TRAUMATIC BASAL GANGLIA HAEMORRHAGE

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ABSTRACT

Traumatic Basal Ganglia Haemorrhage (TBGH) is a relatively rare lesion seen in traffic accidents. Traumatic Basal Ganglia Haemorrhage is probably secondary to shifting of the brain as a result of acceleration or deceleration forces. The purpose of the study was to asses outcome of TBGH cases managed conservatively among head injury patients at our hospital and compare with other studies.

We studied 16 patients with TBGH diagnosed on Plain CT Scan done on admission between Jan 2000 to Dec 2002. All patients were treated conservatively. We evaluated outcome in these patients.

Consciousness became clear in all patients. Expressive and nonfluent aphasia occurred in 6 patients, weakness of opposite side was observed on 10 patients. Good recovery was seen in 11 patients and 4 had moderate disability. In TBGH a good outcome was observed.

Keywords: Basal ganglia, shearing injury, traumatic intracerebral haemmorhage

INTRODUCTION

Traumatic Basal Ganglia Haemorrhage is a relatively rare lesion seen in adolescents in traffic accidents which is observed in approximately 1-3.0% of cases of head injury [1,2]. Traumatic Basal Ganglia Haemorrhage is probably secondary to shifting of the brain as a result of acceleration or deceleration forces with tearing of vessels which results in haemorrhage involving the lenticulostriate or anterior choroidal arteries [3,4]. It can occur in isolation or in association with a primary pathologic consequence of trauma, such as subdural and epidural haematoma, brain contusion, subarachnoid haemorrhage and intraventricular haemorrhage [5,6]. The purpose of the study was to asses outcome of TBGH cases managed conservatively among head injury patients at our hospital and compare with other studies.

MATERIALS AND METHODS

We retrospectively reviewed the record of 16 patients with traumatic basal ganglia haemorrhage without any other associated intracranial lesion, admitted at our hospital between January 2000 and December 2002 located as shown in (table-1). There were 13 males and 3 females with mean age of 28 year. These cases represented 0.8% of total series of all head injured patients. Ninety four percent of them were injured in a traffic accident and one by falling from height. On admission neurological assessment revealed finding as shown in (table-2). All of them had skull X-rays and Plain computerized tomographic scan of brain on admission. None of the patient had a history of haemorrhagic tendency or hypertension. All were treated conservatively with administration of mannitol. For clinical evaluation and outcome assessment, the Glasgow Coma Scale [7] (GCS) and Glasgow outcome Scale [8] (GOS) were used respectively.

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RESULTS

The diagnosis of traumatic basal ganglia haemorrhage was established on admission using CT scan (fig. 1 & 2). The initial CT Scan in all these patients revealed haemmorhage in the caudate nucleus, putamen, and thalamus. The GCS score on admission ranged from 5-11 (mean=9). X-ray skull was done in all patients and skull fracture was present in 43% of patients. The final outcome in our series was fairly good. Consciousness became clear in all patients, most

patients became alert in three months. Weakness of opposite side was observed in 10 patients, expressive and nonfluent aphasia occurred in 6 patients. Outcome revealed good recovery in 68.7% of cases (table-3).

DISCUSSION

Traumatic basal ganglia haemorrhage is common in children and adolescents injured in traffic accidents [9] and is found in about 3-5% of head injured patients who undergo CT scanning. Impact directed towards the tentorium may lead to shifting of the brain through the tentorial notch with pulling or tearing of vessels which sometimes results in haemorrhage on the basal ganglia [10,11]. In addition, it is well known that traumatic basal ganglia haemorrhage, intraventricular haemorrhage, corpus callosum injury, brainstem injury and petechial haemorrhageare are seen as association of the traumatic basal ganglia haemorrhage. In a study by Lee et al [12] patients with concomitant intraventricular haemorrhage or subarachnoid haemorrhage was an indication of severe head injury and often-poor prognosis while those patients with only basal ganglia bleed had good results. The outcome of their series was rather as good as our series with 53.8% of patients having a functional survival.

In another series by Katz et al [13] showed relative frequency of TBGH 3% with a good final outcome revealing moderate disability or good recovery in 70% of the cases.

We included only those patients in this study who had basal ganglia bleed without any associated lesions. We performed conservative therapy only and all of our patients became alert. Early rehabilitation for hemiparesis are thought to have enhanced the out comes. Traumatic basal ganglia hemorrhage therefore is associated with favorable outcome.

CONCLUSION

In traumatic basal ganglia haemorrhage although there is coma lasting for more than 24 hours with abnormal motor responses to pain stimuli, a good outcome may be expected when severe concomitant intracranial lesions are absent.

