient's symptoms were stable at his follow-up and was discharged with prophylactic anti platelet therapy.
Keywords: Basilar fenestration, ischemic stroke, stroke etiology.

BAZİLER ARTER FENESTRASYONUNA BAĞLI GELİŞTİĞİ DÜŞÜNÜLEN İSKEMİK İNME VAKASI

ÖZ

İntrakranyal arter fenestrasyonları nadir görülen konjenital anomalilerdir.Sıklıkla insidental olarak saptanırlar.Ancak farklı damarsal patolojilerin gelişimi ile ilişkili olabileceği düşünülmüştür.Özellikle anevrizmalarla olan ilişkisini gösteren çalışmalar mevcuttur.İskemik inme ile ilişkili olabileceğini düşündüren vakalar literatürde mevcuttur.Burada baş dönmesi şikayeti ile gelen ve anterior inferior serebellar arter alanında enfarktüs saptanan bir hastayı tartışmayı amaçladık.Hasta trombolitik tedaviden fayda gördü.Hastanın herhangi bir vasküler risk faktörü bulunmamaktaydı.Yapılan tetkiklerinde inme sebebi olabilecek bir durum saptanmadı.Manyetik rezonans anjiografide baziler arterin proksimal bölümünde fenestrasyon saptandı.Servis takibi stabil seyreden hasta antiagregan tedavi verilerek taburcu edildi.
Anahtar Sözcükler: Baziler fenestrasyon, iskemik inme, inme etyolojisi.

INTRODUCTION

The term fenestration refers to the appearance that the vascular lumen unusually divides into two parts, each with its own endothelial layer, continues parallel to each other, and joins together again. Intracranial fenestrations are most common in the anterior communicating artery area (1,2). It is followed by the vertebrobasilar system.

Data on the incidence of basilar artery fenestration varies in the literature. It was found between 0.28 % - 5.26 % in autopsy series, 0.3 % - 0.6 % in studies with angiographic data, and 1.0 % - 2.7 % in MRI angiographic series (3).

It has been thought that intracranial arterial fenestrations may be associated with the development of different vascular pathologies. Its relationship with aneurysms has been shown (4,5). There are studies suggesting that this may be related to arteriovenous malformations (6).

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Received: 25.03.2019 **Accepted:** 24.04.2019
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This article should be cited as following: Karabacak A, Bilgin AB, Kilic AH, Ozen Barut B. Association between basilar artery fenestration and ischemic stroke: A case report. Turkish Journal of Cerebrovascular Diseases 2020; 26(2): 186-189. doi: 10.5505/tbdhd.2020.33866

However, few reports are available in the literature suggesting that it may be the cause of temporary ischemic at-tack or ischemic stroke. Here, we aimed to discuss the case that applied with the complaint of dizziness and was planned to be treated with a diagnosis of cerebellar infarction, where basilar artery fenestration was considered as an etiological factor.

CASE REPORT

48 years old woman, applied to the emergency room with a complaint of severe dizziness and vo-miting, which started 3 hours ago. There was no known history of illness and drug use in the pati-ent's history. Neurological examination revealed mild dysarthria, horizontal nystagmus, ipsilateral dysmetria and ipsilateral ataxia. No motor and sensory deficits. In the diffusion magnetic resonance imaging of the patient evaluated as NIHSS= 5, acute ischemic infarct areas especially of the anterior inferior cerebellar artery watershed area were detected in the left cerebellar hemisphere. (Figure I).

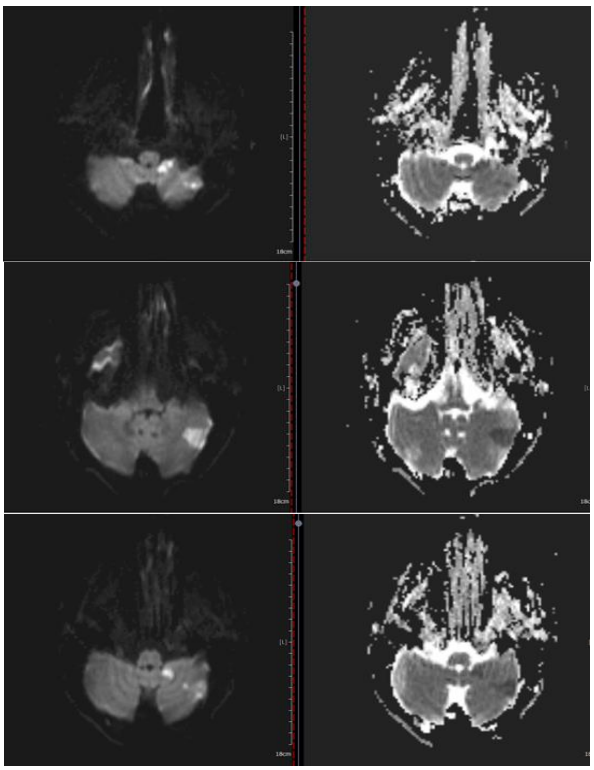

Figure I. Acute infarct areas of the anterior inferior cerebellar artery watershed area in the left cerebellar hemisphere.

