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'Every contact leaves a trace'—Imaging features in a rare case of isolated complete oculomotor nerve palsy following penetrating injury

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Abstract

Isolated complete third cranial nerve palsy following penetrating head injury has been rarely reported. We report a very rare case of complete sudden unilateral oculomotor nerve palsy following penetrating injury and its MR imaging features.

A 17-year-old man sustained clinically subtle penetrating injury to the left side of the head with instantaneous isolated oculomotor palsy on the same side. MR imaging followed by CT study revealed the path of the penetrating nail and gave evidence for the mechanism of injury of the third nerve.

Keywords: Oculomotor nerve; Penetrating injury; MRI

1. Introduction

Isolated complete third cranial nerve palsy following penetrating head injury has been rarely reported. We report a very rare case of complete sudden unilateral oculomotor nerve palsy following penetrating injury and the subtle MR imaging features, which pointed towards the mechanism of injury in this case.

2. Case report

A 17-year-old rickshaw driver was cleaning his vehicle sitting down, and while getting up, accidentally struck the left side of his head against a projecting nail fixed on the cart. He immediately could free himself from the nail and there was very minimal bleeding externally, but found that he developed complete drooping of the left eyelid instantaneously.

Neurological examination revealed isolated complete left third cranial nerve palsy without any other neurological deficits. An initial CT study done elsewhere was reported as normal. MRI study done on a 1.5 T machine showed a horizontal streak of hyperintensity on T2 w images through the left temporal lobe, directed towards the superolateral portion of the left cavernous sinus suggesting the track of penetration of the brain by the nail (Figs. 1 and 2). Susceptibility artifacts at the skin entry point as well as in the left cavernous sinus were well visualized on MR imaging (Fig. 2). A repeat CT with thin sections showed the small punched out defect on the left squamous temporal bone and the track of the nail penetration through the left temporal lobe (Fig. 3A and B). MRI and MRA also ruled out a pseudo aneurysm from the cavernous carotid artery and a posttraumatic carotico-cavernous fistula (CCF) (Fig. 3C and D). Patient was treated conservatively and after ten months showed only partial recovery of ptosis and ocular movements. Repeat MRI showed clear evidence

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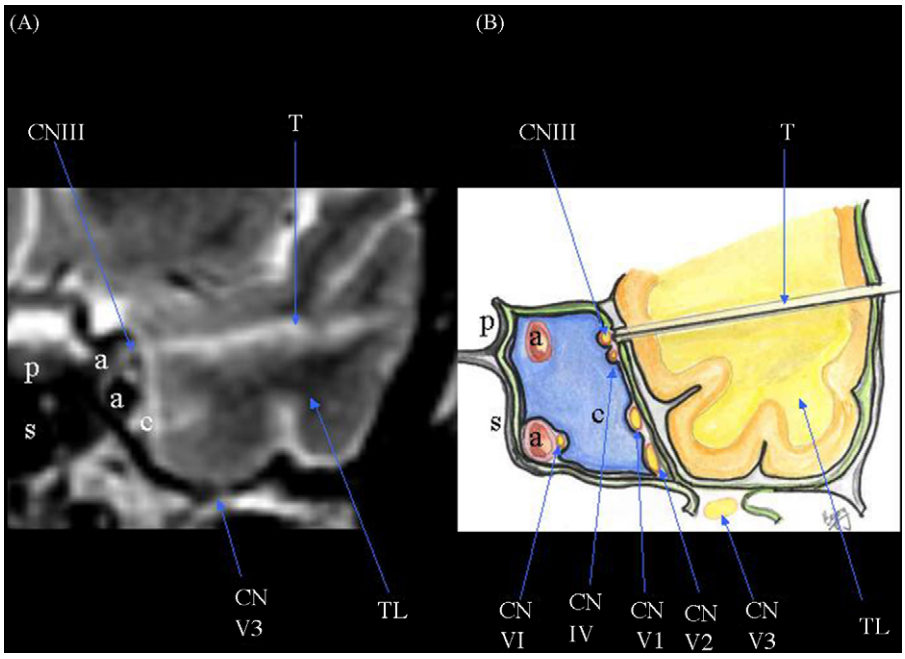

Fig. 1. (A) T2 w coronal MR image at the level of the cavernous sinus showing the nail track through the left temporal lobe extending till the cavernous sinus. (B) Illustration of the coronal brain anatomy at the same level. Note the nail track points exactly to the level of the oculomotor nerve in the cavernous sinus (p, pituitary fossa; s, sphenoid sinus; a, carotid artery; c, cavernous sinus; T, nail track; TL, temporal lobe; CN III, oculomotor nerve; CN IV, trochlear nerve; CN V1, ophthalmic nerve; CN V2, maxillary nerve; CN V3, mandibular nerve; CN VI, abducent nerve).

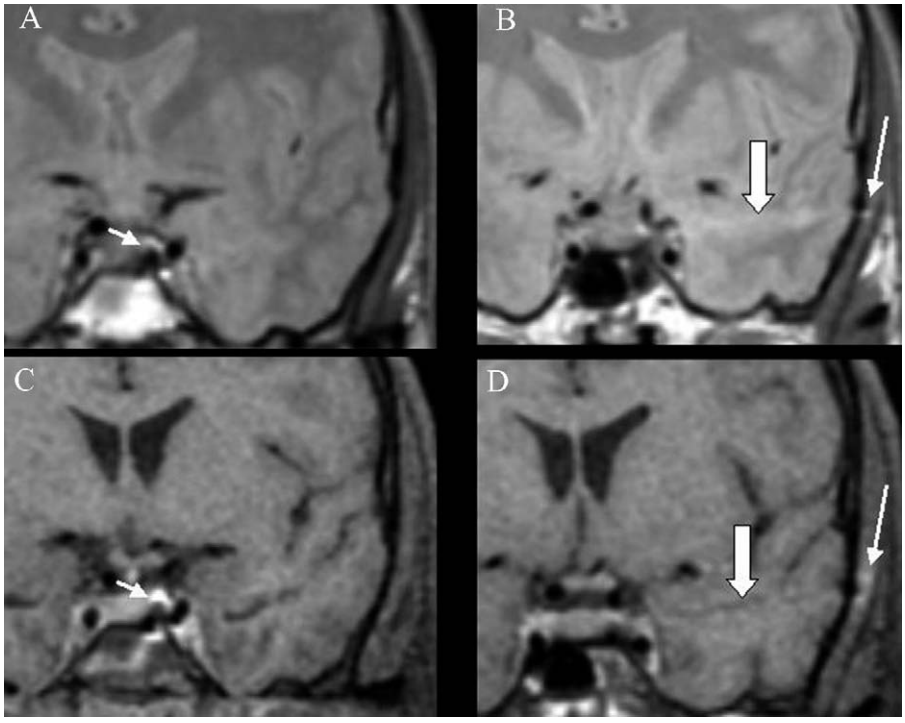

Fig. 2. (A and B) Coronal PD w and (C and D) post-contrast fat saturated images at the level of the cavernous sinus (thick arrow: nail track through the left temporal lobe; short arrow: susceptibility artifact in the cavernous sinus; long arrow: the nail entry site). Note the susceptibility artifact on PD w image and the subtle contrast enhancement at the skin entry point.