Table-1: Location of traumatic basal ganglia haemorrhage (n=16)

	No	%
Left caudate	9	56.25
Right Caudate	5	31.25
Left Putamen	1	06.25
Right Thalamus	1	06.25

Table-2: Neurological findings on admission (n= 16)

Findings	No	%
Hemiparesis	10	62.50
Aphasia	06	37.50
GCS 3-8	11	68.75
GCS 9-11	04	25.00

Table-3: Outcome according to GOS (n=16)

Outcome	No	%
Good Recovery	11	68.75
Moderate Disability	04	25.00
Severe Disability	01	06.25

Fig. 1: Plain CT scan of a head injury patient showing intracerebral haematoma in the left basal ganglia region.

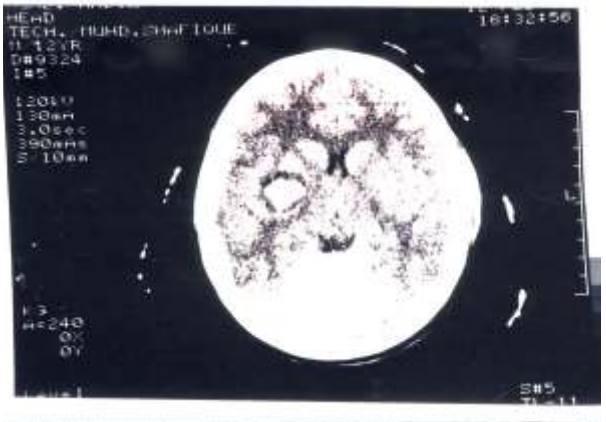

Fig. 2: Plain CT scan of a head injury patient showing intracerebral haematoma in the right basal ganglia region.

REFERENCES

1. Dunning J, Stratford-Smith P, Lecky F, Batchelor J, Hogg K, Browne J et al. A Met-analysis of clinical correlates that predict significant intracranial injury in adults with minor head trauma. **J Neurotrauma 2004; 21: 877-85.**

2. Colquhoun IR, Rawlinson J. The significance of haematomas of the basal ganglia in closed head injury. **Clin Radiol 1989; 40: 619-21.**

3. Hardman JM, Manoukin A. Pathology of head trauma Neuroimaging **Clin N Am 2002; 12: 175-87.**

4. Adams JH, Doyle D, Graham DI, Lawerence AE. Deep intracerebral (basal ganglia) haematomas in fatal non-missile head injury in man. **J Neurol Neurosurg Psychiatry 1986; 49: 1039-43.**

5. Macpherson P, Teasdale E, Dhaker S, Allerdyce G, Galbraith S. The significance of traumatic haematoma in the region of the basal ganglia. **J Neurol Neurosurg Psychiatry 1986; 49: 29-34.**

6. Tong KA, Ashwal S, Hotlshouser BA, Nickerson JP, Diffuse axonal injury in children: clinical correlation with hemorrhagic lesions. **Ann Neurol 2004; 56: 36-56.**

7. Ono J, Yauraura A, Kubofa M, Okimura Y, Irobe K, Outcome prediction in head injury. Analysis of clinical prognostic factors **J Clin Nerosic 2001; 8: 120-3.**

8. Jayakumar PN, Kolluri VRS, Basvakumar DG, Arya BYT, Das BS. Prognosis in traumatic basal ganglia hematoma. **Acta Neurochir 1989; 97: 114-116.**

9. Cauoli M, Locatelli M, Campanella R, Balbi S, Martinelli F, Arienta C. Multiple intracranial lesion in head injury. Clinical consideration prognostic factors, management and results in 95 patients, **Surg Neurol 2001; 56: 82-8.**

10. Harsis C, Di Russo S, Sulliman T, Benzil DC Mortality risk after head injury increases after 30 years. **J Am Coll Surg 2003; 197: 711-6.**

11. Lee JP, Wang ADJ Post–traumatic basal ganglia hemorrhage: analysis of 52 patients with emphasis on the final outcome. **Acta Neurochir 1991; 31: 376-80.**

12. Boto GR, Lobato RD, Rivas JJ. Basal ganglia hematomas in severely head injured patients: clinicoradiological analysis of 37 cases. **J Neurosurg 2001; 94: 224-32.**

13. Katz DI, Alexander MP, Seliger GM, Bellas DN. Traumatic basal ganglia hemorrhage: clinicopathologic features and outcome. **Neurology 1989; 39: 897-904.**