Anterior Cerebral Infarction by Fronto-Basal Meningioma

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ABSTRACT

The association between stroke and meningioma is rarely reported in the data. In most etiology classification, there is no compressive cause. The association between meningioma and stroke is increasingly reported. We report a case of 52-year-old woman, previously healthy, presented with sudden right hemiplegia with some transient mood disorders. The CT-scan revealed acute left anterior cerebral artery infarction associated with fronto-basal meningioma infiltrating both anterior cerebral arteries. She was treated by corticosteroid and rehabilitation, with partial recovery. No stroke prevention was used before surgical treatment.

Keywords: Infarction; Anterior Cerebral Artery; Meningioma

1. Introduction

Mechanisms and causes of cerebral infarction are well studied and documented in the literature, and usually two mechanisms are identified: hemodynamics and thrombotic or thromboembolic causes [1]. Compressive causes by tumor are not reported in the main etiological classifications as Trial of Org10172 in Acute Stroke Treatment (TOAST) classification and ASCO (atherosclerosis, small vessel disease, cardiac source, other causes) [2]. Meningioma is the second most common primary brain tumor with incidence rates of 3 to 13 cases per 100,000. That incidence increases with female gender and age [3], and it is the most common benign tumor in adult, which is usually manifested by slow progressive signs. The occurrence of stroke associated with meningioma is increasingly reported, but there is no cohort study. We report a case of sudden neurological deficit due to callosomarginal branch of the anterior cerebral artery infarction associated with infiltrating fronto-basal meningioma.

2. Case

It was a patient of 52 years, with no particular history, admitted to the neurology department for motor deficit of the right side of the body. The examination revealed some transient episodes of mood disorders without headache or vomiting. Physical examination on admission noted a right hemiplegia predominantly on lower limb and the presence of grasping reflex. The blood pressure was 135/80 mmHg, regular heart without added noise. The CT scan without injection showed a tumor lesion isodense frontobasal parenchyma associated with infarction in callosomarginal territory of the anterior cerebral artery (Figures 1(A) and (B)). A secondary injection revealed homogeneous contrast enhancement of the lesion characteristic of meningioma. That tumor lesion infiltrated both anterior cerebral arteries (Figures 1(C) and (D)). Lipid and inflammatory balance, echocardiography, the 24 hours ECG-recording, and echo-Doppler of the supra-aortic trunks founded no abnormalities. It was not possible to make vascular exploration with MRI or angiography. The possible tumor origin of the infarct was selected. The treatment consisted to corticosteroid based on prednisolone 1 mg/kg associated with motor rehabilitation for 1 month, with partial recovery, then the patient was transferred to neurosurgery department for surgical management, no stroke prevention was conducted before surgery.
3. Discussion

We present the case of meningioma associated to ischemic stroke. The occurrence of stroke in patients with a brain tumor has been described, vascular occlusion is related to either direct compression or vascular infiltration by the tumor, or indirectly by coagulation disorders [4,5]. Meningiomas are the most common benign tumors in adults, and the para sagittal, fronto-basal or skull base localization are usual as our patient [6,7]. By their location few cases of transient ischemic injury have been reported, Komotar et al. [8] estimated to 0.19% the incidence of meningioma related cerebral ischemia by carotid artery compression. The possible pathophysiological mechanism in our case is vascular compression by tumor infiltration, or vascular insufficiency as related in literature [9,10]. Two cases of cerebral infarction by tumor invasion of the internal carotid were reported by Komotar et al. [8]. The offending mechanism is was probably a combination of hypoperfusion and thromboembolism. Although common, the fronto-basal location of meningioma is rarely reported as a cause of infarction in the anterior cerebral artery territory. However Lévêque et al. [6], in their series of meningiomas of the midline were found 32.7% of the infiltration of the anterior cerebral artery. The anterior cerebral artery occlusion directly due to meningioma was recently documented by Masuoka et al., [9]. The management of our patient was not optimal, due to the limitations of radiological explo-

rations and neurosurgery conditions in Congo. Without others contraindications thrombolysis with rt-PA can be used in acute stroke associated to meningioma [11,12] and, in some cases endovascular treatment was used before tumor surgery [10]. In our case, partial recovery of neurological impairment is due to steroid treatment and early rehabilitation, because outcome depend on treatment and early rehabilitation [13].

4. Conclusion

The fronto-basal meningioma is a rare cause of the anterior cerebral infarction, although the compression mechanism is poorly reported due to the very slow evolution and non-invasive nature of the tumor. The vascular insufficiency and hemodynamic change are the most offending mechanisms.

REFERENCES

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