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Spontaneous Intracranial Hemorrhage in a 29-Year-Old Male: A Case Report

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Abstract:

Spontaneous intracranial hemorrhage is rare, especially in a young patient population. Signs and symptoms of intracranial hemorrhage include facial droop, vision loss, motor deficits with extraocular movements, deficits with tongue movement, weakness in the arms or legs, sensation loss, and mental status change.

This is a case report of a 29-year-old male with no past medical history who presented for a spontaneous intracranial hemorrhage. This patient's only neurologic deficit was the loss of visual field on the left inferior quadrant of his field of vision. The patient obtained a CT head non-contrast which showed 21 mm acute right occipital hemorrhage medially with mild surrounding vasogenic edema. The patient's blood pressure was lowered with a blood pressure goal of less than 160 systolic blood pressure with a nicardipine drip of 5 mg/hr. The patient was admitted to the intensive care unit for further management of intracranial hemorrhage and neurosurgical evaluation. This case report helps to educate medical providers on the importance of a thorough neurologic exam and the possibility of an intracranial hemorrhage occurring despite age.

Introduction:

Cerebrovascular accidents (CVA) are the fifth leading cause of death in the United States [1]. CVAs can be subdivided into ischemic stroke or hemorrhagic stroke. Although ischemic strokes are more common, hemorrhagic strokes have severe morbidity and high mortality. Hemorrhagic strokes can be further subcategorized into intracerebral hemorrhage (ICH) and subarachnoid hemorrhage (SAH). ICH and SAH are bleeds that occur in the brain parenchyma and subarachnoid space respectively. ICH has many risk factors including: cigarette smoking, chronic liver pathology, dual antiplatelet pathology, sympathomimetic usage, etc [2]. More common ICH risk factors include uncontrolled hypertension, age, and male gender [2]. Other considerations for ICH include differences in brain anatomy such as arteriovenous malformations (AVM).

AVMs are a developmental variation in the anatomy of blood vessels occurring anywhere in the body. Brain AVM are particularly concerning due to the increased risk of blood vessel rupture which can lead to permanent neurological damage. AVM etiology has many theories suggesting that it is an in-utero development that either can be due to genetic mutation or due to a cerebral event preceding the development of the brain [3]. AVM have a higher prevalence rate compared to incidence in the United States due to most of them being clinically silent [3]. AVM research warrants further investigation due to a high morbidity rate of 30 to 50% in the 12% of AVMs that become symptomatic [3]. AVM hemorrhages more often occur in the brain parenchyma and subarachnoid space.

Case Presentation:

We present a case of a 29-year-old male patient with no known past medical history who was brought into the emergency department (ED) for left inferior quadrant vision loss 1 hour prior to arrival to the emergency department. The patient was resting in his house and suddenly he was unable to see the left side of his visual field. The patient's family transported him to the emergency room. On arrival, the patient's vital signs were heart rate (HR) 78 beats per minute, blood pressure (BP) 155/110 mmHg, oxygen saturation (SpO2) 98% on room air, respiratory rate (RR) 14 breaths per minute. The patient complained of a constant visual loss of the left side of his visual fields. He denied any other symptoms on arrival. The patient's physical exam findings showed that he was resting comfortably, following all commands, alert and oriented to person, place, time. There was no change in his mental status, no facial droop noted, extraocular motions were intact, cranial nerves 2 - 12 were intact, 5/5 muscle strengths in bilateral upper and lower extremities, and sensations were fully intact. A stroke protocol was initiated. The patient's CT head non-contrast showed 21 mm acute right occipital hemorrhage medially with mild surrounding vasogenic edema. CT angiogram head and neck was unremarkable for intracranial stenosis or occlusion.

While in the ED, the patient's lab work returned unremarkable. Urine drug screen was negative for cocaine, amphetamines, and phencyclidine. EKG was obtained which showed a normal sinus rhythm 86 beats per minute and QTc 452. The patient started to become hypertensive with a repeat BP of 169/79 mmHg. The patient was given labetalol 30 mg IV injection and started on a nicardipine drip 5 mg/hr with a goal BP of less than 160 systolic. The patient was transferred to the nearest tertiary care hospital for admission to the intensive care unit and neurosurgical evaluation.

While in the ICU at the tertiary care unit, MRI brain tumor protocol sequences were obtained to rule out dural venous sinus thrombosis. MRI was unremarkable for thrombosis however, it showed congenital asymmetry. The patient was taken for a digital subtraction angiography which did not reveal any underlying vascular lesion. The patient was discharged home with neurology and neurosurgery follow-up after being admitted to the hospital for 5 days. The patient started on Valsartan 80 mg daily and nifedipine 60 mg daily at bedtime for blood pressure control, BP goal <130/80. The patient was advised on outpatient hypertension workup and repeat MRI brain without contrast in 2 months to reevaluate for any abnormality.

Discussion

We report a case of spontaneous intracranial hemorrhage in a 29-year-old male with no past medical history. There are various causes of spontaneous intracranial hemorrhage which include uncontrolled hypertension, arteriovenous malformation, drug abuse such as amphetamine or cocaine [2, 3, 4, 5]. Uncontrolled hypertension causes increased pressure in the intracranial vasculature which leads to increased shearing pressures resulting in intracranial vasculature rupture [2]. Arteriovenous malformations are a developmental anomaly of the vascular system consisting of tangles of poorly formed blood vessels that connect the arteries directly to the venous drainage network without any interposed capillary system [3]. Cocaine and amphetamines are associated with an increased risk of spontaneous intracranial hemorrhage due to an increase in blood pressure [5].

Intracranial hemorrhage in a 29-year-old is very rare given no predisposing factors that contribute to this phenomenon. This patient denied any drug use such as cocaine or amphetamine. Intracranial hemorrhage from uncontrolled hypertension at a young age would be rare without a structural abnormality which could make the intracranial vessels more likely to rupture. Patient has no past medical history of hypertension but is positive for a family history of hypertension. The patient had no previous knowledge of any developmental or congenital brain abnormalities. Given the patient's history and MRI result obtained in the ICU, arteriovenous malformations may have caused this patient's spontaneous intracranial hemorrhage.

Clinicians should be mindful to perform thorough physical exams in the emergency department to be able to recognize neurologic abnormalities. Stroke protocol should not be delayed, and the patient's blood pressure should be controlled to prevent the worsening of the intracranial hemorrhage. The patient should be admitted to an intensive care unit with a neurosurgery department.

Conclusions:

This case report describes a rare occurrence of spontaneous intracranial hemorrhage in a young 29-year-old male with no past medical history. We recommend to initiate a stroke alert right away to obtain a stat CT head non-contrast and CT angiogram head and neck, followed by an EKG, complete blood count, basic metabolic panel, hepatic function panel, cardiac troponin, urine drug screen, point of care glucose. If the patient has an intracranial hemorrhage the patient's blood pressure should be lowered with IV blood pressure medications with a blood pressure goal of less than 160 systolic. The patient should be admitted to the intensive care unit in a hospital that has neurosurgery.

References: *available on request*