

CASE REPORT

Traumatic Basal Ganglia Hematoma

Amit Agrawal

ABSTRACT

Traumatic basal ganglia hemorrhage (TBGH) is characterized as a hemorrhagic lesion located in the basal ganglia or in internal capsule or thalamus. Outcome of TBGH is mainly determined by the extent of associated brain injuries particularly the larger the size, presence of coagulation disorders, diffuse, presence of intraventricular or brain stem hemorrhage, age >60, pupillary asymmetry, abnormal motor response, and severe head injury all are associated with poorer outcome. In present case, we discuss a case of adult male traumatic basal ganglia hemorrhage with good outcome.

Keywords: Basal ganglia, Head injury, Intracerebral hematoma, Contusion.

How to cite this article: Agrawal A. Traumatic Basal Ganglia Hematoma. *J Postgrad Med Edu Res* 2014;48(3):154-156.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Traumatic basal ganglia hemorrhage (TBGH) is characterized as a hemorrhagic lesion located in the basal ganglia or in internal capsule or thalamus is extremely rare with only few case reports in the literature.¹⁻⁸ In present case, we discuss a case of adult male TBGH with good outcome.

CASE REPORT

A 55-year-old gentleman presented with the history of road traffic accident hit by two wheeler while he was going on the road. The patient came to the emergency room 1 hour after the injury. He was unconscious since the time of injury. He had multiple episodes of vomiting. There was no history of seizures, ear or nasal bleed. He was not diabetic or hypertensive. His general and systemic examination including blood pressure was normal. Neurologically, he was in altered sensorium (GCS-E2V2M5), pupils were bilateral equal and reacting light. He was moving all four limbs equally and there was no facial asymmetry. Deep tendon reflexes were normal and planters were flexor. He

had fracture of the mandible and left radius bone. Computed tomography (CT) scan of brain showed a small hematoma in the region of the right basal ganglia with minimal mass effect (Figs 1A to C). All the blood investigations including coagulation profile were within normal range. The patient was managed conservatively for the basal ganglion hematoma, and underwent internal fixation for mandible/radius fractures. The follow-up scan showed resolution in the size of the hematoma (Figs 2A to C). He recovered completely without any motor or sensory neurological deficits.

