Obstructive Hydrocephalus Due to Infarction of a Cerebellar Hemisphere

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In October, 1956, Murphey and Scott presented a paper to the Society of Neurological Surgeons in Memphis on infarction of the cerebellum with acute obstruction of the fourth ventricle and aqueduct. At that time these authors called attention to the heretofore unreported syndrome of acute obstructive hydrocephalus due to cerebellar infarction. They presented three cases of their own and a fourth case of Dr. Eben Alexander, Jr. These four cases have never been published and their details are now presented, together with an additional fifth case, recently encountered.

Case Reports

Case 1 (Murphey and Scott). A 37-year-old white man, previously in good health, suddenly developed severe, incapacitating, generalized headache 48 hours before admission on March 18, 1951. The headache was associated with nausea, vomiting, restlessness, and dizziness, but there was no alteration of consciousness. Eight hours prior to admission the patient became semicomatose.

Examination. At the time of admission examination revealed a desperately ill, restless, irrational patient with Cheyne-Stokes respiration. Temperature was 101°F, pulse 80, blood pressure 180/130. The neck was stiff, and the eyes were fixed in conjugate gaze to the left. There was bilateral papilledema and bilateral Babinski signs.

The only significant laboratory findings were red blood cell count of 6.75 cu mm, a hemoglobin of 18%, and a hematocrit of 55. A ventriculogram revealed obstructive hydrocephalus; the ventricular fluid was clear and under increased pressure.

Operation. A burr hole was placed over the cerebellar hemisphere, the dura opened, and a large quantity of liquefied cerebellar tissue poured from the opening. Further necrotic tissue was removed by suction. Smear and culture of this material were negative. The patient was temporarily improved, but again developed pressure signs. A posterior fossa exploration was carried out and extensive necrosis of the left cerebellar hemisphere removed. Histologically the tissue revealed vascular necrosis.

Postoperative course. The patient's postoperative course was stormy although he recovered neurologically. This man has subsequently been found to have polycythemia vera.

Case 2 (Murphey and Scott). A 42-year-old white man suffered from recurrent occipital headaches for 2 months prior to the onset of the present illness. Three days before admission he suddenly developed a severe generalized headache associated with dizziness. On the day of admission he became irrational and lethargic.

Examination. The patient appeared to be a somnolent, irrational individual with slurred speech who could not cooperate. Temperature was 99°F, pulse 60, and blood pressure 142/90. The left pupil was slightly larger than the right, the retinal veins were full, but there was no elevation of the optic discs. Babinski signs were present bilaterally; the status of cerebellar function could not be accurately ascertained. Significant laboratory work included a red blood cell count of 5.85 cu mm, a hemoglobin of 17.2 gm%, and a hematocrit of 51. The spinal fluid pressure was over 300 mm of water. The fluid was clear, colorless, and contained 23 lymphocytes. A ventriculogram revealed obstructive hydrocephalus.

Operation. Posterior fossa exploration was carried out. The left cerebellar hemisphere was edematous and necrotic; the cerebellar
tonsils were herniated through the foramen magnum. The posterior fossa was decompressed by removal of the necrotic tissue. Culture of this material was sterile and histologically showed necrotic cerebellar tissue with no evidence of neoplasm.

Postoperative course. The patient has now been followed for 7 months and is slowly recovering. This patient also has polycythemia vera.

Case 3 (Murphey and Scott). A 34-year-old white man was blown backward when he opened a furnace door 24 hours prior to admission. His head struck a pipe, lacerating the scalp, and he sustained first- and second-degree burns of the head and thorax. He was hospitalized at a local hospital where his burns were dressed and his lacerations sutured. Twelve hours after the accident he became somnolent with progressive elevation of pulse and blood pressure. A spinal tap revealed clear fluid containing no cells, under a pressure of over 300 mm of water.

Examination. At the time of admission the patient was conscious and oriented, appearing acutely but not critically ill. His blood pressure was 152/100, pulse 120, respirations 24, and temperature 102°F. He had to be prodded into moving and talking. There were numerous foreign bodies in both corneas obscuring the optic discs. His burns were relatively trivial and did not account for the systemic reaction. The neurological examination was negative. Laboratory work was noncontributory. There was no indication for operative intervention at the time of admission, but later that day the patient suddenly became semicomatose and developed a monoparesis of the left arm. He was taken immediately to surgery.

Operation. Burr holes were placed on the calvarium, but no subdural clot was encountered. A ventriculogram revealed, much to our surprise, a symmetrically dilated ventricular system with no air present in the posterior fossa. Exploration of the posterior fossa revealed an edematous left cerebellar hemisphere with herniation of the cerebellar tonsils. Necrotic tissue was encountered at a depth of 3 cm and removed. Culture of this material was sterile and histologically showed no evidence of tumor.

Postoperative course. The patient was recovering, but suddenly died while being turned in bed on the second postoperative day. Permission for autopsy was refused.

Case 4 (E. Alexander). A 50-year-old man, 3 days before admission, awoke nauseated and had a staggering gait and slurred speech. By afternoon he was semicomatose and on the following day developed Cheyne-Stokes respiration.

Examination. The patient was deeply comatose with a temperature of 100°F, pulse 66, blood pressure 170/70. No papilledema was present, but there were bilateral Babinski signs. The remainder of the neurological examination was negative. Routine laboratory work plus a spinal tap were not remarkable. The patient’s respirations ceased just before a ventriculogram but were begun again after the ventricle had been tapped. The fluid in the ventricle was under marked pressure and roentgenograms showed obstructive hydrocephalus.

Operation. A posterior fossa exploration was carried out. The cerebellum was under pressure and the cerebellar tonsils were herniated. Necrotic cerebellar tissue was encountered in the left cerebellar hemisphere and removed by aspiration, decompressing the posterior fossa.

Postoperative course. The patient survived 5 weeks, but his respirations during this period were irregular. Autopsy revealed marked scarring of the left cerebellar hemisphere, but no evidence of tumor or abscess. There were multiple areas of necrosis in the brain stem.

Case 5 (Wood). A 56-year-old white man developed nausea, vomiting, severe headache, and dizziness 3 days before his admission to the Baptist Memorial Hospital on February 26, 1967. This symptom had appeared without any known antecedent trauma or illness. The headache was bifrontal and suboccipital.

Examination. The patient appeared acutely ill with marked depression of his level of consciousness. There was neck stiffness and the eyes were fixed in conjugate gaze to the left. Bilateral Babinski signs were present. There was no papilledema or vertigo; his pupils reacted normally. He was