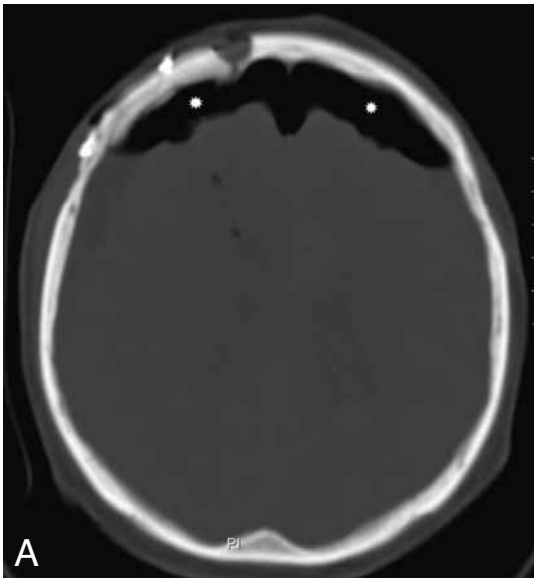
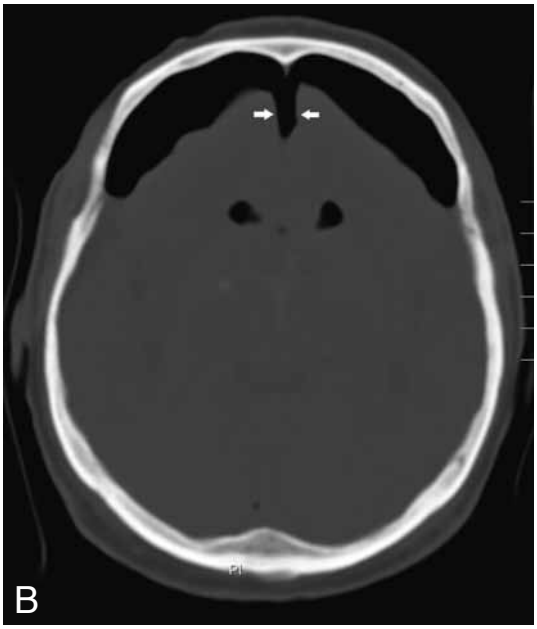
JBR–BTR, 2008, 91: 175.

IMAGES IN CLINICAL RADIOLOGY





The Mount Fuji sign in tension pneumocephalus

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A 76-year-old man underwent a transfrontal craniotomy for removal of an intraventricular tumor located within the third ventricle. Postoperatively, the patient developed a left hemiparesis and a depressed level of consciousness.

A computed tomography (CT) scan in the immediate postoperative period showed massive accumulation of subdural air with compression on both frontal lobes (Fig. A, asterisks). There was widening of the interhemispheric space between the tips of the frontal lobes (Fig. B, arrows). The collapsed frontal lobes and the widening of the interhemispheric space between the frontal lobes resemble a volcano with a central crater, and this appearance is called the "Mount Fuji sign". This sign indicates the presence of tension pneumocephalus.

After ventriculostomy placement, the subdural air collections resolved, but unfortunately the patient died 3 weeks later due to a nosocomial pneumonia.

Comment

The "Mount Fuji sign" on CT scans is useful in discriminating tension pneumocephalus from non-tension pneumocephalus. Indeed, the characteristic separation of the frontal lobes is not found in patients with non-tension pneumocephalus.

Tension pneumocephalus occurs most commonly after neurosurgical evacuation of a subdural hematoma, but has also been reported as a result of skull base surgery, paranasal sinus surgery, posterior fossa surgery in the sitting position, or head trauma.

Tension pneumocephalus is characterized by an increased pressure of air within the subdural space. The increased pressure of air is assumed to be due to a check-valve mechanism, in which the air enters into the subdural space by a defect in the skull bone, but egress of air is blocked by an obstruction. Tension pneumocephalus leads to extraaxial mass effect and subsequent compression of the frontal lobes. The presence of air between the frontal lobes suggests that the pressure of the subdural air exceeds the surface tension of cerebrospinal fluid between the frontal lobes (Michel S.J.: The Mount Fuji sign. *Radiology,* 2004, 232: 449-450).

The correct diagnosis of tension pneumocephalus is made by careful correlation of the clinical signs of neurological deterioration and the CT findings.

Treatment consists of urgent decompression to alleviate pressure on the brain. Potential neurosurgical procedures include craniotomy, drilling of burr holes, needle aspiration, ventriculostomy placement, administration of 100% oxygen, and closure of dural defects.

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