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CASE REPORT

Traumatic Tension Pneumocephalus mimic

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ABSTRACT

Pneumocephalus is a common presentation after road traffic accident but sometimes the extent of air is widespread causing compression of the brain which results in a neurosurgical emergency. We present a case of an elderly male who developed tension pneumocephalus secondary to road traffic accident and was advised surgical intervention by the neurosurgery team to relieve his symptoms.

INTRODUCTION

Road traffic accidents resulting in acute head injury is a common presentation to the emergency department. About 7-9% of cases of acute head injury have intracranial air, out of whom 82% show pneumocephalus. (1) Sometimes, the accumulation of increasing amounts of intracranial air can increase the intracranial pressure to an extent where concurrent appearance or worsening of neurological symptoms occur. (2) It is a neurosurgical emergency and is called as tension pneumocephalus (TP). TP is a rare condition with an incidence of <1% in the reported literature. (3)

CASE SU MMARY

A 79-year-old male presented in the emergency department of Shifa International Hospital, Islamabad with a history of road traffic accident one day ago. He was hit by a car and his initial management was done at another local hospital. He came with persistent vomiting, nose bleed, headache, loss of consciousness and amnesia. There were no seizures, fever or watery leak from ear, nose, and throat. Past medical history was significant for diabetes mellitus and hypertension.

On examination, he appeared stable with the intact airway. Breathing was adequate and there was evidence of bleeding from the nose. Epigastric tenderness was present. His Glasgow Coma Scale was 14/15 (Eye=3, Verbal=5, Motor=6), and there was no focal neurology. Rest of the examination was unremarkable.

Computed tomography (CT) scan of the brain (Figure-1) showed extensive subarachnoid and subdural air. There was extensive air in ventricles and a non-displaced fracture of the right frontal sinus and right ethmoidal sinus wall was reported. Largely displaced fracture with a large defect in cribriform plate of ethmoid on the right side was present. No other bony abnormality or hemorrhage was seen. Diagnosis of tension pneumocephalus was made after radiological consultation

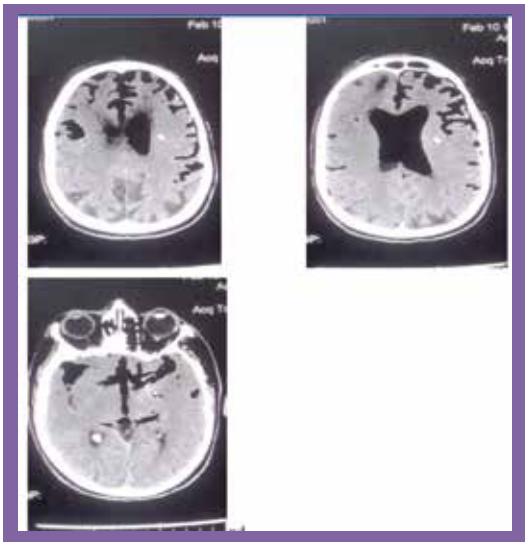

Figure. 1

He received intravenous mannitol, nalbuphine, dimenhydrinate, dexamethasone, metoclopramide, and intravenous fluids. He was seen and advised admission for surgical treatment by neuro-surgeons but patient left against medical advice to gain treatment in a government hospital setting.

DISCUSSION

Tension pneumocephalus is a rare neuro-surgical emergency. (3) Traumatic pneumocephalus commonly presents with depressed mental status (50%), headache

(30%), CSF rhinorrhoea (31%) and loss of consciousness (28%). Frontal bone or sinus fracture is found in 40% cases. [2] The only symptom and sign pathognomic of pneumocephalus is the bruit-hydro-aérique (a.k.a succession splash). It occurs only in 7% of cases. [2] It has been proposed that the volume of air as little as 65ml is sufficient enough to produce TP. [2] There are two proposed theories to explain the mechanism to develop pneumocephalus. In the first theory, it postulates that the CSF leak creates a negative pressure which sucks the air in subarachnoid space. [2] The other theory is the one-way valve mechanism. It states that the positive endo-tympanic pressure is above the intracranial pressure. It pushes the air from paranasal sinuses into the cranial cavity mainly accumulating in extradural space. [2]

Figure. 2

Although plain X-ray skulls may sometimes reveal air in the vault (10%) but the gold standard is the CT scan brain. Mount Fuji sign (Figure-2) is the prototypical appearance of tension pneumocephalus. It occurs due to the extra-axial mass effect of air onto the frontal lobes thus compressing the frontal lobes to attain the appearance of the Mount Fuji. Conservative approach can be used to treat pneumocephalus without tension. It involves a flat or Trendelenburg position with high flow oxygen via face mask. On the contrary, TP is a neuro-surgical emergency which may need procedural interventions including any of the following: craniotomy, emergency burr hole, endoscopy or ventriculostomy. [2]

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