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REVIEW ARTICLE

MEGADOLICHO BASILAR ARTERY ANOMALY COMPLICATED BY A THROMBOSED FUSIFORM ANEURYSM AND A LEFT PONTINE STROKE

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ABSTRACT

We report a case of a 40-year-old man who had been seen for a sudden onset of a vertical binocular diplopia in the left lateral gaze. The patient had high blood pressure, was an active smoker and overweight. His clinical examination showed a complete paralysis of the left VI cranial nerve. Brain MRI in vascular sequence with injection showed a left pontine hypersignal in diffusion (left pontine stroke). Also the presence of mega-dolicho basilar artery associated with a fusiform aneurysm, with parietal thrombus measuring 20 mm in axial section with circulating lumen of 8 mm and a significant mass effect on the left protuberance, without any signs of rupture or bleeding. A surgical therapeutic abstention was decided, the patient was treated by antihypertensive and antiplatelet drugs. Brain MRI with angio-MRI sequence is important for the diagnosis and the search for mega-dolicho basilar artery complications (ischemia, hemorrhage and compression). Complex aneurysms of the basilar artery represent a therapeutic challenge, both neurosurgical and endovascular.

INTRODUCTION

Intracranial arterial dolichoectasia is a dilatative arteriopathy involving the vertebro-basilar arteries in 80% of cases, referred to as megadolicho basilar artery anomaly. It is characterized by arterial dilatation, elongation and sometimes tortuosity (1). Its prevalence in subjects with stroke is estimated to be between 1 and 11% (2). The formation of a fusiform aneurysm associated with an intra-luminal thrombus at the expense of this dolicho-mega basilar trunk is associated with significant morbidity and mortality (3).

CASE REPORT

We report the case of a 40-year-old man who consulted for a vertical binocular diplopia in the left lateral gaze of sudden onset. The patient was hypertensive, an active smoker and overweight (BMI 28).

The clinical examination showed a complete paralysis of the left VI cranial nerve. The rest of the neurological examination was without notable abnormality. Brain MRI in vascular sequence with injection showed a left pontine hypersignal in diffusion as left pontine ischemic stroke. A dolicho mega-basilar trunk associated with a fusiform aneurysm with a parietal thrombus measuring 20 mm in axial section with a circulating lumen of 8 mm and a large mass effect on the left protuberance without signs of rupture or bleeding was also discovered on radiological examination (Figure 1 and Figure 2). A surgical therapeutic abstention was decided in a multidisciplinary staff of neurology and neurosurgery. The patient was put on aspirin 100 mg long term with atorvastatin 40 mg daily. A reinforcement of the management of cardiovascular risk factors was undertaken, in particular the management of arterial hypertension, smoking cessation and a dietary consultation to manage the daily calory intake.

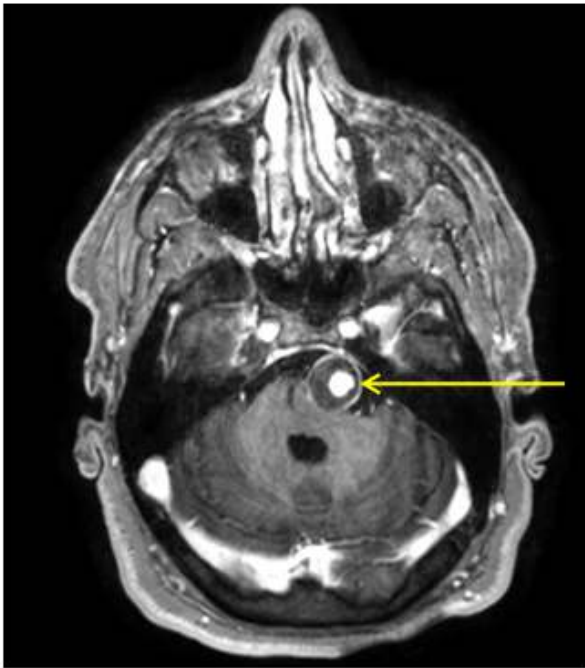


Figure 1. MRI (a contrast enhanced axial view) shows a megadolicho basilar artery anomaly with thrombosed aneurysm and compressing the pons

