

Fat embolism showing restriction on diffusion sequence in brain magnetic resonance imaging

Restrição na sequência de difusão em imagem de ressonância magnética cerebral de embolia gordurosa

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A 69 year-old female presented with bilateral amaurosis, headache, fever (38°C) and dyspnea two days after a liposuction and abdominoplasty. A bilateral papilledema was observed in the clinical examination, without other neurological changes. Her ESR was 60mm/h and her platelet count was low (55.000mm³). Brain MRI revealed restriction of diffusion sequence in the right globus pallidus and both retinas (Figure 1). At spinal tap opening pressure was 16cmH₂O. CSF examination was normal. Angio-MRI of the head and neck were also normal. Both transthoracic and transesophageal ecoDoppler

examinations of the heart, the latter tailored to exclude left-to-right shunt were normal. The whole investigation of coagulopathy, vasculitis and idiopathic intracranial hypertension were negative. The retinal angiofluoresceinography demonstrated papilledema with venous congestion and retinal hemorrhages and no change in the arterial bed (Figure 2). Patient was submitted to anticoagulation with enoxaparine 1mg/kg subcutaneous bid without reversal of amaurosis.

Papilledema leading may be seen in increased intracranial pressure, inflammatory optic neuropathy, infiltrative optic

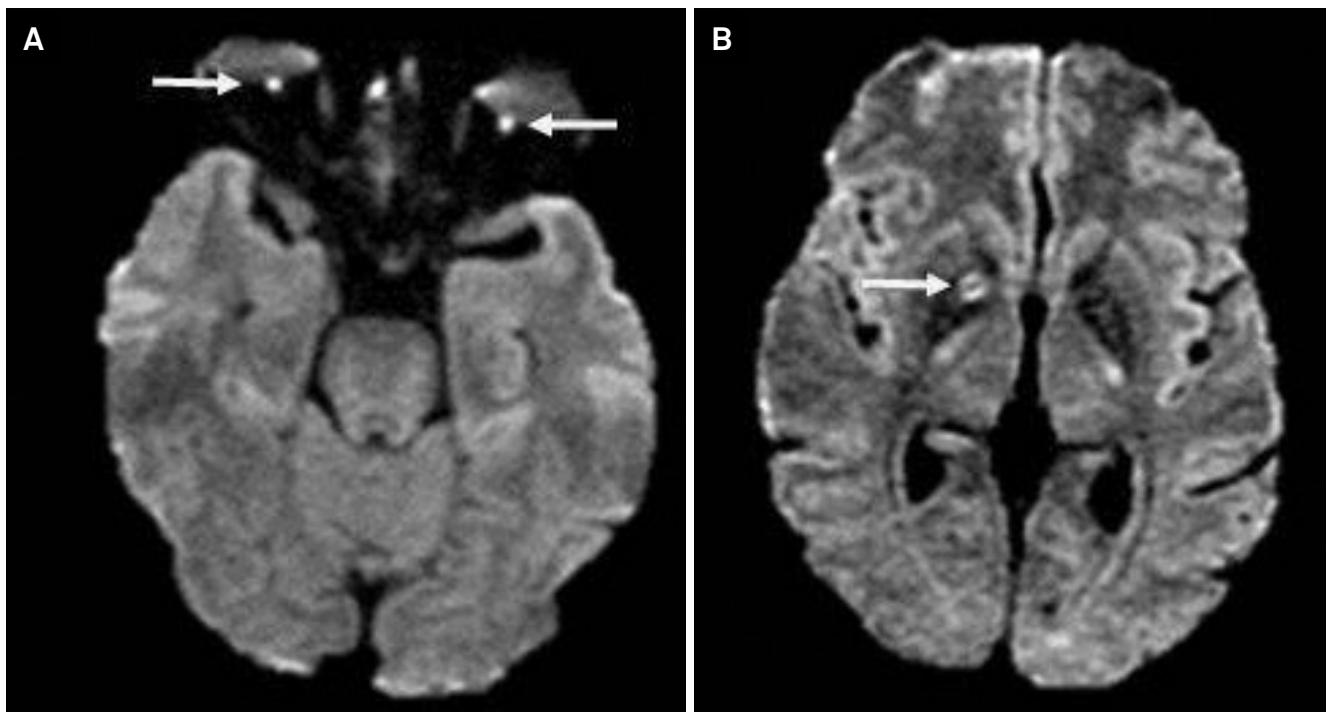


Figure 1. Sign of restriction on the diffusion in both retinas (A) and the globus pallidus to the right (B).

