Surgical management of a mobile floating carotid plaque

Karla Elizabeth Moncayo*, Juan Jose Vidal, Raúl García and David Pereira

Complejo Hospitalario Universitario de Pontevedra, Pontevedra, Spain

* Corresponding author. Complejo Hospitalario Universitario de Pontevedra, Mourente s/n. 36071 Pontevedra, Spain. Tel: +34-986-800134; e-mail: karla_moncayo@hotmail.com (K.E. Moncayo).

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Abstract

A mobile floating carotid plaque (MFCP) is an infrequent pathological lesion with an unknown natural history caused by thinning and rupture of the fibrous cap of the atheromatous plaque; it may result in repeated ischaemic strokes. Duplex carotid ultrasound is a non-invasive technique useful in defining the plaque morphology with high sensitivity and specificity. Due to the lack of evidence, treatment remains controversial. We present a patient with an asymptomatic MFCP diagnosed by ultrasound and treated with carotid endarterectomy without neurological complications due to the procedure and without restenosis nor residual flaps during the follow-up.

Keywords: Mobile floating carotid plaque • Carotid endarterectomy • Duplex ultrasound

INTRODUCTION

A mobile floating carotid plaque (MFCP) is an infrequent pathological lesion with an unknown natural history and an estimated prevalence of 1 in 2000 carotid ultrasound examinations or even less [1]. It differs from a floating thrombus in that in this case the atheromatous plaque is mobile by a thinning and rupture of the fibrous cap, and it may result in repeated ischaemic strokes [2]. Duplex carotid ultrasound is a non-invasive technique useful in defining the plaque morphology with high sensitivity and specificity. Owing to few cases reported, treatment remains controversial. Several approaches have been described in the literature, from medical to surgical treatment, with good results [2–4]. We present a patient with an asymptomatic MFCP diagnosed by ultrasound and treated with carotid endarterectomy (CEA).

CASE REPORT

The patient is a 59-year old man with a past medical history of smoking 76 packs/year during the last 38 years, alcoholic cirrhosis, chronic obstructive pulmonary disease and left CEA due to symptomatic internal carotid artery (ICA) stenosis with amaurosis fugax; he has been under chronic antiplatelet aggregation therapy since then. During the follow-up, duplex ultrasound (DUS) of the supra-aortic trunks made with a linear probe demonstrated a typical jelly fish sign (posterior hyperechogenic plaque, floating and mobile with the heartbeat) in the right ICA with no significant velocity changes causing a stenosis of less than 50% according to the Consensus Panel Recommendations for Classification of Internal Carotid Artery Stenosis (Fig. 1 and Video 1). There was no evidence of restenosis in the contralateral carotid artery. A scheduled right CEA was done with careful extirpation of the mobile plaque.

Intraoperatively, the presence of the MFCP was confirmed (Fig. 2). The histology study revealed an atheromatous plaque with rupture of the fibrous cap. Postoperatively, the patient presented with delirium tremens secondary to alcohol withdrawal and a negative brain CT scan for stroke; the episode was resolved with psychiatric medical therapy (benzodiazepines) and was discharged 9 days after surgery without any acute neurological symptom. DUS after 3 months of surgery showed no evidence of restenosis or residual flap.

Figure 1: Longitudinal duplex ultrasound image showing the mobile floating internal carotid plaque (arrow). Jelly fish sign: plaque fibrous cap moves up and down with the heartbeat (Video 1). ICA: internal carotid artery; CCA: common carotid artery.
DISCUSSION

MFCPs may be associated with repeated ischaemic strokes during short intervals and may play a more important role in the pathogenesis of disease rather than ICA stenosis [5]. DUS is a method, neither invasive nor expensive, able to identify plaque mobility characteristics, allowing the surgeon a careful evaluation of plaque morphology, with high sensitivity and specificity. Jelly fish sign on DUS is defined as a mobile plaque where the fibrous cap moves up and down with the heartbeat [5]; it has been reported as an important predictive factor for ischaemic stroke and sign of high-risk plaque vulnerability [2, 5]. In our patient, this component was clearly identified by DUS fortunately before being symptomatic, reminding us of the importance of careful follow-up programmes on peripheral vascular disease.

The management of this condition is still controversial due to few cases reported and no clinical trials published [2–4]. Szendro et al. [4] reported two non-operated, asymptomatic cases with a benign course of 2 years in 1 patient and 3 years in the other. Meanwhile, others favour surgery as the treatment of choice; Chakhtoura et al. [3] had satisfactory clinical results on the management of 2 cases with MFCP by carotid artery stenting with 32 and 44 months of follow-up, respectively. Ferrero et al. described 2 asymptomatic cases of post-trauma MFCP, treated by CEA uneventfully in 2 years of follow-up.

CONCLUSION

DUS is a non-invasive, fast and inexpensive method that helps in the diagnosis of an MCFP. As there is no gold standard treatment for MCFP, we decided to do CEA due to better control of the distal ICA, good visualization for extraction of the MFCP and having less embolization risk in a 59-year old patient, with a past medical history of symptomatic contralateral ICA stenosis. So far we recommend CEA in carefully selected patients, as we had satisfactory clinical results during our follow-up, but further evidence is needed.

Conflict of interest: none declared.

REFERENCES


eComment. Chronic obstructive pulmonary disease and plaque vulnerability

Authors: Omer Uz and Uygar Kucuk
GATA Haydarpasa Training Hospital, Department of Cardiology, Istanbul, Turkey
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We read the article of Moncayo et al. with interest [1]. Authors present a patient with an asymptomatic mobile floating carotid plaque diagnosed by ultrasound and treated with carotid endarterectomy without neurological complications due to the procedure. They reported that the patient was a 59-year old man with a past medical history of smoking (76 packs/year during the last 38 years) and chronic obstructive pulmonary disease (COPD).

COPD is an inflammatory pulmonary disease. Most patients have mild to moderate disease and as such, have only modest symptoms of cough and breathlessness. Approximately, 50% of all hospitalizations and 25% of all deaths in patients with mild to moderate COPD are related to the cardiovascular system. Chronic lung inflammation contributes to atherosclerotic plaque progression and acute inflammatory stimuli, such as acute respiratory tract infections or acute exacerbation of COPD induce atheromatous plaque rupture, leading to vascular events (stroke, myocardial infarction, or peripheral arterial embolism) [2]. Finally, patients with COPD are vulnerable to vascular events. Duplex carotid ultrasound should be carefully evaluated to identify the presence of mobile atherosclerotic plaques in such patients.

Conflict of interest: none declared.

References