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Amit Sharma
Department of Psychiatry,
Deenbandhu Chhotu Ram
University of Science and
Technology, Murthal,
Haryana, India

Intracerebral hemorrhage in 57 years old male- A case report

Amit Sharma

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Abstract

Intracerebral hemorrhage (ICH) with or without Intraventricular hemorrhage (IVH) is a highly morbid disease process due to the mass effect and secondary injury that occurs upon the surrounding brain. We recorded a case of Intracerebral hemorrhage (ICH) in 57 years old male patient.

Keywords: Intracerebral hemorrhage, Brain, Secondary injury

Introduction

Intracranial hemorrhage includes epidural hematoma, subdural hematoma, subarachnoid hemorrhage (SAH), intraventricular hemorrhage (IVH), hemorrhagic transformation of ischemic stroke (HT), venous hemorrhage from cortical vein or sinus thrombosis and intracerebral hemorrhage ^[1]. Intracerebral hemorrhage accounts for 10-15% of all strokes and carries very high morbidity and mortality rates that have not changed over the last 30 years. At one year, mortality ranges from 51% to 65% depending on the location of the hemorrhage. Half of the deaths occur in the first two days. At six months, only 20% of patients are expected to be independent. The incidence of hemorrhage increases exponentially with age and is higher in men than in women ^[2].

Intracerebral hemorrhage (ICH) with or without intraventricular hemorrhage (IVH) is a highly morbid disease process due to the mass effect and secondary injury that occurs upon the surrounding brain. Historically, surgical evacuation has failed to demonstrate improved outcomes in comparison to standard medical therapy likely due to the significant brain trauma when accessing the clot. Recent minimally invasive techniques have proposed a way to improve outcomes by reducing this injury ^[3].

ICH accounts for approximately 10-20% of all strokes 8-15% in western countries like USA, UK and Australia, and 18-24% in Japan and Korea. The incidence of ICH is substantially variable across countries and ethnicities. The incidence rates of primary ICH in low- and middle-income countries were twice the rates in high-income countries in 2000-2008. In a systematic review of 36 population-based epidemiological studies, the incidence rate of ICH per 100,000 person-years was 51.8 in Asians, 24.2 in Whites, 22.9 in Blacks, and 19.6 in Hispanics ^[4]. We recorded a case of Intracerebral hemorrhage (ICH) in 57 years old male patient.

Case Report

A 62 years old male developed sudden onset headache followed by unconsciousness. A non-contrasted head computed tomography (CT) was done which showed right-sided caudate ICH with ventricular extension but without hydrocephalus. The patient was localizing on the right upper extremity and withdrawing in the left upper extremity and bilateral lower extremities to noxious stimuli. An external ventricular drain was placed and the patient was admitted to the intensive care unit. A repeat CT head six hours post EVD placement demonstrated a collapsed ventricle secondary to CSF drainage, but the progression of perihematoma edema and midline shift. With increasing mass effect and failure of neurological improvement with CSF drain drainage, it was decided to do ICH evacuation. Following anesthetization, a 5 cm curvilinear right frontal incision was made behind the hairline. A 4 cm craniotomy was performed followed by identification of the posterior aspect of the right frontal superior sulcus. The inferior depth of the hematoma was evacuated with

Corresponding Author:
Amit Sharma
Department of Psychiatry,
Deenbandhu Chhotu Ram
University of Science and
Technology, Murthal,
Haryana, India

gentle irrigation and suction. With the use of suction, irrigation, and a side cutting resection device, the remainder of parenchymal hematoma was extracted. A post-operative head CT showed near complete removal of the ICH and IVH from the right lateral ventricle. At the 6 month follow-up visit, the patient was living at home, neurologically intact. At each follow-up, head CT at each outpatient visit was negative for hydrocephalus.

Discussion

Sudden onset of focal neurological deficit which progresses over minutes to hours is the major presenting feature of ICH. The nature of the deficits reflects the location of the initial bleeding and subsequent edema. Seizures, vomiting, headache, and diminished level of consciousness are common associated symptoms. Both headache and diminished level of conscious are uncommon in acute ischemic strokes. The majority of patients with primary ICH develop measureable lesion expansion over the initial few hours. The degree of hematoma growth is an independent determinant of mortality and functional outcome. The mass effect of the primary bleeding may cause lesions to migrate and dissect^[5].

ICH is usually caused by ruptured vessels that are degenerated due to long-standing hypertension. Responsible arteries show prominent degeneration of the media and smooth muscles. Fibrinoid necrosis of the sub-endothelium with micro-aneurysms and focal dilatations may be seen in some patients. Lipohyalinosis, prominently related to long-standing hypertension, is most often found in non-lobar ICH whereas cerebral amyloid angiopathy (CAA) is relatively more common in lobar ICH^[6].

Hypertension is the most important risk factor for spontaneous ICH, and the contribution of hypertension is greater for deep ICH than for lobar ICH; hypertension is twice as common in patients with deep ICH as in those with lobar ICH. Current smoking and heavy alcohol consumption are associated with increased risk of ICH^[7]. We recorded a case of Intracerebral hemorrhage (ICH) in 57 years old male patient.

Sindelar *et al.*^[8] reported a 62-year-old male with ICH and IVH with acute neurological deterioration due to hydrocephalus was found to have no improvement following external ventricular drainage. A repeat non-contrast computed tomography (CT) head was obtained which demonstrated the worsening mass effect from perihematoma edema. Surgical intervention was employed that uses a variety of techniques (endoscopic and exoscopic visualization, stereotactic trans-sulcal approach and side cutting aspiration, and intraventricular thrombolytic therapy) to reduce cerebral trauma while effectively removing both ICH and IVH. The surgical intervention reduces the mass effect and associated secondary injury, lessens the likelihood of shunt placement and length of stay, and improves long-term morbidity.

The single mandated indication for neurosurgical decompression is cerebellar hemorrhage causing decreased level of consciousness, hydrocephalus or brainstem compression. Early craniotomy prior to significant brainstem compression is critical. The best surgical candidates are patients with an initial Glasgow Coma Scale (GCS) <14 and hematomas >40 mL while those with higher GCS and smaller lesions are likely to have a good outcome with conservative, non-surgical management^[9].

The volume of the ICH and the clinical grade on the Glasgow Coma Scale on admission are the most powerful predictors of 30-day mortality. Hemispheric lesions >30 cc have a high mortality rate. Patients with GCS <9 and hematoma >60 cc have a 90% mortality rate. Intraventricular involvement with associated hydrocephalus predicts a mortality rate of 43% at 30 days. 13, 14 Brainstem hemorrhages, even when small, carry a poor prognosis. Age over 80 years also carries a higher risk of mortality^[10].

Conclusion

Authors demonstrated the typical clinical presentation of an ICH and multimodal approach that involves not only the standard medical therapy of intracerebral hemorrhage, but also a combination of the various minimally invasive surgical methods.

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