EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

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Spontaneous Intracerebral Hemorrhage

A 79-year-old Female is brought to the Emergency Department by EMS after her daughter found her to be confused. The patient initially complained to her daughter of a severe headache when she first woke up, and then began to feel weak become more confused and disoriented. The patient has a PMH of breast cancer, diabetes, hypertension, and atrial fibrillation. She had been taking dabigatran for stroke prophylaxis until 2 days ago when she stopped taking it in preparation for upcoming hip replacement surgery. In the ED the patient is generally weak, disoriented, and seems to be in a haze. There do not seem to be focal neurologic deficits, but exam is limited due to patient status. CT scan shows intracerebral hemorrhage. As her consciousness continues to decline she is intubated to protect her airway. Which of the following is the most important risk factor for spontaneous intracranial hemorrhage?

A. Breast cancer

B. Diabetes

C. Hypertension

D. Anticoagulation

E. Age

The patient's initial head CT scan in the emergency department showed an area of hyperdensity in left temporal lobe surrounded by an area of hypodensity. These findings are consistent with intracerebral hemorrhage.

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

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The correct answer is C. Hypertensive vasculopathy is the most common etiology of spontaneous intracerebral hemorrhage (ICH). These bleeds often occur in small arteries branching at 90-degree angles from larger intracerebral arteries, most commonly affecting the pons, midbrain, thalamus, caudate, putamen, and cerebellum.

Discussion

Intracerebral hemorrhage is the 2nd leading cause of acute stroke, following ischemic stroke. There are many etiologies, including hypertension, cerebral amyloid angiopathy, vascular malformations, brain tumor, bleeding disorder, anticoagulation, and CNS infections.

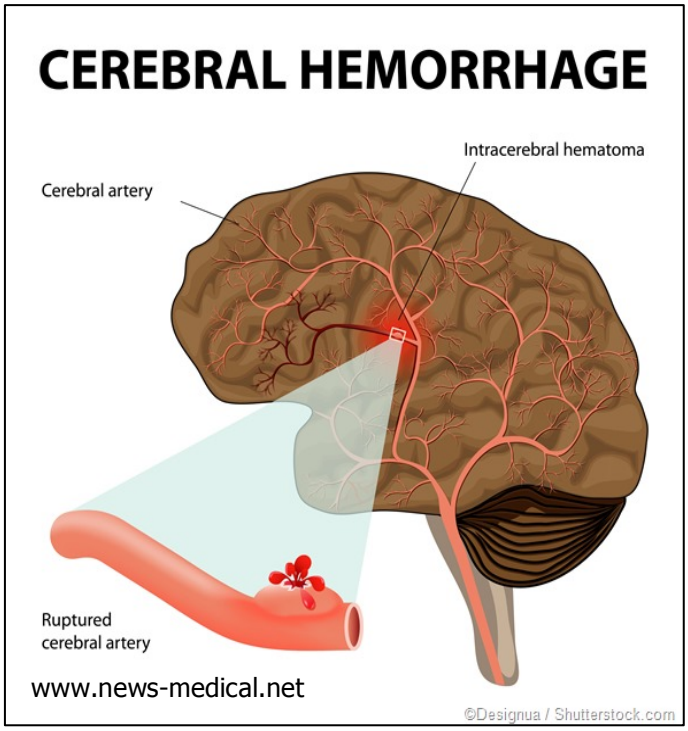
Patient presentation in ICH differs from ischemic stroke. While onset is usually very rapid in ischemic stroke, a patient's mental status may deteriorate over minutes to hours in ICH. While focal neurologic deficits may occur, patients more commonly present with altered mental status. Headaches and vomiting occur in half of patients and up to 29% have a seizure within the first few days.

Evaluation with CT or MRI is necessary for the diagnosis, with non-contrast CT being the most common initial study. Acute hemorrhage is detectable on CT almost immediately and size measurements can provide prognostic information. MRI can be used to identify an underlying structural cause if this is suspected.[2]

Treatment

The main areas of focus in treatment for ICH consist of reversal of anticoagulation, blood pressure management, seizure treatment, ICP management, and craniotomy if indicated.

Anticoagulants should be immediately discontinued. If INR is elevated due to warfarin, it should be corrected with vitamin K dependent factors. Patients taking newer oral anticoagulants can be considered for treatment on an individual basis with PCCs, rFVIIa, activated charcoal or hemodialysis. SCDs should be used for DVT prophylaxis.



Blood pressure is frequently elevated in patients with ICH and pressure should be lowered to a goal of SBP 140 mmHg. Care should be taken to not let the pressure drop too low, however, as this can worsen ischemia.

Seizures are treated if they occur, but seizure prophylaxis is not indicated.

Invasive monitoring and treatment of elevated ICP can be used in patients with GCS<8, intraventricular hemorrhage, or hydrocephalus. Glucocorticoids should never be used to lower ICP.

A craniotomy can be performed in select patients with mass effect from the hematoma, especially in patients with cerebellar hemorrhage.[1]

For a list of educational lectures, grand rounds, workshops, and didactics please visit ***BrowardER.com*** and **click** on the ***"Conference"*** **link**.

All are welcome to attend!

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Intracerebral Haemorrhage

ICH Score (Hemphill et al.)

Feature	Finding	Points
GCS	3-4	2
	5-12	1
	13-15	0
Age	>=80	1
	<80	0
Location	Infratentorial	1
	Supratentorial	0
ICH volume	>=30cc	1
	<30cc	0
Intraventricular Blood	Yes	1
	No	0
ICH SCORE		0-6 points

ICH Score	30 Day Mortality
0	0%
1	13%
2	26%
3	72%
4	97%
5	100%
6	100%

The prognosis of ICH depends on many factors including location of hemorrhage (supra versus infratentorial location), size of the hematoma, level of consciousness, patient age, and overall medical health and condition. The ICH score is a commonly used scale to gauge prognosis. Preceding use of antithrombotic and anti-platelet agents was also associated with a poorer outcome.

The 30-day mortality ranges from 35-52% and it is estimated that only 12-39% of patients will fully regain independent function.[3]

Take Home Points

- Intracranial hemorrhage is a neurologic emergency and should be evaluated and treated in a timely manner.
- Onset is usually more insidious than in acute ischemic stroke, and presentation with headache and altered mental status is more common.
- Diagnosis is made with neurologic imaging, usually a non-contrast head CT.
- Hypertension is the most common cause; other causes include cerebral amyloid angiopathy, vascular malformations, brain tumors, and anticoagulation treatment.
- Treatment includes reversal of anticoagulation, regulation of blood pressure and ICP, and craniotomy in select cases.
- Prognosis depends on severity of hemorrhage and prior patient status, with less than half returning to independent function.

ABOUT THE AUTHOR

This month's case was written by Brian Baird. Brian is a 4th year medical student from NSU-COM. He did his emergency medicine rotation at North Broward Medical Center in December 2017. Brian plans on pursuing a career in Radiology after graduation.

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