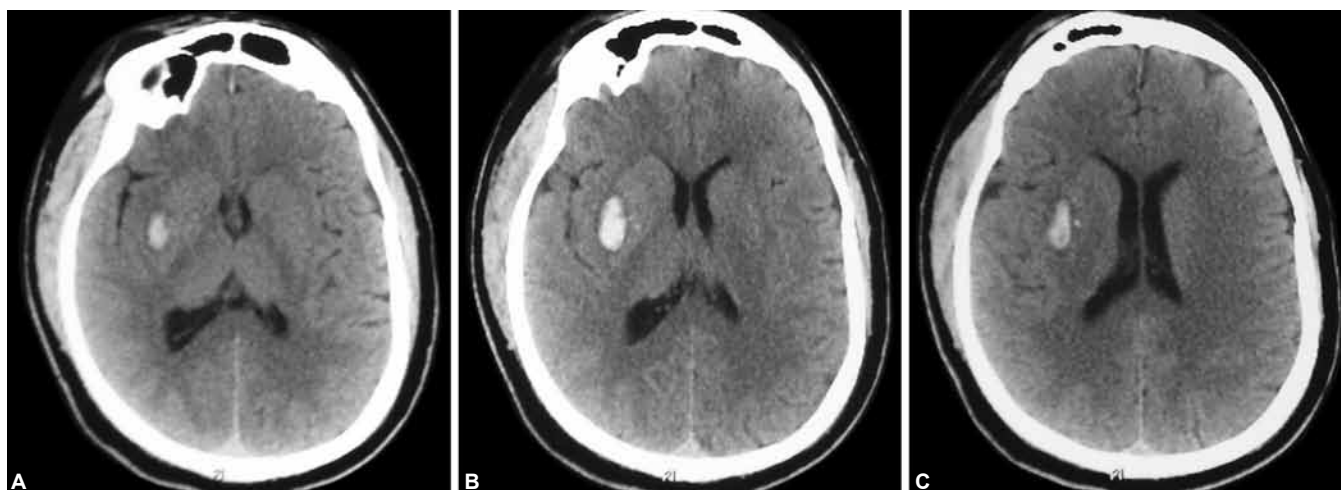
DISCUSSION

The reported incidence of TBGH ranges from 3 to 10% of closed head injuries,^{1,3,4,6,9} and the incidence of TBGH is higher in autopsy series ranging between 10 and 12%.^{1,6,10-12} The exact pathogenesis of TBGH is not clear, but, it has been suggested that the TBGH can occur from acceleration/deceleration forces at the time of injury leading to shear strain of the lenticulostriate or anterior choroidal vessels.^{1,4,10,13,14-16} Based on the diameter, TBGH are classified as small (<2 cm) and large hemorrhages (>2 cm).^{1,14} Based on the location of the hemorrhages, it had been suggested that the TBGH are small, multiple, rarely bilateral, and located in the zone of lentiform nucleus and external capsule, whereas spontaneous hemorrhages are large solitary, causing mass effect, and mainly in the region of thalamus and internal capsule.^{2,3} Computed tomography scan is of enormous value, not only for the detection of traumatic basal ganglion hematomas but also to demonstrate the size of the lesions, mass effect and to detect any associated diffuse brain injury.^{9,17} It may be difficult to differentiate TBGH from spontaneous hematomas on imaging; however, in presence of definite history of trauma and presence of typical findings demonstrating the direction of impact that corresponds with hemorrhagic site, one can suspect traumatic hemorrhages.¹⁰ Hemorrhagic contusions located in the pallidum can have fluffy edges around the lesion which was described as characteristic of traumatic etiology.¹⁸ The management of the TBGH depends on the neurological status, size of the hematoma, presence of mass effect, and the options include conservative management, open surgery, CT-guided stereotactic, or ultrasound-guided aspiration.^{2-4,10} In present case, in view of the smaller size of the lesion, we managed the patient conservatively. Traumatic basal ganglia hemorrhage needs to be differentiated from

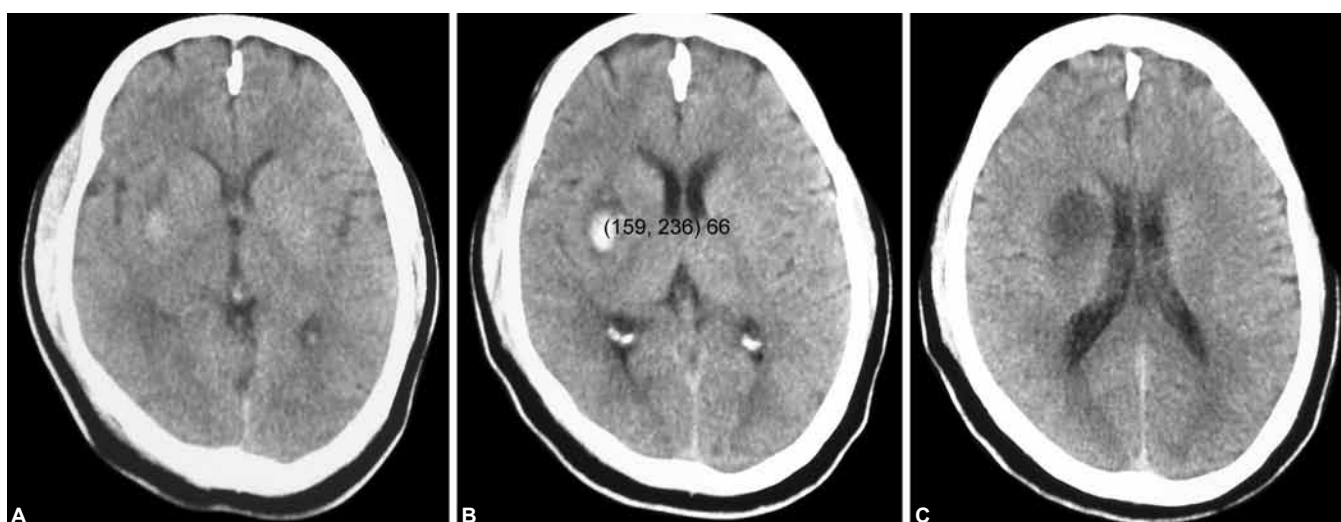
Professor

Department of Neurosurgery, Narayana Medical College and Hospital, Nellore, Andhra Pradesh, India

Corresponding Author: Amit Agrawal, Professor, Department of Neurosurgery, Narayana Medical College and Hospital Nellore, Andhra Pradesh, India, Phone: 8096410032, e-mail: dramitagrawal@gmail.com



Figs 1A to C: Initial plain CT scan of brain showing small right basal ganglia hematoma with mild mass effect



Figs 2A to C: Follow-up CT scan showing resolution in the size of hematoma with perilesional edema

spontaneous basal ganglionic hematomas. As in present case, in a previously healthy individual without any history of hypertension¹⁰ with a clear cut history of trauma, and no evidence to suggest any other cause of basal ganglionic hemorrhage.²

CONCLUSION

Outcome of TBGH is mainly determined by the extent of associated brain injuries, particularly the larger the size, presence of coagulation disorders, diffuse, presence of intraventricular or brain stem hemorrhage, age >60, pupillary asymmetry, abnormal motor response, and severe head injury all are associated with poorer outcome.^{2-8,13,16,19-21} As we observed in the present case, many studies have shown a favorable outcome for patients with TBGH.^{3,6,10,13,19}

