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Case Report

Malignant ischemic stroke revealing a spontaneous carotid dissection in a young patient: Rare case report ☆,☆☆

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ABSTRACT

Ischemic stroke remains today a major health problem that requires adequate management and etiological research. The prevalence in young people has increased.

This article is a case report of a 37-year-old female diabetic patient who had an acute ischemic stroke due to spontaneous dissection of the right internal carotid artery.

The article discusses the epidemiology, pathophysiology, diagnosis, and treatment of cervical artery dissection, which is a common cause of stroke in young patients. The use of antiplatelet and anticoagulant therapy, as well as endovascular and surgical interventions, is also discussed.

Spontaneous carotid bulb dissection is an emergency in ischemic stroke in young people. The prognosis depends on the severity of the initial injury and the extent of collateral circulation, with successful recovery in 75% of cases.

Abbreviations: GCS, Glascow score; Spo2, Pulsed oxygen saturation; CT, Computed Tomography; MRI, Magnetic resonance imaging; FLAIR, Fluid-attenuated inversion recovery; TOF, Time-of-flight; HB, hemoglobin; ECG, electrocardiogram; USPIO, ultrasmall superparamagnetic iron oxides.

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Introduction

Ischemic stroke is a major health problem that requires etiological research for adequate management. The prevalence of ischemic stroke in young subjects has increased in recent years. Cervical artery dissections are taking a place in the prerogative of young subject compared to elderly subject. There is an enormous variation in the signs and symptoms of this disease, which makes it extremely difficult to diagnose at the initial presentation [1].

The therapeutic indications, subject of controversy, will be according to the topography and the diffusion of the arterial lesions, the treatment includes anticoagulation, surgery in case of failure or recurrence can constitute a therapeutic alternative [1].

Case presentation

We report the case of a 37-year-old female patient, diabetic for 1 year on oral antidiabetics with poor compliance and no past interventions, who suffered from functional impotence of the left hemi body for 20 hours. On admission, the patient was pale, conscious with GCS 15/15, normotensive at 135/80 mm Hg, tachycardic at 130 bpm, respiratory SpO2 was 98%, polygenic at 27 cpm, apyretic with capillary blood glucose at 1.2 g/L

The clinical examination was abnormal on the neurological level with an impossible standing, does not hold the Barre nor the Mingazzini on the deficient side, segmental force was 0/5, but the sensitivity was preserved with an attack of the facial nerve.

After conditioning, a brain CT without contrast enhancement was performed and came back without any abnormality. A brain MRI scan was performed showing abnormalities of the right fronto parietal and occipital subcortical area with diffusion hypersignal (Fig. 1) and the beginning of translation on the FLAIR sequence. Absence of hemorrhagic stigma on the T2 sequence with absence of flow in the intracranial portion of the carotid artery on the 3D TOF sequence, which is in favor of an acute multifocal ischemic stroke in the superficial and deep territory of the right sylvian and right posterior cerebral arteries (Fig. 2)

The patient underwent a complete biologic workup showing microcytic hypochromic anemia (Hb 9.6 g/dL, VGM 64 fl, TCMH 18 pg), ferritinemia 3.80 ug/L with an unremarkable coagulation panel.

The patient was hospitalized in a medical neurology department, an etiological workup was performed: ECG and Echocardiography did not show any signs in favor of an embolism cardiopathy, the syphilitic serologies performed came back negative, but a Doppler ultrasound of the supra-aortic vessels showed an echo graphic aspect related to a dissection of the carotid bulb extended to the right internal carotid artery, the interrogation with the patient did not find any notion of cervical trauma before.

The diagnosis of an ischemic stroke on spontaneous dissection of the carotid bulb was made, and the decision was to put the patient on anticoagulant treatment with enoxaparin 6000 UI/12 h with relay by antivitamin K.