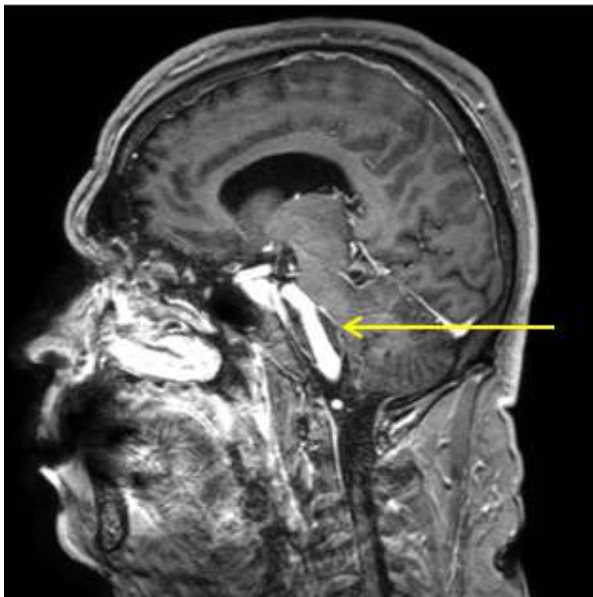


Figure 2. MRI (a contrast enhanced sagittal view) shows a megadolicho basilar artery compressing the midbrain

DISCUSSION

The dolicho-mega basilar trunk or megadolicho basilar artery anomaly is one of the dilatative arteriopathies mainly affecting the media with a rarefaction of the elastic tissue (1). The formation of the fusiform aneurysm is initiated by a lipidic deposit in the intima with a rupture of the internal elastic membrane with infiltration of the muscular tissue. This phenomenon will result in tortuosity and vascular ectasia causing turbulence and circulatory slowing favoring the formation of intra-luminal thrombus (1,3). Hypertension, obesity, diabetes mellitus, smoking and ethnicity are reported risk factors that also favor the formation of intra-luminal thrombus (5).

The vital and functional prognosis related to this pathology is very poor as reported by Drake *et al* in their case series (6). The association of a dolichoectasia of the basilar trunk with an aneurysm is a predominantly male pathology with an average age around fifty years old (4). The clinical pictures of basilar trunk dolichoectasia can be divided into three groups. One could have a picture of neighboring compression (cranial pairs, third ventricle or brain stem), a picture of cerebral infarction of lacunar type or a picture of sub arachnoid hemorrhage. However, the discovery could be fortuitous without any warning symptoms (1). Magnetic resonance imaging (MRI) of the brain with MRI angiography is a major asset in the detection of this dilatative arteriopathy (7). We can retain the diagnosis of a megadolicho basilar artery anomaly if it laterally exceeds the edges of the sella turcica in axial section with an internal arterial diameter greater than or equal to 4.3 mm on magnetic resonance imaging defining an ectasia. A risk of aneurysmal rupture has been reported for an arterial diameter greater than 10 mm. Brain imaging also highlights complications related to dolichoectasia of the basilar trunk. Complications could be intra-arterial such as mural thrombus formation or extra-arterial such as the occurrence of lacunar infarction, compression of the cranial pairs or hydrocephalus (1). We do not yet have a therapeutic recommendation for the practical management of dolichoectasia of the basilar artery. Treatment is based on the management of cardiovascular risk factors, especially in the presence of cerebral infarction (1). Surgical management remains a great challenge due to the absence of a neck in fusiform aneurysms. The study of Hirofumi N *et al* could not demonstrate the superiority of surgical management versus conservative treatment for giant fusiform aneurysms of the basilar trunk dolichoectasia (8).

CONCLUSION

The dolicho mega trunk basilar complicated with a fusiform aneurysm is a rare pathology whose morbi-mortality remains of poor prognosis. The discovery could be fortuitous. The clinical symptomatology depends on the size, shape and complications of the arterial involvement. Brain MRI with angio-MRI is used to make the diagnosis and to search for possible complications. The management of a fusiform aneurysm on a dolicho-ectatic basilar trunk remains a great surgical challenge.

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