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Subarachnoid hemorrhage

JAMES LOGAN, 47, is brought to your emergency department by ambulance. The paramedics tell you that en route to the hospital, Mr. Logan became unresponsive and experienced a generalized seizure. Now he's extremely lethargic, but he responds to verbal stimuli and can move all extremities

What's the situation?

Mrs. Logan says she and her husband were watching television when he complained of an exploding headache, then passed out. He has no history of trauma or syncope but does have a history of hypertension and cigarette smoking.

You examine Mr. Logan and find sluggish pupillary reaction to light and mild photophobia. His vital signs are: BP, 150/90; heart rate, 110; and respirations, 24. He has left-sided weakness, but other components of the physical examination are within normal limits

You establish another intravenous line, administer oxygen by nasal cannula at a rate of 2 liters/minute, and attach a pulse oximetry sensor to his finger.

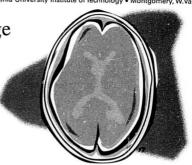
Obtain a 12-lead electrocardiogram and connect Mr. Logan to a cardiac monitor. Draw blood for chemistry profile, blood glucose level, complete blood cell count, and coagulation studies. Prepare Mr. Logan for a computed tomography (CT) scan of the head.

What's your assessment?

Mr. Logan's signs and symptoms point to a neurologic problem. Results of the initial diagnostic studies are within normal limits, but the CT scan shows blood in the subarachnoid space, confirming subarachnoid hemorrhage.

This type of bleeding is caused by the rupture of a blood vessel or an intracranial aneurysm, typically at the circle of Willis or major cranial artery branches and commonly after head trauma. Subarachnoid hemorrhage has a 40% mortality rate, and half the survivors are left with permanent neurologic deficits.

Risk factors for subarachnoid hemorrhage include hypertension, smoking, alcohol or cocaine use, and pregnancy. Subarachnoid hemorrhages are more common in women and African-Americans and in people ages 40 to 65. The hallmark symptom is a severe headache that comes on suddenly.



What must you do immediately?

Once the physician makes a preliminary diagnosis of subarachnoid hemorrhage, prepare Mr. Logan for a cerebral angiogram to locate the site of the bleeding. Patients whose CT scans are negative or inconclusive but whose clinical presentations are suspicious should have a lumbar puncture, unless they have increasing intracranial pressure (ICP).

Treatment goals are to locate the site of bleeding. repair the damage (usually by clipping the aneurysm), and manage complications such as hydrocephalus. hyponatremia, seizures, and increased ICP. If the patient's respiratory pattern or airway is in jeopardy, he'll be intubated and mechanically ventilated.

What should be done later?

Mr. Logan's angiogram shows an aneurysm in the circle of Willis. After surgery to clip the aneurysm, he's admitted to the intensive care unit (ICU), where he'll be monitored for complications. His neurologic status will be assessed frequently.

Mr. Logan will receive diazepam to alleviate anxiety and restlessness, codeine for pain control, and a calcium channel blocker such as nimodipine to prevent cerebral vasospasm. The physician also orders dexamethasone sodium phosphate to reduce inflammation and docusate sodium, a stool softener, to prevent unnecessary straining that can increase ICP. Because of his previous seizure, Mr. Logan may also need anticonvulsant therapy.

After several days in the ICU, Mr. Logan is transferred to a rehabilitation facility for physical therapy to treat his left lower leg weakness and generalized muscle atrophy. 0