Pneumocephalus clinical features

Pneumocephalus may be a causative factor for post-craniotomy pain and headache with surgical injuries [1].

Clinical presentation includes headaches in 38 %, nausea and vomiting, seizures, hemiparesis, dizziness, obtundation and depressed neurological status [2].

An intracranial succussion splash is a rare (occurring in ≈ 7%) but pathognomonic finding. Tension pneumocephalus may additionally cause signs and symptoms just as any mass (may cause focal deficit or increased ICP).

A minority of patients describe 'bruit hydro-aerique' (a splashing noise on head movement, equivalent to the succussion splash of pyloric stenosis) [3].

This noise may also be audible to the examiner with the aid of a stethoscope.

Patients often report sounds in the head after craniotomy.

In a prospective observational study of patients undergoing craniotomy with dural opening. Eligible patients completed a questionnaire preoperatively and daily after surgery until discharge. Subjects were followed up at 14 days with a telephone consultation.

One hundred fifty-one patients with various pathologies were included. Of these, 47 (31 %) reported hearing sounds in their head, lasting an average 4-6 days (median, 4 days, mean, 6 days, range, 1-14 days). The peak onset was the first postoperative day and the most commonly used descriptors were 'clicking' [20/47 (43 %)] and 'fluid moving' in the head [9/47 (19 %)]. A significant proportion (42 %, 32/77) without a wound drainage experienced intracranial sounds compared to those with a drain (20 %, 15/74, $p < 0.01$); there was no difference between suction and gravity drains. Approximately a third of the patients in both groups (post-craniotomy sounds group: 36 %, 17/47; group not reporting sounds: 31 %, 32/104), had postoperative CT scans for unrelated reasons: 73 % (8/11) of those with pneumocephalus experienced intracranial sounds, compared to 24 % (9/38) of those without pneumocephalus ($p < 0.01$). There was no significant association with craniotomy site or size, temporal bone drilling, bone flap replacement, or filling of the surgical cavity with fluid.

Sounds in the head after cranial surgery are common, affecting 31 % of patients. This is the first study into this subject, and provides valuable information useful for consenting patients. The data suggest pneumocephalus as a plausible explanation with which to reassure patients, rather than relying on anecdotal evidence, as has been the case to date [4].

Rapid neurologic deterioration following craniofacial resection may be caused by the development of tension pneumocephalus [5].

1)
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