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The case of low symptoms carotid cavernous fistula

Carotid cavernous sinus fistulas are pathological junctions of the internal carotid artery or its branch with the cavernous sinus (5, 10). On account of pathomechanism they break into two groups: traumatic and idiopathic (2, 6, 11, 14). Posttraumatic fistulas come into being in result of the arteriorrhexis in the cavernous sinus and they are richly symptomatical in general (3, 5, 8, 9, 13, 15). They are caused by hydrodynamic forces on the vascular wall or in result of injuries of bone fragments (5). A rupture of the aneurysm or arteriorrhexis as a result of pathological processes in the wall can be the reason of idiopathic fistulas (2, 6, 11, 14). Penetrating of the arterial blood into the sinus cavernous lumen increases its pressure. It makes venous blood outflow difficult and causes dilatation of orbit veins. Sometimes it leads to inversion of the direction of the blood flow. Clinical symptoms may appear immediately after trauma or gradually increase in a few days. They are: persistent hum near the temporal region, compatible with the action of the heart heard by patient, pulsating exophthalmus, swelling of eyelids, hyperemia and falling out of the conjunctiva, immobilization of eyeball as a result of the pressing nerves III, IV, VI. These symptoms are usually one-sided but if the intercavernous leakage is big they can be bilateral (13). On the basis of these clinical symptoms, a diagnosis of big full-symptomatic fistulas is not difficult, but the Doppler examination, ultrasonography and angiography are also necessary (10, 12, 14). Small fistulas, with incomplete clinical symptoms are not easy to diagnose (4). Their clinical picture is similar to primary diseases of the orbit and eyeball such as inflammation of the soft tissues of the orbit, Graves-Basedow disease, tumours, angiomas, haematomas of the orbit or the superior orbital fissure syndrome (1, 7).

CASE DESCRIPTION

A patient K. M., 37 years of age, number of case record 539/98 was admitted to the Department and Clinic of Dental and Maxillofacial Surgery in Lublin in order to consult a maxillofacial surgeon. The oculistic diagnosis was: *protrusio bulbi oculi sinistri, fractura orbitae sinistri.* On the basis of anamnesis it was found that one month earlier the patient had been beaten. As a result of trauma his orbit and left eyeball were injured. It was in Spain, where the patient was given first aid and was hospitalized for three weeks in Ophthalmological Hospital. At the moment of admission to our clinic the patient did not see with his left eye and he had not papillary reaction to the light and accommodation. He also complained of exophthalmus of the eyeball, swelling and hyperemia of eyelids and falling of

the upper eyelid (Fig. 1). X-ray examination of facial skull (paranasal sinuses and postero-anterior examination of the skull) revealed no post-traumatic changes. During auscultation with stethoscope in the left temporal region we heard one discrete, compatible with the pulse, pulsating murmur, not heard by the patient. We decided to execute CT examination (computer tomography). It showed the broken inferior wall of the orbit with slight dislocation of the fragment of fractured bone and soft tissues into maxillary sinus, anterior dislocation of the eyeball, and medial and upper dislocation of the optical nerve. The patient with suspicion of the post-traumatic carotid cavernous fistula was sent to the Department of Surgical Radiology and Neuroradiology of the Medical University in Lublin in order to get detailed diagnozing and specialistic treatment. Utrasonographic Doppler examination showed the extension of the ophthalmic superior vein and blood flow insertion and it confirmed a suspicion of the diagnosis: post-traumatic carotid cavernous sinus fistula. On the basis of the carried out examination the patient was classified for left carotid angiography and embolization of the fistula.

Fig.1. The patient on the day of admission to hospital

DESCRIPTION OF CAROTID ARTERIES ANGIOGRAPHY WITH EMBOLIZATION OF THE CAROTID CAVERNOUS FISTULA

Carotid arteries angiography was made using 5 F catheter through the right femoral artery (Fig. 2). After insertion of catheter across the left carotid artery into the cavernous sinus fistula embolization was made. There were used seven spirals (Tornado Cook) with length 3 and 4 mm and radius of turn 3 and 4 mm (Fig. 3). Soon, an effect of the slowing down the blood flow was obtained and then it was stopped (Fig. 4). During the control examination a formed thrombus in the left internal carotid artery, at the height of fistula, was observed (Fig. 4). The next angiography of the right carotid artery showed an efficient brain arterial circle and no symptoms of ischaemia of the left cerebral hemisphere were present (Fig. 5). Checking ultrasonography showed full efficiency of the embolization.The patient, in generally good condition was discharged from hospital with recommendation of follow-up examination. Three months after the treatment no symptoms of the left exophthalmus, swelling of eyelids and orbit soft tissues, hum in the temporal region, were found. Mobility of the eyeball was correct (Fig. 6). Unfortunately, loss of the left eye vision appeared a permanent complication after trauma.

