Superimposed chronic subdural hygromas

Report of two cases

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Two cases are reported of separate but superimposed chronic subdural collections occurring over one cerebral hemisphere convexity. It is suggested that this phenomenon may account for some apparent recurrences of chronic subdural collections after simple burr-hole evacuation.

KEY WORDS • subdural hygroma • subdural hematoma • burr-hole drainage

Two cases are described in which entirely separate but superimposed chronic subdural collections were found on the same side of the cerebral convexity, separated by a thick oblique septum continuous with the enclosing subdural membrane. Such a phenomenon does not appear to have been reported previously but it is possible that it may account for some apparent postoperative recurrences of chronic subdural hygroma.

Case Reports

Case 1

A 50-year-old woman was admitted to the hospital after having collapsed in the street. No earlier history was available.

Examination. On admission she was found to be alert but mute, with a spastic right hemiparesis. Over the next 4 weeks there were striking day-to-day fluctuations in both her level of consciousness and the severity of the hemiparesis. A brain scan showed an extensive area of increased uptake over the left cerebral convexity, and carotid angiography demonstrated a leftsided extracerebral collection with a maximum depth of 1½ in., the deepest part lying posteriorly.

Operation. Left parietal and frontal burr holes were made, and a subdural collection of a watery greenish fluid was found, enclosed by a thick vascular membrane. As the angiogram had indicated, the maximum depth lay toward the occipital lobe. In view of its totally fluid nature, no further burr holes were deemed necessary to empty the subdural cavity, which was washed out with saline.

The intracranial tension was low, and as the brain did not re-expand toward the dura after the collection had been evacuated, isotonic saline was injected into the lumbar sac until the subdural space was obliterated by expansion of the hemisphere.

Postoperative Course. Immediately, the patient's neurological condition deteriorated. Noxious stimuli produced decerebrate extension and the pupils became mid-sized, unequal, and unresponsive to light. The patient was taken back to the operating theater and...
FIG. 1. Case 1. Diagram showing separation of superimposed subdural collections by an oblique septum.

the burr holes were reopened. No reaccumulation of the subdural collection was found, but the cerebral substance was extremely tense. Following removal of cerebrospinal fluid (CSF) by lumbar puncture and the intravenous administration of 40 gm of mannitol, the intracranial tension was reduced and the brain was observed to pulsate. Over the next few hours she recovered gradually to her original preoperative neurological state; her condition then remained stationary. Eight days later a further carotid angiogram showed that an extracerebral collection was still present at the posterior of the left hemisphere; its maximum depth was 1 in. over the outer aspect of the temporal lobe.

Second Operation. The original left frontal and parietal burr holes were reopened and left occipital and temporal holes were made. The cavity of the original subdural collection now contained only a few drops of fluid; however, the new holes revealed a second superficial subdural cavity lying over the lower and posterior part of the hemisphere, partially overlapping the original deeper cavity and separated from it by a thick oblique septum and the membranes enclosing both the subdural cavities (Fig. 1). The degree of overlap of these two cavities was considerable, such that the deeper cavity found originally extended over the greater part of the convexity sufficiently to explain the extent of the original angiographic abnormality (Fig. 2).

Following the evacuation of the second collection the patient made a complete neurological recovery.

Case 2

This 7-year-old boy had a right temporal developmental intracerebral cyst which behaved as a space-occupying lesion. A low-pressure Pudenz valve system was inserted to connect the interior of the cyst with the peritoneal cavity. His previous symptoms of raised intracranial pressure were relieved by this operation but a few weeks postoperatively he developed intermittent attacks of vomiting and listlessness. Three months after the development of these symptoms he was readmitted for further investigation.

Examination. On examination he appeared well; no abnormal neurological signs could be found apart from a partial left sixth nerve palsy and an amaurotic left eye both predating his original operation. The valve chamber appeared difficult to empty and it was thought that his symptoms were due to partial obstruction of the valve system. A technetium-99 brain scan showed increased uptake over the convexity of the left cerebral hemisphere, and carotid angiography showed a left-sided extracerebral collection, apparently unloculated, with a maximum depth of 3/4 in.

Operation. Left frontal, parietal, and high temporal burr holes were made. The intracerebral tension was not raised, and on incision of the dura, a thick, vascular subdural membrane was encountered. It was assumed at first that the burr holes overlay a single communicating chronic subdural collection, but on opening the subdural membrane thin, dark red fluid escaped from the frontal and temporal burr holes, and thin greenish fluid came out of the parietal hole. Saline irrigation was carried out through each hole, but no solid clot was washed out. However, although the saline passed easily from the frontal to the temporal opening and vice versa, there was apparently no communication between them and the parietal burr hole. Passage of blunt instruments into each hole revealed that there were two separate and partially overlapping cavities, with a firm, impenetrable septum of the subdural membrane in between. The membrane was incised beneath the parietal burr hole, and the posterior end of the deep cavity communicating with the two anterior burr holes was entered. This collection which lay under the posterior superficial collection came into contact with the dura at the front of
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FIG. 2. Case 1. Diagram showing position of the subdural collections and burr holes.

FIG. 3. Case 2. Diagram showing position of the subdural collections and burr holes.

the convexity (Fig. 3). Beneath both collections the inner limiting membrane covering the brain surface was found to be sufficiently thick to obscure adequate visualization of the cortex and hence of any deeper collection. The patient's postoperative recovery was uneventful.

Discussion

A thorough search of the literature has failed to reveal any mention of the occurrence of superimposed and separate chronic subdural collections. Chronic subdural collections usually respond well to simple evacuation of the fluid through multiple burr holes, but occasionally a case apparently recurs postoperatively and requires additional drainage holes. In such instances, as in Case 1, a separate collection may be present, which has gone unnoticed at the first operation even though drainage holes have been placed so as to provide access to all angiographically visible parts of the collection. Laterally separated loculations would be seen on angiography, but superimposed or partially overlapping loculations would not. The latter situation can easily be missed if a supposed single collection is evacuated through only one or two burr holes, as often seems practicable when the contents of a chronic hematoma are thin and watery.

Two features indicative of the presence of separated subdural collections are an inner subdural membrane of differing thickness beneath different burr holes and the finding of different-colored fluids from different holes, as in Case 2. Such partially superimposed loculi whose separation by an oblique septum has not been realized might be drained unwittingly.

In Case 1, the injection of saline into the lumbar sac to obliterate the subdural space led to a dramatic postoperative neurological deterioration. In retrospect, it is clear that this procedure may cause adverse effects, since the rise in intracranial tension it produces will exaggerate any shift of the intracerebral contents. For this reason the author now considers this procedure to be dangerous in the treatment of chronic subdural collections, and has accordingly abandoned its use.

One may postulate how such superimposed loculi develop. If chronic subdural collections develop from small hemorrhages into the subdural space which gradually expand by breaking down and attracting fluid by osmotic pressure, as is widely believed, then it is possible to conceive that two small separate hemorrhages occurring in slightly different planes of the subdural membrane could slowly enlarge into overlapping fluid collec-
tions obliquely separated by a thickened membrane continuous with the outer enclosing membrane.

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Reference