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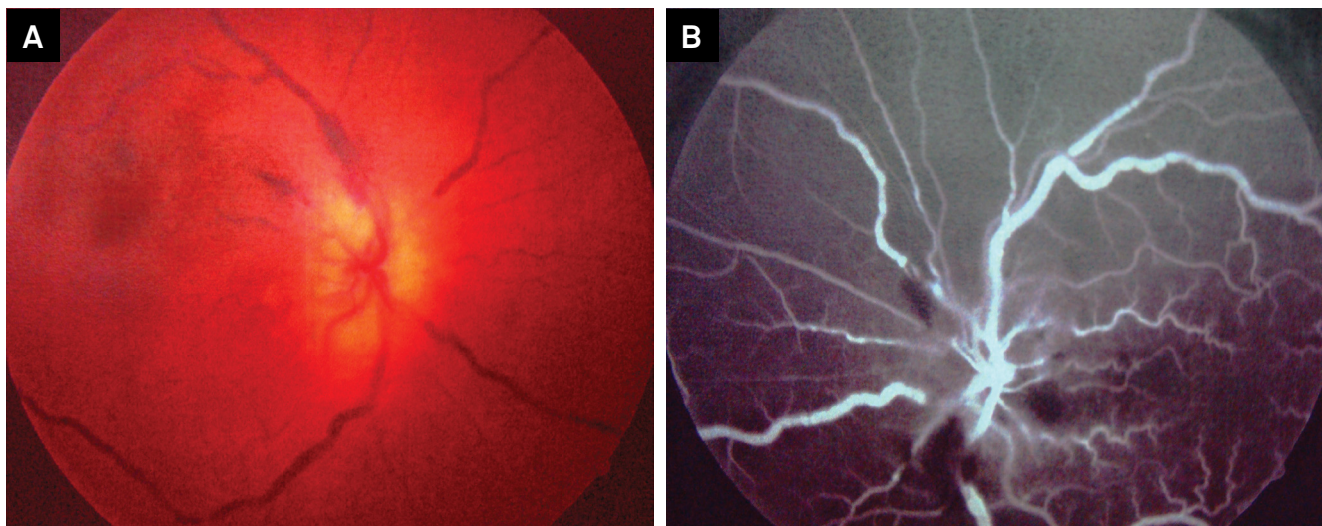


Figure 2. Papilledema with venous congestion (A) and retinal hemorrhage with no change in arterial bed (B).

neuropathy, optic nerve tumours, compressive optic neuropathy, vasculopathies, intra-ocular disease venous obstruction; conditions associated with a massive increase in the protein content of CSF.

There are several mechanisms described for papilledema, such as a stasis of venous and lymphatic drainage secondary to increased pressure in the subarachnoid space, to an inflammatory condition, to venous obstruction by cloths or to mechanical obstruction. Optic nerve ischemia and impaired axoplasmic flow are also mentioned as determinates of a choked disk. In the case described above the sudden onset of the amaurosis, time-locked to the surgical procedure (liposuction) suggests a vascular phenomenon. Liposuction may determine small vessel rupture and adipocyte damage. Fat microfragments are drained by the venous circulation and surpass the pulmonary capillary bed, reaching the arterial system. Criteria for fat embolism were described by Gurd and Wilson (Table)¹.

We hypothesized that in this case papilledema was caused bilateral ciliary arteries obstruction by fat

Table. Gurd's criteria for fat embolism.

Major criteria
Axillary or subconjunctival petechiae
Hypoxaemia ($\text{PaO}_2 < 60 \text{ mmHg}$; $\text{FI}_2 = 0.4$)
Central nervous system depression disproportionate to hypoxaemia
Pulmonary oedema
Minor criteria
Tachycardia $< 110 \text{ bpm}$
Pyrexia $< 38.5^\circ\text{C}$
Emboli present in the retina on funduscopy
Fat present in urine
A sudden inexplicable drop in haematocrit or platelet values
Increasing ESR
Fat globules present in the sputum

embolism. Similar cases of cerebral fat embolism were described. Surgeons, ophthalmologists, physicians, and neurologist should be aware of this condition².

References

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Erratum

Refractory epilepsy in children with brain tumors. The urgency of neurosurgery.

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Aliocha Dostoevski 's death during an epileptic seizure.

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The paragraph:

However, Anna panicked and called their pediatrician, Dr. A. Tchochin, who lived nearby, picked up the phone immediately. (Page 945)

Should be:

However, Anna panicked and called their pediatrician, Dr. A. Tchochin, who lived nearby.

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