REFERENCES

1. Adams JH, Doyle D, Graham DI, Lawrence AE, McLellan DR. Deep intracerebral (basal ganglia) haematomas in fatal nonmissile head injury in man. *J Neurol Neurosurg Psychiatry* 1986;49(9): 1039-1043.
2. Bhargava P, Grewal SS, Gupta B, Jain V, Sobti H. Traumatic bilateral basal ganglia hematoma: a report of two cases. *Asian J Neurosurg* 2012;7(3):147-150.
3. Kumar S, Jha D, Abbey P, Mishra V, Handa A. Outcome of traumatic basal ganglia hemorrhage. *Int J Neurosurg* 2009;6(1).
4. Boto GR, Lobato RD, Rivas JJ, Gomez PA, de la Lama A, Lagares A. Basal ganglia hematomas in severely head injured patients: clinicoradiological analysis of 37 cases. *J Neurosurg* 2001;94(2):224-232.
5. Fung C, Z'Graggen WJ, Beck J, Gralla J, Jakob SM, Schucht P, Raabe A. Traumatic subarachnoid hemorrhage, basal ganglia hematoma and ischemic stroke caused by a torn lenticulostriate artery. *Acta Neurochi* 2012 Jan;154(1):59-62.
6. Katz DI, Alexander MP, Seliger GM, Bellas DN. Traumatic basal ganglia hemorrhage: clinicopathologic features and outcome. *Neurology* 1989;39(7):897-904.
7. Kibayashi K, Shojo H, Ono N. Traumatic basal ganglia hematoma in a fatal traffic accident victim. *Legal Med* 2002;4(2):127-130.
8. Takeuchi S, Takasato Y, Masaoka H, Hayakawa T, Yatsushige H, Shigeta K, Otani N, Wada K, Nawashiro H, Shima K. Traumatic basal ganglia hematomas: an analysis of 20 cases. *Acta Neurochir Suppl* 2013;118:139-142.
9. Macpherson P, Teasdale E, Dhaker S, Allerdycce G, Galbraith S. The significance of traumatic haematoma in the region of the basal ganglia. *J Neurol Neurosurg Psychiatry* 1986;49(1):29-34.

10. Jang KJ, Jwa CS, Kim KH, Kang JK. Bilateral traumatic hemorrhage of the basal ganglia. *J Korean Neurosurg Soc* 2007; 41(4):272-274.
11. Yanaka K, Egashira T, Maki Y, Takano S, Okazaki M, Matsumaru Y, Kamezaki T, Ono Y, Nose T. Bilateral traumatic hemorrhage in the basal ganglia: report of two cases. *No Shinkei Geka* 1991; 19(4):369-373.
12. Jellinger K. Traumatic basal ganglia hemorrhage. *Neurology* 1990;40(5):862-863.
13. Lee JP, Wang AD. Post-traumatic basal ganglia hemorrhage: analysis of 52 patients with emphasis on the final outcome. *J Trauma* 1991;31(3):376-380.
14. Mosberg WH, Lindenberg R. Traumatic hemorrhage from the anterior choroidal artery. *J Neurosurg* 1959;16(2):209-221.
15. Fujioka M, Maeda Y, Okuchi K, Kagoshima T, Taoka T. Secondary change in the substantia nigra induced by incomplete infarct and minor hemorrhage in the basal ganglia due to traumatic middle cerebral arterial dissection. *Stroke* 1999;30(9):1975-1977.
16. Lindenberg R. Significance of the tentorium in head injuries from blunt forces. *Clin Neurosurg* 1964;12:129-142.
17. Shigemori M, Tokutomi T, Shirahama M, Hara K, Yamamoto F. Massive traumatic hematoma localized in the basal ganglia. *Neurol Med Chir* 1981;21(7):697-700.
18. French BN, Dublin AB. The value of computerized tomography in the management of 1000 consecutive head injuries. *Surg Neurol* 1977;7(4):171-183.
19. Kimura M, Sobata E, Suzuki S, Nonogaki Y, Iwabuchi T. Traumatic hematoma in the basal ganglia (caudate) with favorable prognosis: report of two cases. *No Shinkei Geka* 1994;22(2): 155-158.
20. Jayakumar PN, Kolluri VR, Basavakumar DG, Arya BY, Das BS. Prognosis in traumatic basal ganglia haematoma. *Acta Neurochirurgica* 1989;97(3-4):114-116.
21. Munemoto S, Komai T, Aizumi S, Kimura A, Ishiguro S, Yamamoto S. Traumatic hemorrhage in the basal ganglia in the child. Five cases. *No Shinkei Geka* 1985;13(9):1027-1033.