The IV tpa infusion was started 3.5 hours after the onset of symptoms. After intravenous thrombolytic therapy, the patient was calculated as NIHSS= 2 and hospitalized in a neurology clinic for follow-up. The patient had no history of hypertension, diabetes mellitus, dyslipi-demia, cardiovascular disease, and cardiac rhythm disorder. No metabolic syndrome, obesity, phy-sical inactivity, smoking, and alcohol use. No significant findings were detected in the family history questioning. No feature was detected in routine blood values. Vasculitis markers were negative. In genetic studies, heterozygous MTHFR positivity was detected. Echocardiography and carotid sys-tem MRI angiography examinations were evaluated as normal. No abnormality was detected in 24-hour rhythm holter monitoring. Basilar artery fenestration was detected in cranial magnetic reso-nance angiography (Figure II). The patient, who remained stable in clinical follow-up, was discharged with antiaggregant therapy with the purpose of secondary prophylaxis.

DISCUSSION AND CONCLUSION

The basilar artery is formed by the joining of the bilateral longitudinal neural arteries to the midline at the 5th week of fetal life. Meanwhile, the connection with temporary bridge arteries is provided. Once the fusion is complete, the bridge arteries disappear over time. A defect that may occur du-ring the joining of the longitudinal neural arteries may cause fenestration at any level of the basilar artery (7). Although each of the vascular lumens, which are parallel to each other, have their own intima and media layer, the adventitia layer may be common (8).

Fenestration can occur in any part of the basilar artery. However, it is most common in the proximal area. The association of fenestrations with aneurysms is particularly important clinically. There is no abnormality in the internal structure of the lateral walls of the vascular lumens, which are divided into two. There are focal defects in both proximal and distal ends of the medial walls. These defects in the vessel wall are thought to play a role in the formation of aneurysm (9). Hemodynamic changes that this may cause may also cause ischemic events. The presence of intraluminal septa, which appears close to the end points of the fenestration and

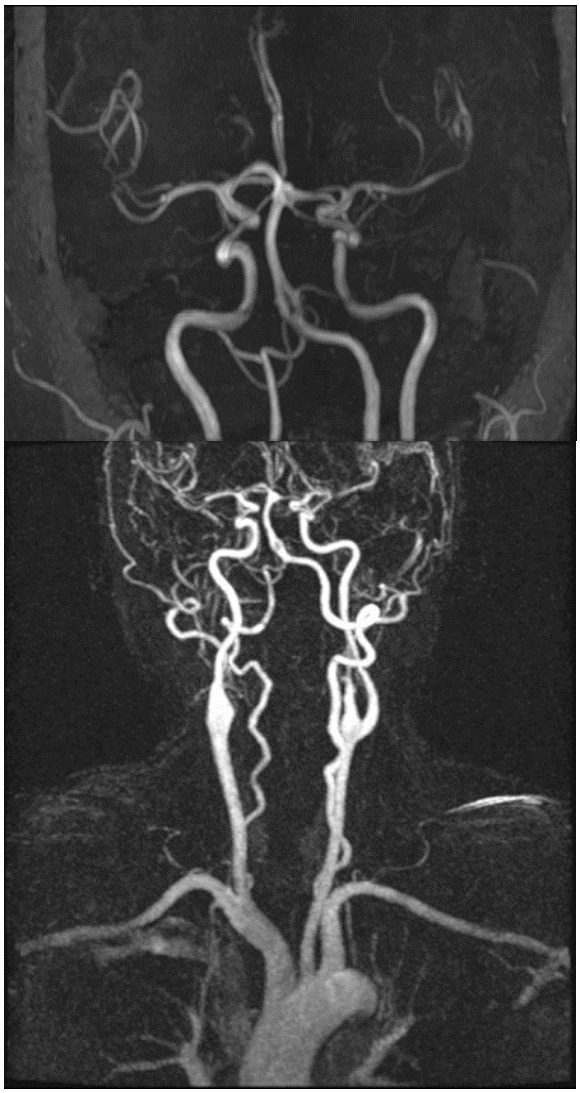

Figure II. Basilar artery fenestration MRI angiography image.

separates both lumens, may cause turbulence in the vascular flow and cause embolism (10). The fact that the absence of any risk factors that may cause ischemia in our case, that the infarct area is located in the watershed area of the vein where the anomaly is located, indicates fenestration as an etiological factor. Tanaka et al have examined the angiography of 2280 cases in order to investigate the frequency of basilar artery fenestration. In this study in which 23 basilar artery fenestrations were detected, 3 of these cases had an infarct area of the vertebrobasilar system watershed area. One of these three cases belonged to the anterior inferior cerebellar artery watershed area. The location of the anterior inferior cerebellar arteries in the case with infarction in this area originated from the fenestrated region (type 2), as in our case (11). In another ischemic stroke case report, which is thought to be related to basilar artery fenestration, it has been stated that virtual arterial endoscopy may be helpful in the diagnosis stage since it may create differential diagnosis with thrombus appe-arance (12).

As conclusion, although the relationship between basilar artery fenestration and ischemic stroke has not been cle-arly shown in the literature, there are case reports. The absence of another risk factor that we can detect in our case and the compliance of the infarct area with the feeding area of the vein where the fenestration is located suggest that arterial fenestration may be a factor in terms of ischemic stroke development. Future studies or the increase of similar case reports may support this view.

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Ethics

Informed Consent: It was declared that informed consent was signed by the patient.

Copyright Transfer Form: Copyright Transfer Form was signed by all authors.

Peer-review: Internally peer-reviewed.

Authorship Contributions: Surgical and Medical Practices: AK, ABB, AKK, BOB. Concept: AK, ABB, AKK, BOB. Design: AK, ABB, AKK, BOB. Data Collection or Processing: AK, ABB, AKK, BOB. Analysis or Interpretation: AK, ABB, AKK, BOB. Literature Search: AK, ABB, AKK, BOB. Writing: AK, ABB, AKK, BOB.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.