Case Reports and Technical Note

Dissecting Abscess of the Falx Cerebri

Case Report

Edmund M. Fountain, M.D.*

Hermann Hospital, Texas Medical Center, Houston, Texas

(Received for publication July 15, 1955)

The falx cerebri attaches anteriorly at the crista galli in proximity to the cribiform plate and to the frontal and ethmoid sinuses. Two layers of dura mater form the falx during its embryological development, later becoming coherent. In view of the close proximity of the anterior attachment of that structure to potential sources of bacterial infection, it seems fortunate that experience is limited with infection that enters the falx and dissects apart its two layers to form an abscess. No previous case with this complication has been found. It is possible that such a case may have been previously reported as a complication of brain abscess. Reported in that manner, it may not be easily revealed through the usual methods of literary research. The case reported here is the only one in the author's experience. Inquiry of associates indicated that they too had not heard of this entity. Consequently, it is believed worth while to bring it to attention.

It may later become evident that the use of antibiotics is the reason that such an abscess can develop. Previously the patient would have expired from one or more brain abscesses before sufficient time had elapsed for the development of a dissecting abscess of the falx cerebri. No doubt a considerable period of time must elapse for the separation of these two layers of dura mater. It also seems probable that antibiotics do not reach this region as thoroughly as they do the brain in view of the relative avascularity of the region as compared to the brain.

Case Report

The patient was a white male college student, 20 years of age, who was admitted to the Hedgecroft Hospital, Houston, Texas, on Aug. 34, 1953. A history was obtained of headache of 3 weeks' duration. On the day prior to admission he had noted weakness of his right leg. It was thought by the examining physician that his speech was slow.

A spinal puncture was done on Aug. 34, 1953. The pressure was not measured. The cell count was 85 WBC, of which 70 per cent were polymorphonuclear and 30 per cent mononuclear cells. The protein was 35 mg. per cent. A provisional diagnosis of polioencephalitis was made by the admitting neurologist in view of the presence of a local epidemic of poliomyelitis in which cerebral manifestations were not uncommon.

Examination. When he was first seen by the author on Aug. 38, 1953, the findings were as follows: Temperature 101.4°, pulse rate 72, and blood pressure 130/63. The appearance was that of an acutely ill young white male. His neck was quite stiff. Kernig's sign was positive. There was complete motor aphasia. He was apparently able to understand, and he obeyed simple requests well. He would look toward a noise and toward a spoken voice. There was a

* 119 Hermann Professional Building, Houston, Texas.
mild divergent squint but no paralysis of extraocular movements. There was no papilledema. He would not attempt to swallow, although it was stated that he did swallow on the day prior to this examination. He was able to squeeze both hands quite well on request. There was no inequality of the strength of the hand grip, although there was generalized weakness accompanying his acute illness. All extremities were appreciably spastic. He was unable to move the right leg at all. There was good strength in the left leg. Tendon reflexes were approximately symmetrical. Babinski response was positive on the right and normal on the left. Abdominal and cremaster responses were absent.

It was believed probable that the patient had a cerebritis on the basis of a bacterial infection. It did not appear likely that he had a localized abscess at that time.

Subsequently a second spinal puncture was done on Aug. 29, 1952, which showed an initial pressure of 520 mm. of water and a cell count of 400 WBC, of which 94 per cent were polymorphonuclear cells.

Course. Beginning on Aug. 25, 1952, and for 3 weeks he received antibiotics (500,000 units of penicillin IM, q. 2 hr., and 200 mg. of Terramycin IV, q.i.d.). During this period his clinical findings gradually improved. Spinal punctures on Sept. 4, 8, and 12, 1952 showed progressive drop in pressure, the pressures being 450 mm., 320 mm., and 280 mm., respectively. The spinal fluid protein also dropped from 84 mg. per cent to 23 mg. per cent. Pleocytosis diminished to 10 cells, 2 of which were polymorphonuclear. The aphasias cleared satisfactorily. He was free of focal symptoms except for mild weakness in his right leg. However, manifestations of increased intracranial pressure occurred in spite of the improvement in aphasia and paralysis. Bilateral papilledema was noted first on Sept. 1, 1952. The papilledema progressed in spite of his other improvement. On Sept. 27, 1952, after 3 days off of antibiotics, his headaches recurred with vomiting. On Sept. 29, 1952, for the first time since early
in his illness, he again had difficulty in speaking. Paresis of the right leg increased. There was no elevation of temperature at all.

He was subsequently transferred from the Hedgecroft Hospital to the Hermann Hospital. Roentgenograms of the skull showed no calcification in the pineal gland. There was clouding of the right frontal sinus and of the right maxillary sinus as well as the ethmoids with loss of the mucoperiosteal line in the right frontal sinus. Previous films had not shown these changes.

**Operation.** On the night of Sept. 29, 1952, a left posterior parietal burr hole was made under local anesthesia. After the dura mater had been opened through the burr hole, the brain was found to be under increased pressure. A ventricular needle was inserted into the brain in the direction of the left temporal lobe, since it was felt that an abscess might be present there. The lateral ventricle was never entered. The ventricular needle entered a brain abscess which drained purulent material freely. Approximately 50 cc. of yellowish pus were obtained; and the abscess was irrigated. The ventricular needle was then inserted in other directions. Another smaller abscess was entered and irrigated. During this procedure (under local anesthesia), the patient's condition was fairly good in regard to his state of consciousness.

**Course.** Soon after return to his room his general condition seemed much worse. He became completely hemiplegic on the right side, and his aphasia was also complete. His respirations rose to 36 and then decreased gradually to 8. With oxygen his color remained good. At 6:30 a.m. on Sept. 30, 1952, a ventricular needle was again inserted through the burr hole and two more separate and distinct brain abscesses, more medial than the previous ones, were tapped and gently irrigated with sterile normal saline. Approximately 2 ounces of pus were obtained from these two brain abscesses. Respirations remained slow. The blood pressure rose. Gradually the respirations failed in spite of stimulation with coramine, and he expired at 7:15 a.m. on Sept. 30, 1952.

**Autopsy.** There were multiple brain abscesses in the left cerebral hemisphere. A major abscess was present in the left frontal lobe. The unusual finding was that the two dural layers of the falx had been separated from one another. There was a sac of pus extending from the rostral end of the falx to the caudal end, forming a large expanding lesion between the two cerebral hemispheres (Fig. 1).

**COMMENT**

The unusual finding of an abscess of the falx with separation of the two dural layers, both grossly and microscopically, has not been found described in the literature. It is apparent that the patient had meningitis and rather marked cerebritis which was suppressed with antibiotics. After antibiotics were discontinued, the multiple brain abscesses manifested themselves. The abscess within the falx was neurologically silent, the aphasia and paresis of the leg probably arising from the cerebral abscesses. Development of papilledema as the aphasia and paralysis subsided was probably caused by the presence of the abscess in the falx. The development of this unusual abscess is possibly explained by the difference in vascularity between brain and falx with resulting higher concentration of antibiotics in the brain.

At present no means can be conceived whereby this lesion could have been reliably localized and drained by use of standard methods. However, it is possible that arteriography would have shown separation of the anterior cerebral arteries.

**SUMMARY**

The clinical and autopsy features of a case of multiple brain abscesses of the left cerebral hemisphere with the unusual complication of a very large dissecting abscess of the falx are presented. The possible relationship in the development of this condition between antibiotics and the relative avascularity of the falx as compared to the brain is suggested.