

Factors Contributing to Survival of Hunt and Hess Grade 5 Aneurysmal Subarachnoid Hemorrhage Patients

Alexa Bodman MD; Justin Faulkner BS; Gentian Toshkezi MD; Julius Gene Latorre MD; Grahame C.D. Gould MD
State University of New York Upstate Medical University
Syracuse, NY

Learning Objectives

- High Grade Subarachnoid
 Hemorrhage patients continue to carry a poor prognosis
- 2. Definitive treatment of patients with severe SAH lowers mortality
- 3. Endovascular therapies and improved ICU management should be offered to high grade SAH patients with signs of brainstem function

Introduction

In the United States, the Hunt and Hess grading system for subarachnoid hemorrhages (SAH) is commonly used to aid in predicting a patient's outcome based on their presenting exam [1]. In high grade patients, further delineation is needed as grade 5 patients are associated with a high mortality rate and poor prognosis. This retrospective review investigated the presenting exams with attention to brainstem function of all patients with Grade 5 SAH and their outcomes.

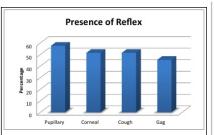


Figure 2. Percentage of patients with presensce of a pupillary light reflex, a gag reflex, a cough, and a corneal reflex on initial exam off sedation.

Methods

A retrospective chart review of all patients 18-89 admitted to our institution with the diagnosis of SAH, found based on CPT code, from January 2005-October 2015 was performed after approval from the Institutional Review Board. Charts were reviewed to identify all patients presenting as a Hunt and Hess 5 SAH.

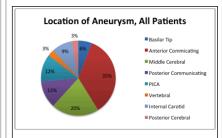


Figure 1. Aneurysmal location in all patients presenting with Hunt and Hess 5 SAH.

Results

Over 10 years, 476 patients presented with SAH due to a ruptured aneurysm with 35 presenting with a Hunt and Hess Grade 5. Thirty-one of these patients were deceased at discharge, an 88.6% mortality rate. The average age of 55 with a range of 26-88 years. There were 24 female and 12 male patients. Examination without sedation showed presence of pupillary reflex in 57.6%, corneal reflex in 51.5%, cough in 51.5%, and gag in 45.5% of patients. Patients' families decided for comfort measures in 65.7% of cases. Eleven (31.4%) patients underwent definite treatment for their aneurysms. Nine patients underwent coil embolization and two underwent craniotomy for clipping of their aneurysm. In treated patients with all brainstem reflexes recorded intact, 80% survived whereas none survived that had 1 or more absent. Exam of brainstem reflexes was not recorded in one treat patient. In surviving patients, 2 had aneurysms located in the posterior circulation and 2 had aneurysms located in the anterior circulation. In treated patients, the average Glasgow Coma Scale (GCS) for survivors was 6.75 whereas GCS was 4.43 in those who died. The modified Rankin Scale at discharge was 4 for 3 of the surviving patients and 2 for one of the surviving patients at one year follow-up.

Conclusions

The Hunt and Hess and WFNS grading scales are used to categorize patients with SAH and aid in predicting prognosis and guiding treatment options. In traumatic brain injury research, partial loss of brainstem reflexes is associated with a high mortality rate and poor outcome[2]. In high grade patients, the prognosis by these scales is very poor often leading to an early discussion of palliative care. In patients who were treated, those with no evidence of brainstem dysfunction had a better outcome than those with 1 or more brainstem reflexes absent. In high grade SAH patients initial aggressive resuscitative management and ventricular drain followed by definitive intervention in those with presence of brainstem function may be warranted to improve outcome.

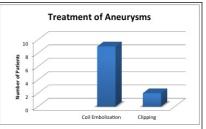


Figure 3. Number of patients treated with endovascular coil embolization versus craniotomy for clipping.

References

Hunt WE, Hess RM: Surgical Risk
As related to Time of Intervention in
the Repair of Intracranial Aneurysms. J
Neurosurg 28: 14-20, 1968
 Buttrick S, O'Phelan K, Goodman
K, Benveniste RJ: Prospective Study of
Futile Care in the Neuroscience
Intensive Care Unit. Congress of
Neurological Surgeons 63(1): 174,
2016