CASE REPORT

Mobile Thrombus at the Origin of the Internal Carotid Artery

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SUMMARY

Stroke is the third leading cause of death in many countries world wide. The vast majority of acute strokes are ischemic, caused often by embolism from the large arteries of the head and neck and aortal arcus, and less frequently by cardiogenic embolism. The exact etiology is assessed only in a minority of the patients. A case report of a female patient with mobile thrombus at the origin of the internal carotid artery diagnosed by duplex sonography is presented. The patient refused surgery; two days later a recurrent severe stroke occurred caused by embolism of the found thrombus.
Key words: thrombus, duplex sonography, stroke.

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Stroke is the third leading cause of death in our country, as in many others (1). It is most frequently caused by ischemia due to embolism from the large arteries or from the heart (2). It is not possible to assess the exact source of the embolism in majority of the patients. Duplex sonography is non-invasive, easy to repeat and available as a bedside diagnostic method for the carotid arteries investigation. It can prove the disease of the carotid arteries, and it enables quantification of the found obstructive disorder. It is suitable for monitoring of the disease dynamics, and it also facilitates indication of the patient for intervention therapy and the evaluation of therapeutic results.

CASE REPORT

A 74-year-old female patient was admitted to the department of medicine of the regional hospital after a stroke on her right side with hemiparesis and expressive aphasia. She had never been seriously ill apart from systemic hypertension treated for years with a combination of diuretics and calcium blocker.

During the first days of hospitalisation the motoric impairment of the right hand side extremities progressed into hemiplegia. In laboratory tests mixed hyperlipidemia was found as the only significant finding. The neurologist suspected an ischemic stroke. Four days later a CT investigation of the brain was performed, establishing a hypodense lesion with a diameter of 3 cm on the left hand side in paraoccipital location (Fig. 1). During the infusion therapy with Oikamid, Mannitol i.v., intake of oxygen and correction of hypertension, a significant improvement of the patient's condition occurred, so it was possible for the patient to return to home care; she walked with a stick and otherwise only enunciation defects remained.

One month after discharge a duplex sonography of carotid arteries was performed. Despite bad visibility due to a thick layer of subcutaneous fat, a mobile thrombus 8 x 2.5 mm originating from the heterogenic atherosclerotic plaque on the anterior wall of the bulbus of the common carotid artery was found (Fig. 2). A thrombus with a conical shape flowed freely in the blood stream. The situation was explained to the patient, but despite the emphasis on the risk of recurrent stroke she refused the proposed immediate angiosurgery or intervention operation. Trombolytic therapy was impossible due to the presence of gynaecological bleeding, so anticoagullant therapy was recommended to the patient. Two days later she was again admitted to the regional hospital with a severe stroke with right side hemiparesis and severe mixed aphasia. After treatment her condition improved, but the severe impairment of enunciation remained, and the patient was able to walk only with the assistance of another person. 30 days after this event the follow-up CT of the brain was performed, finding an enlargement of the originally documented ischemic lesion (Fig. 3). Follow-up duplex sonography of the carotid arteries performed 4 weeks after the recurrent stroke documented disappearance of the previously described mobile thrombus and formerly described heterogenic plaque on the anterior wall of the common carotid artery, not leading to significant stenosis (Fig. 4). The endometrial sample investigation proved carcinoma. The clinical condition of the patient had not changed.

DISCUSSION

Ischemic strokes constitute 80% of all strokes (2). Almost half of them are caused by thrombotic embolism from atheromas of the large arteries of the head and neck or aortal arcus, almost 11-20% are connected with cardiogenic embolism (3–5). Stenosis of the origin of the internal carotid artery is the most frequent pathological finding on the carotid arteries in these patients (6). It is reported that etiology of the 20–45% of ischemic strokes is not related to this stenosis (5). Exact etiological diagnosis is assessed only in a minority of the patients. The disease of the carotid arteries can be documented by some diagnostic methods, such as duplex sonography, common x-ray contrast angiography, CT or NMR angiography. Duplex sonography, which reliably demonstrates the presence of the carotid artery disease, first of all atherosclerotic plaques, which facilitates to assess the severity of the related stenosis and in many cases to indicate the patients for surgery without previous angiography, is the first selection method due to many advantages. The presence of thrombus in the carotid artery during this investigation is seldom documented. In these cases usually the older thrombotic stenosis of the internal or common carotid artery is present (Fig. 5). A mobile thrombus is established only very rarely; in our sonography laboratory it was established in two cases among the 3865 patients, and in the first patient it had been proved during the urgent surgery. In the other patient the mobile part of the plaque was documented and immediately removed by surgery. More detailed data concerning the prevalence of the mobile objects are not available.

