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Evaluation of Endoscopic Evacuation of Intraventricular Hemorrhage

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Introduction

Neuroendoscopy has become an integral part of neurosurgery,particularly in the ventricular system. Intraventricular hemorrhage (IVH) with associated hydrocephalus is a good indication for endoscopic surgery. The aim of the present study was to evaluate the role of endoscopy in evacuation of intraventricular hemorrhage as well as its safety and feasibility.

Methods

During a 1-year period, 15 patients with spontaneous IVH with associated hydrocephalus were studied. Patients with a large parenchymal hematoma or IVH of vascular origin were excluded from the study. Rigid endoscope was used to evacuate hematoma in lateral ventricles and third ventricle in all patients. Glasgow Coma Scale (GCS), Graeb score and ventriculo-cranial ratio were evaluated before and after endoscopic intervention and Glasgow Outcome Scale (GOS) was appraised at 6 months postoperatively.

Results

In all patients, the procedure resulted in a considerable removal of ventricular blood. Graeb score was reduced by 48%..Ventriculo-cranial ratio was reduced by 27%. The procedure was carried out safely and no bleeding or delayed hydrocephalus was observed in any case. Mortality at 6 months was found in 33% of the patients and favorable outcome (Glasgow Outcome Scale. 3-5) was observed in 33% of cases.

Conclusions

Endoscopic management of severe IVH with obstructive hydrocephalus can effectively reduce the amount of ventricular blood. Future refinement in instrumentation and careful selection of cases may make this method more applicable and effective.

Learning Objectives

assessment the role of the endoscope in evacuation of intraventricular hemorrhage

References

1. Chen CC, Liu CL, Tung YN, Lee HC, Chuang HC, Lin SZ, Cho DY. Endoscopic surgery for intraventricular hemorrhage (IVH) caused by thalamic hemorrhage: comparisons of endoscopic surgery and external ventricular drainage (EVD) surgery. World Neurosurg 2011;75:264–8.
2. Hamada H1, Hayashi N, Kurimoto M, Umemura K, Nagai S, Kurosaki K, et al. Neuroendoscopic removal of intraventricular hemorrhage combined with hydrocephalus. Minim Invasive Neurosurg 2008;51:345–9.
3. Mohr G, Ferguson G, Khan M, Malloy D, Watts R, Benoit B, et al. Intraventricular hemorrhage from ruptured aneurysm. Retrospective analysis of 91 cases. J Neurosurg 1983; 58:482–7.
4. Mayfrank L, Kissler J, Raoofi R, Delsing P, Weis J, Küker W, et al. Ventricular dilatation in experimental intraventricular hemorrhage in pigs. Characterization of cerebrospinal fluid dynamics and the effects of fibrinolytic treatment. Stroke 1997;28:141–8.
5. Bhattathiri PS, Gregson B, Prasad KS, Mendelow AD. Intraventricular hemorrhage and hydrocephalus after spontaneous intracerebral hemorrhage: results from the STICH trial. Acta Neurochir Suppl 2006;96:65–8.
6. Rosen DS, Macdonald RL, Huo D, Goldenberg FD, Novakovic RL, Frank JI, et al. Intraventricular hemorrhage from ruptured aneurysm: clinical characteristics, complications, and outcomes in a large, prospective, multicenter study population. J Neurosurg 2007;107:261–5.
7. Graeb DA, Robertson WD, Lapointe JS, Nugent RA, Harrison PB. Computed tomographic diagnosis of intraventricular hemorrhage. Etiology and prognosis Radiology 1982; 143(1):91-6.
8. Fujii K, Tanaka R, Oka H, Nagata S, Rhoton Jr AL. Microsurgical anatomy and operative approaches to the lateral ventricles. International Congress Series 2002; 1247 (0): 19-27.
9. Oka K, Go Y, Yamamoto M, Kumate S, Tomonaga M. Experience with an ultrasonic aspirator in neuroendoscopy. Minim Invasive Neurosurg 1999;42(1):32-4.
10.Hallevi H, Dar NS, Barreto AD, Morales MM, Martin-Schild S, Abraham AT, et al. The IVH score: a novel tool for estimating intraventricular hemorrhage volume: clinical and research implications. Crit Care Med 2009; 37(3):969-74.
11.Coplin WM, Vinas FC, Agris JM, Buciuc R, Michael DB Diaz FG, et al. A cohort study of the safety and feasibility of intraventricular urokinase for nonaneurysmal spontaneous intraventricular hemorrhage. Stroke. 1998; 29(8):1573-9.
12.Naff NJ, Carhuapoma JR, Williams MA, Bhardwaj A, Ulatowski JA, Bederson J, et al. Treatment of intraventricular hemorrhage with urokinase : effects on 30-Day survival. Stroke 2000;31(4):841-7.
13.Tuhrim S, Horowitz DR, Sacher M, Godbold JH. Volume of ventricular blood is an important determinant of outcome in supratentorial intracerebral hemorrhage. Crit Care Med 1999;27(3):617-21.
14.Horváth Z, Veto F, Balás I, Kövér F, Dóczi T. Biportal endoscopic removal of a primary intraventricular hematoma: case report. Minim Invasive Neurosurg 2000;43(1):4-8.
15.Kamikawa S, Inui A, Kobayashi N, Tamaki N, Yamadori T. Intraventricular hemorrhage in neonates: endoscopic findings and treatment by the use of our newly developed Yamadori-type 8 ventriculoscope. Minim Invasive Neurosurg 2001;44(2):74-8.
16. Nomura S, Ishihara H, Yoneda H, Shirao S, Shinoyama M, Suzuki M. Neuroendoscopic evacuation of intraventricular hematoma associated with thalamic hemorrhage to shorten the duration of external ventricular drainage. Surg
Neurol Int 2010;1:43.
17.Yadav YR, Mukerji G, Shenoy R, Basoor A, Jain G, Nelson A. Endoscopic management of hypertensive intraventricular haemorrhage with obstructive hydrocephalus. BMC Neurol 2007;7:1.
18. Chen HC, Chuang CC, Tzaan WC, Hsu PW Application of neuroendoscopy in the treatment of obstructive hydrocephalus secondary to hypertensive intraventricular hemorrhage. Neurol India 2011;59(6):861-6.
19.Basaldella L, Marton E, Fiorindi A, Scarpa B, Badreddine H, Longatti P. External ventricular drainage alone versus endoscopic surgery for severe intraventricular hemorrhage: a comparative retrospective analysis on outcome and shunt dependency. Neurosurg Focus 2012;32(4):E4.
20. Komatsu F, Komatsu M, Wakuta N, Oshiro S, Tsugu H, Iwaasa M, et al. Comparison of clinical outcomes of intraventricular hematoma between neuroendoscopic removal and extraventricular drainage. Neurol Med Chir (Tokyo) 2010;50(11):972-6.2

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