Incidental Finding of A Fenestrated Vertebrobasilar Junction Aneurysm

Youssoupha Kasse1, Géraud Akpo1*, Ibrahim Niang1, Khadiidia Ba Diop1, Rokhaya Diagne2, Aminata Mbaye1, Papa Malick Dibor Diouf1, Mame Coumba Fall1 and Sokhna Ba Diop1
1Department of Radiology and Medical Imaging, FANN Hospital, Dakar, Senegal
2Department of Neurology, FANN Hospital, Dakar, Senegal

Abstract

We report the case of a saccular aneurysm of the fenestrated vertebrobasilar junction in a 57-year-old woman, incidentally discovered. The diagnosis was made on CT brain angiography which found the anatomical variant and the aneurysm.

Vertebrobasilar junction aneurysms are uncommon but often associated with a fenestration of the basilar artery.

We detail the radiological features illustrating this association.

Keywords: Basilar artery fenestration; CT brain angiography; Vertebrobasilar aneurysm

Introduction

We report here a case of an incidental discovery of this association in a patient received for a suspected cerebral venous thrombosis.

Vertebrobasilar junction aneurysms are uncommon but often associated with a fenestration of the basilar artery.[1]

Aneurysms of the vertebrobasilar junction are rare, representing less than 0.5% of intracranial aneurysms, and are associated in 70% of cases with a fenestration of the basilar trunk.[2]

*Corresponding author: Géraud Akpo, Department of Radiology and Medical Imaging, FANN Hospital, Dakar, Senegal; Tel: +221 77 5429470; E-mail: geraudakpo@hotmail.com


Received: February 05, 2022; Accepted: February 21, 2022; Published: February 28, 2022

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We report here the case of an incidental discovery of this association in a patient received for a suspected cerebral venous thrombosis.

Observation

The patient was a 57-year-old woman with a history of pulmonary embolism who was referred to our department for a cerebral CT angiography for a suspected cerebral venous thrombosis.

CT revealed a large saccular aneurysm of 13 x 16 mm, with a wide neck (05 mm), implanted on an asymmetric fenestration of the vertebrobasilar junction, without any sign of complication (Figures 1-3).

No other vascular abnormalities were noted, and the dural venous sinuses in particular were permeable.

Discussion

The first case of this rare entity was described in 1979 by Hoffman, et al.[3]. Embryologically, the basilar trunk is formed by the union of the two vertebral arteries around the 7th week of amenorrhea. Any
fusion anomaly may result in a focal duplication of the basilar artery [4].

This can occur over the entire height of the artery but predominates in the proximal segment [5]. A classification based on the relationship between the fenestration and the origin of the Anterior Inferior Cerebellar Arteries (AICA) distinguishes 04 types (Figure 4) [6,7]:

- Type I: the fenestration is located up stream of the origin of the AICA (this is the case of our patient);
- Type II: the two AICAs are born symmetrically on the fenestration;
- Type III: emergence of a single AICA on the fenestration;
- Type IV: the fenestration is located down stream from the origin of the AICA.

Although rare, aneurysms of the vertebrobasilar junction are associated in 70% with a fenestration of the basilar trunk [2].

The occurrence of this association is explained by the presence of parietal abnormalities related to these anatomical variants: locally absent media, discontinuity of the elastin, and locally thinned subendothelium. This parietal fragility, added to the turbulence of the arterial flow, predisposes to the formation of aneurysms [5,6,8].

CT angiography is currently the best technique for the diagnosis and preoperative evaluation of these aneurysms. The 3D VRT reconstructions are valuable to understanding their often complex anatomy [9].

Their localization makes surgical treatment delicate because of the presence of narrow vascular-nervous relationships and the difficulty of finding an adequate approach. The current treatment is based on endovascular coil embolization [4,8,9].

Conclusion

Aneurysms of the vertebrobasilar artery are rare and their presence should be investigated for associated fenestration, which is a predisposing factor. Radiologists and neurosurgeons should be aware of this high probability of lesion association.

Competing Interests

The authors declare no competing interests.

References
