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Minimally Invasive Evacuation of Cerebellar Hematomas Using the Apollo System

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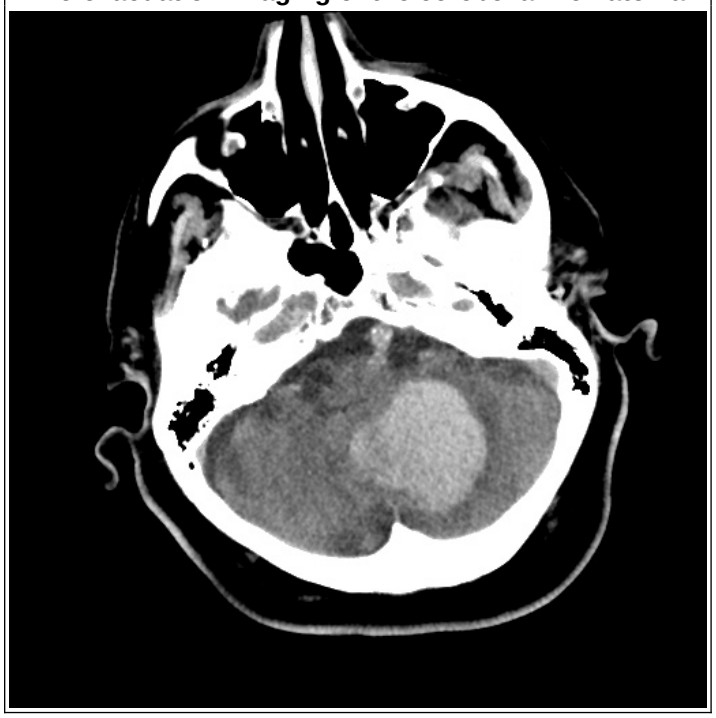
Introduction

Despite representing between 5-13% of all intracerebral hemorrhages, spontaneous cerebellar hematomas remain associated with very high morbidity and mortality. (1) Open craniotomy for decompression and evacuation of the hematoma is the gold standard for the treatment of such lesions. Despite the various medical advances, surgical mortality remains between 20-50%. Minimally invasive surgical evacuation of supratentorial hematomas with the Apollo Aspiration system has shown promising results. (2) We present a series of patients with infratentorial cerebellar hematomas evacuated minimally invasively.

Methods

This is a retrospective chart review of four adult patients who underwent minimally invasive evacuation of cerebellar hematomas using the Apollo system by experienced neurosurgeons at three academic medical centers.

Pre-evacuation imaging of the cerebellar hematoma



Limitations

The small number of patients and the retrospective nature of our study are inherent limitations of such research. However, with any new technique, indications are restrictive and very few patients qualify for the intervention. In addition, the manipulation of the endoscopic evacuation apparatus has a steep learning curve and an experienced operator will have decreased numbers of complications and more favorable outcomes.

Results

Four patients were included in this series. All four patients were males with an average age of 61 (44-69). Two patients presented with slurred speech, one patient presented with headaches and one patient was unconscious. Glasgow coma scale at presentation ranged from 4-14. Mean pre-operative volume was 22.9 cm3 (15-30 cm3) and mean post-operative volume was 2.1 cm3 (0-3.8 cm3) with an average of 91% reduction in hematoma volume (80 -100 %). All four patients underwent the intervention through a single burrhole using the Apollo aspiration system with the assistance of frameless stereotactic navigation or intraoperative ultrasound. One patient required conversion to a craniotomy for complete evacuation of the hematoma. There were no intra-operative complications and blood loss was limited to less than 50 cc. Two patients were neurologically intact post-operatively and two patients never regained consciousness. Two patients died of neurological complications, one patient died of decompensated liver cirrhosis despite excellent neurological recovery and one patient had a complete neurological recovery at two months follow-up.

Conclusions

Minimally invasive evacuation of infratentorial cerebellar hematomas using the Apollo aspiration system is both a feasible and promising treatment approach.

Post-procedure CT scan following minimally invasive evacuation

Learning Objectives

1- Identify an effective treatment of cerebellar hematomas

2- Describe the technical feasibility of a minimally invasive aspiration of cerebellar hematomas

3- Emphasize the presence of a learning curve with any new technique

References

1. Kirollos RW, Tyagi AK, Ross SA, van Hille PT, Marks PV:Management of spontaneous cerebellar hematomas; a prospective treatment protocol. Neurosurgery 49:1378-1387,2001

2. Spiotta AM, Fiorella D, Vargas J, Khalessi A, Hoit D, Arthur A, et al. Initial multicenter technical experience with the Apollo device for minimally invasive intracerebral hematoma evacuation. Neurosurgery (2015)