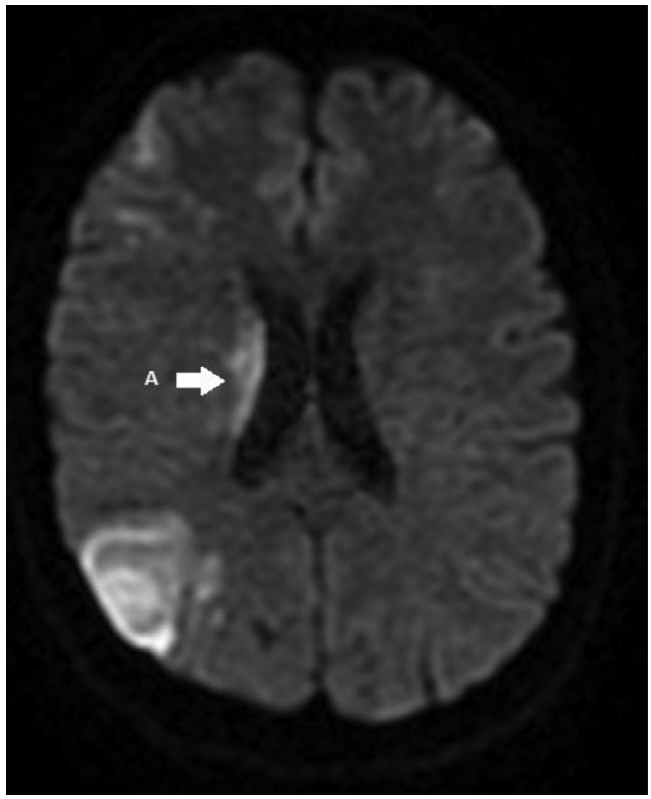

Fig. 1 – MRI of the head, cross section, Diffusion sequence, fronto parietal and right caudate nucleus hypersignal. (A) Caudate nucleus hypersignal.

The evolution was marked at the 6th day by the admission of somnolence as well as Claud Bernard Horner Syndrome. A cerebral scan without contrast enhancement was performed (Fig. 3), showing a significant cerebral edema with a midline compression of 11 mm and then 14 mm, and a subfalcoral involvement requiring a surgical intervention, which was not performed because of the family's refusal. The patient was then put on Mannitol 100 mL/6H, and the evolution was marked by an improvement in the state of consciousness, but persistence of the sensory-motor deficit.

The patient was discharged at day 15 with a GCS 15/15 under antivitamin K 3 mg per day.

Discussion

Spontaneous carotid artery dissection represents one of the main causes of DVA in the young subject, there is a huge variation in the signs and symptoms of this disease, which makes it extremely difficult to diagnose at initial presentation [1].

It is the main cause of ischemic stroke in people under 45 years of age. Note that the peak incidence is in the fifth decade with male gender [2]. Risk factors include: neck trauma, recent infection, family history, smoking, hypertension, oral contraceptives, Marfan Syndrome and others.

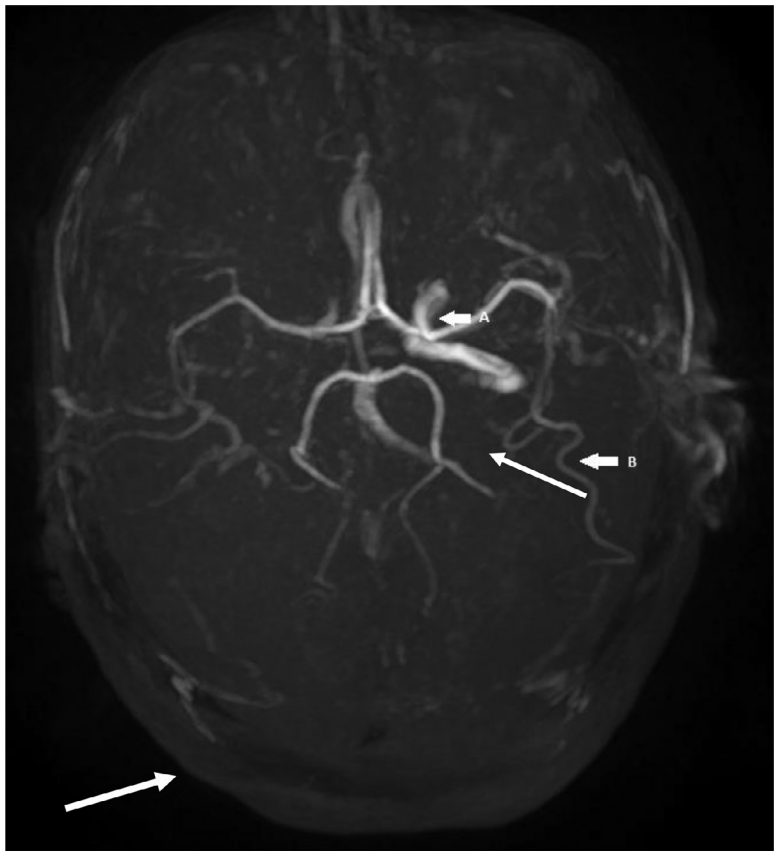

Fig. 2 – 3D TOF sequence which shows acute multifocal ischemic stroke in the superficial and deep territory of the right sylvian and Absence of left internal carotid artery flow. (A) Artère cérébrale moyenne M4 gauche (B) Artère carotide interne gauche.

