POST-TRAUMATIC INTRACRANIAL HEMATOMAS IN
PATIENTS WITH ARRESTED HYDROCEPHALUS

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The deceptively benign clinical course that hydrocephalic patients may
have with post-traumatic intracranial hematoma has not been men-
tioned in the literature. Two adult patients with long-standing “ar-
rested” hydrocephalus who received head injuries have been treated in
this department. Each of them had a course immediately after injury that
did not suggest the gravity of the condition. A third case of hydrocephalus
has been seen in an adult who had an epidural hematoma develop as a
complication of a ventriculogram. This patient also experienced an atypical
course. In this paper, these 3 cases are reported, the literature is reviewed
for pertinent related cases, and a few conclusions are drawn concerning the
care of the hydrocephalic patient who has sustained a head injury or has
had intracranial surgery.

The occurrence of a subdural hematoma following surgical treatment
for hydrocephalus has been recognized in children; and in reviewing the
literature, it is seen that a similar apparently benign clinical course may be
found in these cases also. Anderson1 has reported this development in 3 out
of 24 patients operated upon. The first patient had a spinoureteral anastomos-
sis. Symptoms of increased intracranial pressure developed 10 days post-
operatively. After three unsuccessful attempts to relieve it by repeated
shunts, a diagnosis of large bilateral subdural hematoma was made at
autopsy. The second patient had a right choroid plexectomy. After a satis-
factory postoperative course for 6 weeks, a diagnosis of an existing left
subdural hematoma was made only after craniotomy, which was done
preparatory to performing a left plexectomy. The third patient had a resec-
tion of an intraventricular cyst and a choroid plexectomy. Signs of increased
intracranial pressure developed on the third postoperative day. Because of
experience with the first 2 cases, the diagnosis of subdural hematoma was
suspected and promptly confirmed by subdural taps. Davidoff and Feiring2
have reported the development of subdural hematomas in 3 cases subse-
quently to surgical treatment of 85 hydrocephalic children. Their first patient
had a bilateral choroid plexectomy and had a satisfactory course until nearly
2 years later when he suffered a head injury and a subdural hematoma de-
veloped over the left cerebral hemisphere. The hematoma was removed and
the patient had a satisfactory postoperative course. Eighteen months later,

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he had convulsive seizures but his neurological findings were within normal limits. A subdural puncture on the left side yielded brown fluid demonstrating a persistence of the hematoma. Their second patient had a subarachnoid-peritoneal anastomosis which was followed by the development of convulsive seizures, headaches and vomiting 1 to 2 months after operation. Bilateral subdural hematomas were removed. The hematomas persisted and became symptomatic again 3 months later. Their third patient had a bilateral plexectomy. She was well for 3 years and then sustained a minor head injury which did not render her unconscious or alter the neurological findings. Two months after the injury, she became listless, vomited and had headaches. A large subdural hematoma was found over the right cerebral hemisphere.

These cases show the unusually long intervals that may occur between the injury and development of the hematoma and the appearance of symptoms. The following cases would suggest that the same course may be seen after head injuries or intracranial surgery in adults with hydrocephalus.

CASE REPORTS

Case 1. L.S., a 34-year-old white male, fell from a hayrake 2½ months prior to admission to the University Hospital in September 1951. He was alone and it is not known if he were unconscious. Neurological findings were normal and roentgenograms of the skull did not reveal any fractures. Convalescence was uneventful except for vomiting twice on the day of injury and headaches for a week.

His vacation ended 2 weeks after the injury and he returned to his job as an automobile assembly worker. He performed his work satisfactorily until 2 weeks before admission to the hospital when he began to have difficulty with coordination, stumbled frequently, became quarrelsome, and was noted to be putting the automobile door hinges on upside down.

Past history revealed that he had been a healthy, normal child except for an enlarged head since early childhood.

Examination. His calvarium was unusually large in proportion to his face. The gait was slightly unsteady and coordination was impaired throughout. A left lower facial paresis was present. Vital signs and speech were normal. Reflexes were hyperactive and both plantar responses were extensor in type.

A diagnosis of “decompensation” of arrested hydrocephalus with stenosis of the aqueduct of Sylvius was considered as well as one of communicating hydrocephalus with subdural hematoma.

Operation. The patient was prepared for ventriculography. A trephination at Keen's point on the right was made and the dura mater was noted to have a bluish-white color. On opening the dura mater there was a gush of dark blood and about 700 cc. were removed. A small craniectomy was performed and the membranes of a subdural hematoma were identified. The subdural membranes extended from the frontal to the occipital pole. They were removed entirely except for points of attachment along the sagittal sinus. The brain was depressed 2 inches from the inner table of the skull and did not re-expand after removal of the membranes. A cannula was placed in the lateral ventricle and 280 cc. of Ringer’s solution were injected. The brain then expanded to within 0.5 cm. of the inner table of the skull. The cerebral