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SCIENTIFIC LETTER

Complicated migraine: Importance of neuroimaging

Migraña complicada: importancia de la neuroimagen

Migraine is a frequent reason for consultation in Accident and Emergency. Its association with visual disturbances is not uncommon, but when visual symptoms go beyond a typical visual aura, they force us to broaden the differential diagnosis.

We present the case of a 25-year-old male with a previous diagnosis of migraine. He came to Accident and Emergency one evening with headache and double vision since the previous morning. It had started as one of his usual migraine attacks, with hemicranial pain associated with photo-phonophobia, nausea and worsening with exercise. In the early hours of the morning he vomited, and at that time noticed a sudden worsening of the pain behind his left eye, with the development of binocular diplopia. He also noticed that his left eye was more closed.

On examination, there was oedema and slight bilateral periorbital ecchymosis, predominantly on the left. No limitation of eye movements was observed. The other cranial nerves and the rest of the neurological examination were normal.

As this was a headache with focal neurological signs and abnormalities in the examination of the patient, a cranial CT scan was indicated and performed. There were two orbital masses in the extraconal compartment of the superior-medial quadrant of both orbits, larger on the left, with homogeneous density, well-defined contours and mass effect on the superior rectus muscles (Fig. 1). Subsequently, an orbital ultrasound was performed, in which a homogeneous, hypoechogenic, well-defined mass was observed on the left orbital roof (Fig. 2).

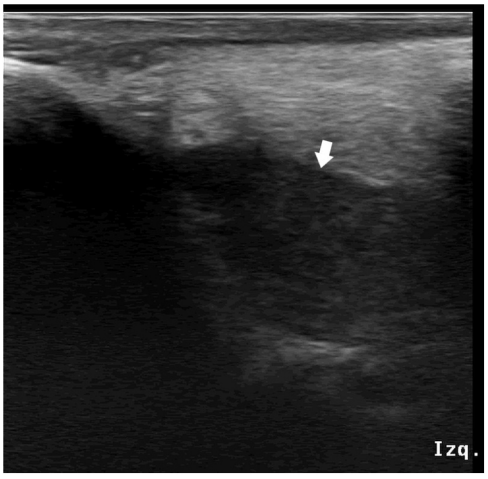

Figure 2 Ultrasound of orbits. Image showing a homogeneous, hypoechogenic mass, well demarcated against the orbital fat (arrow), located in the left orbital roof.

This, together with the patient's clinical data, pointed to a diagnosis of subperiosteal orbital haemorrhage caused by increased venous pressure in the context of emesis.

Subperiosteal orbital haemorrhages are rare.[1] In the absence of trauma, this type of haemorrhage has been described in the context of diving, sinusitis, bleeding diathesis or, more frequently, coinciding with a sudden rise in cranial venous pressure (we have identified 35 published cases of this type,[1] in connection with vomiting, coughing, lifting weights, childbirth, hanging).[1] The pathophysiology

Figure 1 CT of brain. a and b) Axial and coronal slices, respectively, showing two orbital masses (arrows) in the extraconal compartment of the superior-medial quadrant of both orbits, of homogeneous density around 60 HU (larger on the left side), with well-defined contours. c) Sagittal slice at the level of the right orbit, showing the intimate relationship between the haematoma and the superior rectus muscle (arrow), which it is displacing slightly downwards.

is postulated to be mediated by lax adhesion between the periosteum and bone in the orbital roof. Symptoms are acute and include proptosis, eyelid oedema, pain, diplopia and sometimes decreased visual acuity. Most have limited upward gaze. The haemorrhage is most often unilateral (only four of the cases were, like this one, bilateral[1]), and located in the upper part of the orbit. Evacuation of the haematoma is only necessary in the rare cases where the optic nerve is involved.[2]

On CT, the appearance is that of a well-defined, biconvex, homogeneous mass of somewhat greater density than the brain parenchyma, which may cause inferior displacement of the orbital soft tissues.[1] Ultrasonography may be an alternative in pregnancy or infancy, showing a well-demarcated, homogeneous, low/medium echolucent lesion.[3]

The radiological image of an orbital mass raises the differential diagnosis between bleeding, neoplasia (primary or metastasis) or inflammation (orbital pseudotumour, orbital myositis). In a case such as ours, given the clinical context of an acute onset of symptoms, without a history of cancer, and coinciding with an elevation of venous pressure, the suspicion of bleeding should be high.[4]

Painful acute binocular diplopia as a clinical sign also poses a diagnostic challenge; causes include vascular aneurysm or dissection, carotid-cavernous fistula or thrombosis, myositis or orbital pseudotumour, Tolosa-Hunt syndrome or giant cell arteritis.[5] In the context of migraine headache, migraine with brainstem aura and recurrent painful oculomotor neuropathy (öphthalmoplegic migraine¨) should also be considered. Palpebral oedema in addition to the headache may suggest a trigeminal-autonomic headache (although diplopia would not be typical of them). While many of these diagnoses are clinical, other causes of painful diplopia need to be ruled out by neuroimaging, as our case illustrates.

From a radiological point of view, diplopia makes it necessary to examine the neuroimaging with a specific systematic approach, paying particular attention to the structures of the brainstem, subarachnoid space, cavernous sinus, superior orbital fissure and orbit,[4] without forgetting that, as in this case, it is important to direct the analysis according to the clinical history and examination.

Authorship

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Conflict of interest

The authors declare that they have no conflicts of interest.

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