It results from a cleavage of the arterial wall by a spontaneous hematoma or following an intimal breach. They occur preferentially at histologically vulnerable sites. There are sub adventitial and subintimal stenosing dissections responsible for a low-flow AVCI, distal thrombus or emboli, creating an arterial channel. This dilatation may cause a mass effect on the surrounding structures (sympathetic fibers and lower cranial nerves). Clinically the patient may present with unilateral head and neck pain, other manifestations usually appear 4 days after a Claud Brenard Horner Syndrome (Ptosis Myosis Enophthalmos). Cranial nerve damage, tinnitus, cerebral or retinal ischemia can also be noted, found in 50%-95% of patients.

Ultrasonography (echo-Doppler) is the technique of first choice (easy/noninvasive) for the diagnosis of carotid dissection, pathognomonic images (intimal flap or double lumen image) are found in only 10% [3]. It is also an important tool in the follow-up of patients. MRI angiography is an indispensable means of diagnosis, other means can reveal the dissection. Angiography represented a gold standard to make the diagnosis. The need for antithrombotic therapy to prevent a primary ischemic event or recurrence in arterial dissection is currently well established. It includes antiplatelet agents or anticoagulants, but to date no study has shown superiority between the 2 treatments [4,5]. Antiplatelets are preferred when the dissection is associated with: a large ischemic lesion that contraindicates anticoagulation, when it causes only local symptoms (or the patient does not show signs of ischemia), or when there is an intracranial extension of the dissection that could induce a subarachnoid hemorrhage. In most cases, patients with spontaneous carotid dissection have a good outcome under medical treatment alone. The use of endovascular treatment by angioplasty remains controversial [6,7] but it has shown better results than conventional surgery due to the low incidence of early occlusions, stroke and cranial nerve damage postoperatively [8,9]

Peycheva et al study aimed to confirm the diagnostic capabilities of the ultrasound fusion imaging system in neurosonology by using different planes of insonation to detect normal cerebral structures in healthy volunteers. The ultrasound fusion imaging system combines live ultrasound investigations with preregistered CT, MRI or PET images and has been used for analysis of lesions in various organs. The study confirms the potential of the ultrasound fusion imaging system as a promising imaging modality in neurology with multiple reproducibility providing real-time monitoring. The interest lies in the potential of this new method for diagnostics and teaching in neurosonology [10].

There are new diagnostic methods and approaches for identifying unstable and high-risk carotid plaques. While

Fig. 3 – CT of the head, axial plane showing right hemispheric ischemia with cerebral edema (White arrow) responsible for a mass effect on the midline structures.

older imaging techniques focused on luminal stenosis, newer methods such as Shear wave elastography, optical coherence tomography, Superb microvascular imaging, and USPIO MRI provide detailed information about plaque morphology and pathological mechanisms. The ultimate goal of these methods is to predict atherosclerotic burden, plaque instability, and the likelihood of cerebrovascular events for each patient, in order to optimize personalized management [11].

Endovascular treatment is mainly indicated when there is recurrence despite adequate medical treatment, patients with hemodynamic hypoperfusion or patients with expanding or symptomatic false aneurism [12].

The main complications of endovascular treatment: intimal hyperplasia, stent stenosis or vessel occlusion. Rehabilitation is a major component in the therapeutic process of ischemic stroke.

Our patient was satisfied from our medical care.

In general, the prognosis depends on the severity of the initial ischemic injury as well as the extent of collateral circulation. The prognosis of spontaneous internal carotid artery dissection is favorable, with about 75% of patients making a good recovery [6,7]. The risk of recurrence, initially if the artery is healthy, is about 2% during the first month, but then decreases to 1% per year with a higher risk of recurrence in young patients with hereditary arteriopathy, Thus, the mortality following a spontaneous dissection is less than 5%. The risk of recurrence, initially if the artery is healthy, is about 2% during the first month, but then decreases to 1% per year [8,9].

The CARE guidelines were used in the writing of this paper [13].

Conclusion

Spontaneous carotid bulb dissection remains an emergency not to be neglected in the face of ischemic stroke in young subjects. The prognosis depends on the severity of the initial ischemic damage as well as the extent of the collateral circulation, with a good recovery in 75% of cases.

Ethical approval

The ethical committee approval was not required give the article type case report. However, the written consent to publish the clinical data of the patients were given and is available to check by the handling editor if needed.

Patient consent

Written informed Consent was obtained from the patients for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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