In the therapy, surgical thrombectomy is the first selection method. In the literature successful description of the mobile atheroma, clinically manifesting by recurrent transitory ischemic attacks and completed stroke, removed from the common

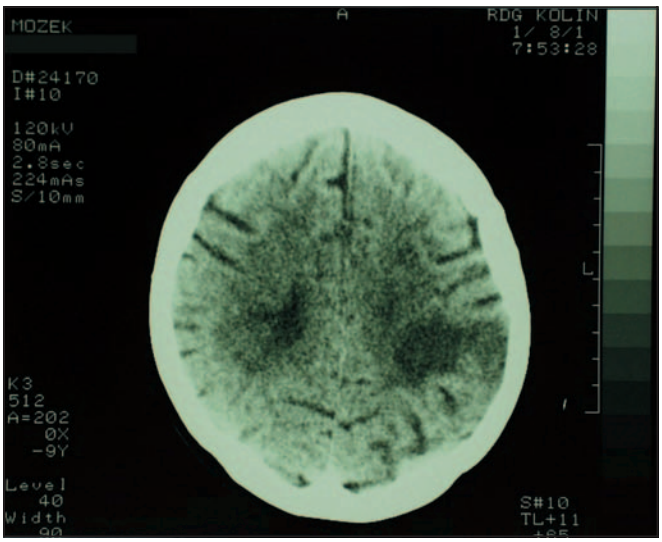

Fig. 1. CT of the brain – malatic focus para-occipitally in the left hemisphere

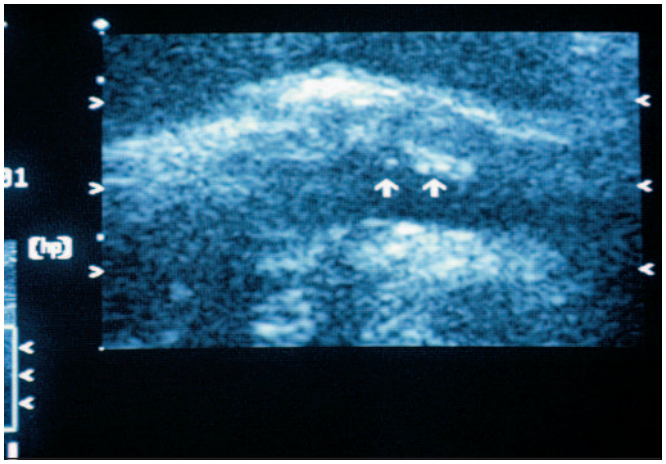

Fig. 2. Duplex sonography of the origin of the left internal carotid artery. Mobile thrombus is indicated by the arrows

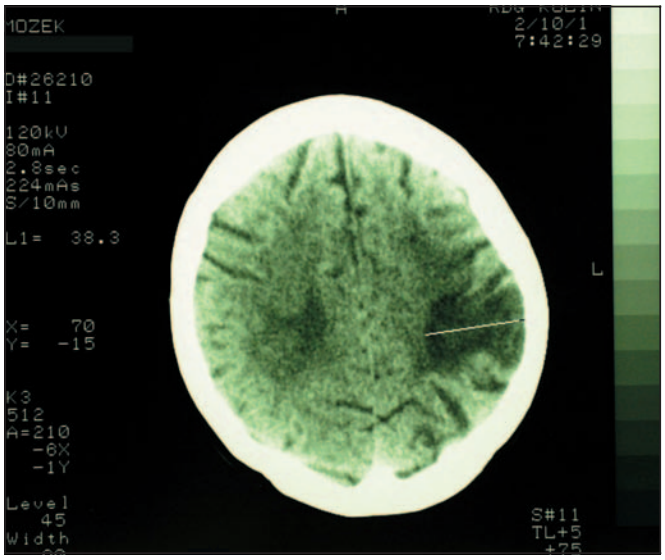

Fig. 3. CT of the brain – enlargement of the malatic focus in the left hemisphere

carotid artery by surgery can be found (7). The mobile thrombus in the internal carotid artery of a 33-year-old female patient

