

## Isolated third nerve palsy due to mesencephalic hematoma

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**Abstract:** Isolated cranial nerve palsy is an uncommon sequel in head injury. A 9-year-old child was admitted in comatose condition after falling from a house with right pupil dilatation and same eyeball deviated laterally. Clinical impression was that of a right sided traumatic hematoma and resulting uncal herniation leading to third nerve palsy. However, CT scan revealed a small hemorrhage in anterior tegmentum on right side. The majority of third nerve palsies following trauma have been reported due to lateral herniation syndrome but isolated third nerve palsy due to tegmental herniation is rare entity.

**Keywords:** tegmentum, hematoma, third nerve.

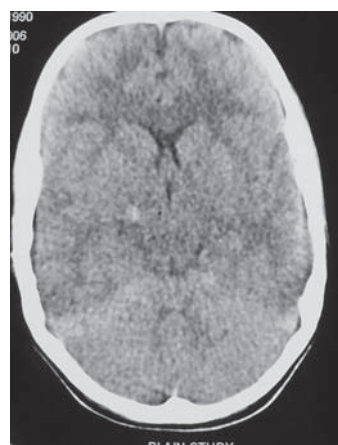
### INTRODUCTION

Traumatic mesencephalic hemorrhage associated with severe head injury has a high mortality<sup>1</sup>. The patients usually have one of the complicated brain stem syndromes. Isolated third nerve palsy following trauma is not a common entity and when it occurs, involvement can be anywhere from its origin in midbrain to its termination in orbit. However, isolated third nerve palsy due to tegmental hemorrhage is rare entity<sup>1,2,3</sup>.

### CASE REPORT

A nine-year child had fall from two-storied house. She became unconscious and was brought to emergency department in the same state. On examination, she was comatose with Glasgow coma score of four (E1 V1 M2). Her right pupil was fully dilated and not reacting to light and her right ball was deviated laterally. Left pupil was normal size and reacting to light. Clinical diagnosis was made of posttraumatic hemorrhage on right side with uncal herniation. She was intubated and CT scan was done urgently. She was put on ventilatory support. CT scan revealed hemorrhage in right tegmentum. There was no significant associated injury. She was managed conservatively. After one week patient improved in her sensorium and was extubated. Her pupil size came to normal and medial rectal palsy was partly reduced but

she continued to complain of occasional diplopia on looking to right side. Since she was on improving trend so no attempt at squint, correction was taken.



**Fig 1:** CT scan showing hematoma in right tegmentum of midbrain and extending just into crural cistern

### DISCUSSION

Posttraumatic third nerve palsy is an alarming sign as it usually indicates lateral tentorial herniation. In absence of herniation, third nerve palsy in isolation is an uncommon entity<sup>4</sup>. In a study by Solomon et al, they found only 1.2% incidence of isolated third nerve palsy amongst 2100 patients of head injury<sup>5</sup>. In other study by Richard et al, they reported 15% occurrence of third nerve palsy amongst the patients having acquired third, fourth and sixth nerve palsies<sup>6</sup>. Tiffin et al found no case of third nerve palsy attributable to trauma<sup>7</sup>.

Etiology of direct third nerve palsy in absence of

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herniation can be because of differential movement of brain stem and supratentorial structures which can cause nerve injury<sup>8</sup>. In some cases third nerve injury has occurred even with minor head injury due to mechanical stress<sup>9,10</sup>. Disturbance in blood supply or detrimental biochemical effects arising from head injury can also lead to nerve damage<sup>4</sup>. Direct damage to third nerve nucleus or nerve origin inside midbrain is one of the rare causes of third nerve injury<sup>1,2,3</sup>. The nerve function may be expected to improve as the hematoma resolves but complete recovery is rare. The close association of reticular activating system may be responsible for altered level of sensorium that improves once hematoma is resolved. Few cases of spontaneous tegmental hemorrhage with oculomotor nerve palsy have been reported as well<sup>11</sup>. In these cases the etiology was either hypertension or vascular malformation<sup>12</sup>.

### REFERENCES

1. Tokuno T, Kawakami Y, Yamamoto T. Isolated infranuclear oculomotor nerve palsy caused by traumatic midbrain hemorrhage: *No shinkei Geka* 1996; 24: 849-52.
2. Isikay CT, Yucesan C, Yucemen N, Culcuoglu A, Mutluer N. Isolated nuclear oculomotor nerve syndrome due to mesencephalic hematoma. *Acta Neurol Belg* 2000; 100: 248-51.
3. N Ighoghossian, NV Ighetto A, T Rouillas P. Oculomotor nerve syndrome and ocular tilt reaction caused by mesencephalic hematoma. *Rev Neurol* 1991; 147: 676-79.
4. P Muthu, P Pritty. Mild head injury with isolated third nerve palsy. *Emerg Med J* 2001; 18: 310-11.
5. Solomons NB, Solomon DJ, De Villiers JC. Direct traumatic third nerve palsy. *S Afr Med J* 1980; 58: 109-11.
6. Richards BW, Jones FR, Young BR. Causes and prognosis in 4278 cases of paralysis of oculomotor, trochlear and abducens cranial nerve. *Am J Ophthalmol* 1992; 113: 489-96.
7. Tiffin PAS, MacEwen CJ, Craig EA, et al. Acquired palsy of oculomotor, trochlear and abducens nerves. *Eye* 1996; 10: 377-84.
8. Heinz J. Cranial nerve avulsion and other neural injuries. *Med J Aust* 1969; 2: 1246-9.
9. Kanski J. Clinical Ophthalmology-A systematic approach. 4<sup>th</sup> ed. London. Butterworth Heinemann, 1999: 622.
10. Eyster EF, Hoyt WF, Wilson CB. Oculomotor palsy from minor head trauma. *JAMA* 1972; 220: 1083-6.
11. CT Ikay, CY Ucesan, NY Ucemen, AC Ulcuoglu, NM Utluer. Isolated nuclear oculomotor nerve syndrome due to mesencephalic hematoma. *Acta Neurol Belg* 2000; 100: 248.
12. JC Getenet, VA Ighotto, N Ighoghossian, P Trouillas. Isolated bilateral third nerve palsy caused by a mesencephalic hematoma. *Neurology* 1994, 44: 981-2.