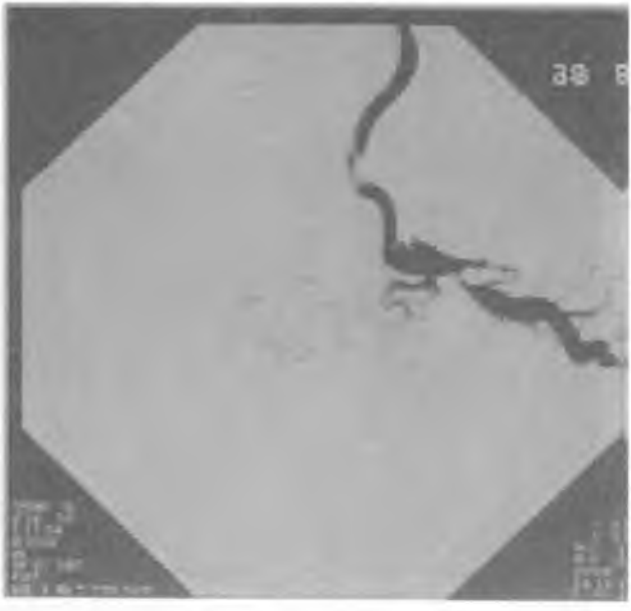

Fig. 2. Angiography of carotid internal artery with extension and insertion of the blood flow in the orbital upper vein; lack of the left ophthalmic artery

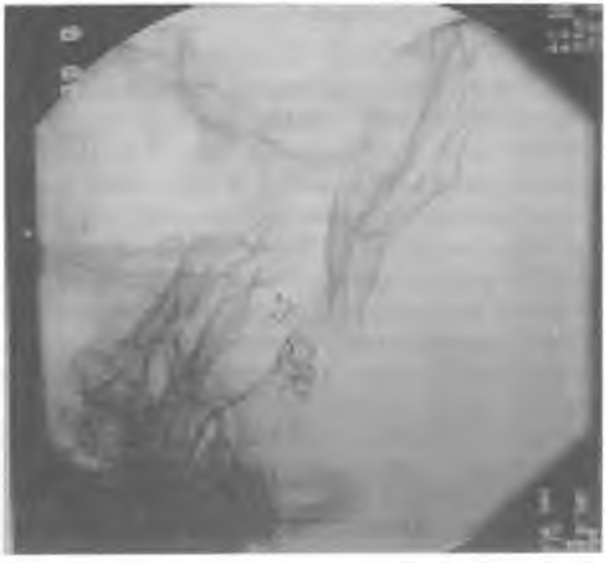

Fig. 3. Embolizing spirals into the cavernous sinus

Fig. 4. The state after embolization, thrombus of the left carotid internal artery

Fig. 5. Angiography of the right carotid internal artery; efficient brain arterial circle – correct filling of the brain arteries of both hemispheres

Fig. 6. The patient after ending of the treatment

DISCUSSION

After cranial injuries posttraumatic complications like carotid cavernous sinus fistulas are rare. It is difficult to give a correct diagnosis if clinical symptoms are not evident. In doubtful cases the simple auscultation examination of the temporal region with using stethoscope is necessary. A cheap, non-invasive and efficient examination in initial diagnosis of carotid cavernous sinus fistulas is also ultrasonography (by the Doppler method).

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SUMMARY

The authors describe the case of a patient with posttraumatic carotid cavernous sinus fistula with a complex of low clinical syndromes. Attention was drawn to oligosymptomatic fistula causing diagnostic difficulties in maxillofacial surgery practice. The study presents diagnostic and treatment methods and their results.

Przypadek skąpoobjawowej przetoki szyjno-jamistej

W pracy omówiono przypadek pacjenta z pourazową przetoką szyjno-jamistą o niepełnym zespole objawów klinicznych. Zwrócono uwagę na skąpoobjawowość przetoki, która w praktyce chirurga szczękowego może powodować trudności diagnostyczne. Zaprezentowano szczegółową metodę diagnostyki oraz wyniki leczenia.