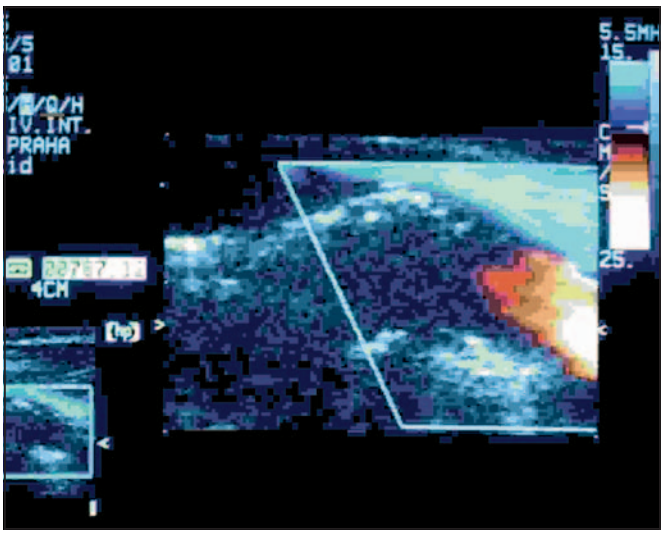

Fig. 4. Duplex sonography of the origin of left internal carotid artery. Previously occurring thrombus is missing, there is a low plaque on the anterior wall of the bulb of the common carotid artery

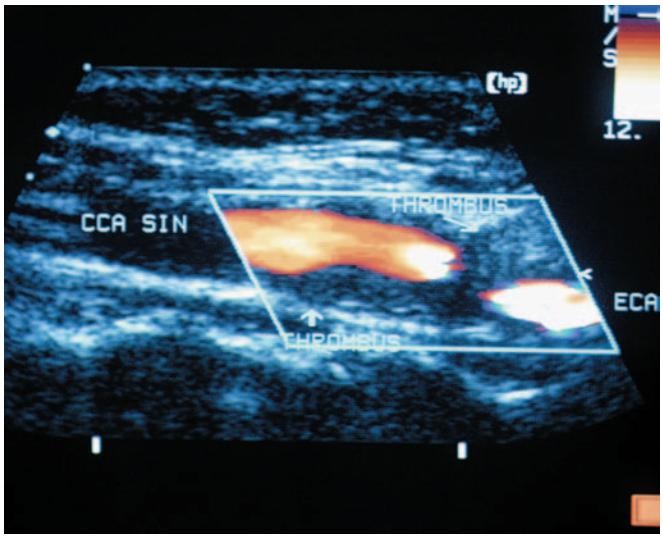

Fig. 5. Duplex sonography of the branching of common carotid artery. Thrombus filling up the origin of the internal carotid artery is indicated with an arrow in the right part. Thrombus on the posterior wall of the bulb of the common carotid artery is indicated by the vertical arrow. CCA SIN – left common carotid artery, ECA – external carotid artery

was established as a complication of the syndroma of ovarial hyperstimulation, and it was also successfully removed by surgery in this patient (8).

Successful recanalisation of the acute stenosis of the internal carotid artery by removal of the emboli and transfer of those into external carotid artery by the balloon catheter was described by Hama in 2000 (9).

The presence of atherosclerotic plaque fixed to the surface can be documented by scintigraphy with thrombocytes marked with ^{111}In, however the significance of this finding for the prognosis of these patients is not known yet (10).

The source of the cardiogenic embolism causing almost 25% of ischemic strokes can by proved by oesophageal echocardiography (4). Thrombus in the auriculum of the left atrium is the frequent pathological finding, less frequently another source of embolism or condition enabling the occurrence of the parado-

xical embolism (foramen ovale patens, defect of the atrial septum) is found.

CONCLUSION

The case report of a female patient with the mobile thrombus originating from the atherosclerotic plaque on the anterior wall of the bulbus of the common carotid artery and freely flowing in the blood stream is described. The repetitive embolism of the thrombus leads to recurrent strokes. Duplex sonography is the leading diagnostic method for this rarely documented complication of the atherosclerosis of the carotid arteries in a patient with a malignant tumor.

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