CASE REPORTS AND TECHNICAL NOTES

CHRONIC EPIDURAL ABSCESS AND CONDENSING OSTEOMYELITIS OF THE FRONTAL BONE

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Chronic epidural abscess with hyperplastic bone changes extending over a period of years without outward manifestations is an uncommon clinical entity. Morello and Hoen† reported a case in 1954 describing the bone changes as those of condensing osteomyelitis, similar to the condition occurring in long bones. We thought that it would be apropos to add our case to the literature at this time because the pathology in the two is so strikingly similar, albeit the origins of the infections were different. In addition, the case herein reported has interesting neurological features worthy in themselves of documentation.

CASE REPORT

A 35-year-old white female was admitted to Letterman Army Hospital on Dec. 4, 1954. She had apparently been well until 6 weeks before admission, when she entered a station hospital at Elmendorf, Alaska, with the chief complaint of rather sudden onset of severe headache, nausea, and vomiting, which had continued for 4 days. There was evidence at this time of early papilledema and a right homonymous hemianopsia. She was unable to remember anything during the first 2 weeks of her hospitalization there. She was described as having had several episodes of "coma and rigidity" during this period, but no definite convulsions. She gave no history of hemimotor or sensory seizures. The blindness in the right visual field had not been noticed by the patient until brought to her attention by the examining physician. Over a period of 4 weeks she had noticed a gradual deterioration of memory, but no aphasia. She also noticed that her food had a "flat" taste. She had been cognizant of double vision since the onset of her illness. She complained of marked staggering and dizziness, which was described as a sensation of objects moving back and forth before her.

Past History. At the age of 13 the patient had a left pansinusitis following a severe coryza. Smear and culture of antral pus on Nov. 27, 1932 showed Staphylococcus aureus. An x-ray report of Jan. 5, 1933 stated that there was an "osteomyelitis of the upper half of the left frontal bone." On Jan. 5, 1933 drainage of the left frontal sinus by an opening into the floor was done. A secondary incision was made over a fluctuant mass high in the left frontal region. One ounce of pus was obtained. Both the inner and outer tables of the skull were eroded through to the dura mater. Most of the necrotic bony area was curetted. The patient’s recovery was uneventful.

Roentgenograms on Jan. 27, 1933 showed a chronic osteomyelitis involving the left frontal bone and orbital plates. An area of rarefaction, 2×3 cm. in size, was present in the left frontal region near the midline. A further report on Mar. 23, 1933 stated there was some regeneration of bone in the left frontal area. There was no clinical evidence of sinusitis after April 1933. There was a recession of the area of rarefaction in the frontal bone, which now measured 1×2 cm.

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In February 1938, roentgenograms of the skull showed a considerable amount of irregular new bone formation in the left frontal region. The area of osteomyelitis continued to drain intermittently through the scalp, necessitating several debridements up to the time the patient was 23 years old. Thereafter, it ceased to drain and she remained well until her present illness.

Examination. A shallow depression measuring approximately 5 cm. in diameter was present in the left frontal bone. There was no palpable skull defect, even though the patient said that she had had the bone removed several times before. No draining sinus was evident. There was a defect in the left supra-orbital region near the inner canthus from previous surgery on the frontal sinus. This caused the appearance of proptosis, but none was found on measurement. There was a reduction in ollaction, worse on the left side. Visual acuity was 20/20 OD and 20/25 OS. There was weakness of both lateral recti. Bilateral papilledema was present, measuring 3 D. OD and 1½ D. OS. Small hemorrhages were present in both fundi, with mild retinal edema. The visual fields showed a right incongruous, homonymous hemianopsia with macular sparing (Fig. 1). Definite hypalgesia and hypesthesia were present on the right face and also over the right side of the body. Motor coordination was good bilaterally. The deep tendon reflexes on the right side were increased. The right abdominal reflex was present but diminished. There were no pathologic toe signs and no clonus.

Laboratory Data. Hemogram and urinalysis were within normal limits. Blood serology was negative. Roentgenograms of the chest were within normal limits. Roentgenograms of the skull showed an extensive sclerotic reaction along the medial aspect of the left frontal bone, measuring 10×5 cm. and being approximately 3 cm. in thickness. This region was well demarcated in all dimensions, extending posteriorly and superiorly as far as the coronal suture, with its anterior-inferior aspect at the margin of the left frontal sinus. The frontal sinuses appeared to be within normal limits (Figs. 2 and 3).

Course. The patient was seen in consultation by the Ear, Nose and Throat Department, who found no evidence of sinus pathology. On Dec. 6, 1954, an EEG was performed demonstrating abnormalities throughout the left hemisphere with an irritative focus in the left temporal region. On Dec. 13, 1954 ventriculography was done through bilateral parietal burr holes. There was no increase in intracranial pressure. The anterior horn on the left side was displaced inferiorly, apparently the result of the new bone formation in the left frontal region (Fig. 3). Very little displacement of the ventricular system relative to the midline was demonstrable. The cisterna chiasmatica appeared obliterated by a protruding soft tissue mass. The anterior portion of the third ventricle, including the infundibular recess, appeared to be displaced approximately ½ to 1 cm. posteriorly. There was a posterior displacement of the infundibulum, and also a marked posterior displacement of the entire brain stem, as demonstrated by the marked widening of the pontine cistern.

Operation. A left frontal craniectomy was performed, with removal of a large amount of
extremely thickened eburnated bone measuring 7.5×10×10 cm. The bone was too hard and thick to remove with a rongeur, and it was necessary to cut grooves with an electric drill, prior to using a Gigli saw. Five cc. of purulent exudate overlay the dura mater beneath the thickest portion of the bone. The dura mater was covered with granulation tissue. The frontal lobe rose gradually to fill the defect after the removal of bone. The wound was closed primarily.

Bacteriological Report. A culture of the purulent material revealed a non-hemolytic, coagulase-negative Staphylococcus aureus. It was sensitive to all antibiotics.

Postoperative Course. Aspiration fluid from the wound the following day showed no growth in 48 hours. The patient could distinguish white moving objects in the right visual field on the 1st postoperative day. By the 3rd day she no longer had double vision, headaches or vomiting.

Her course continued uneventfully. The papilledema began to subside the 10th postoperative day. Visual fields 3 weeks after operation showed slight, but definite improvement in the 3/1,000 isopter OD. At the time of discharge her papilledema had subsided. A repeat EEG on Jan. 5, 1955 demonstrated a left frontotemporal focus; however, it represented some improvement over her former record and showed much less left-sided abnormality.

Pathological Report. Sections of bone showed a rather dense trabeculation, with evidence of inner and outer plates. The marrow cavities were present with immature and mature blood elements throughout. Granulation tissue was composed of well vascularized fibrous tissue intensely infiltrated with acute and chronic inflammatory cells.

Bacteriological Report. Special stains for bacteria were negative. Culture of the granulation tissue gave non-hemolytic, coagulase-negative Staphylococcus aureus.

**COMMENT**

This case illustrates the fact that an infection of low virulence, in the epidural space, can exist for a period of years (in this case 12 years) without outward signs of its presence. This seems to confirm the general impression that cranioplasty following contaminated and/or infected wounds of the skull, even though done a year or more following the original removal of bone, is not without danger. We feel that the patient’s papilledema was most likely caused by the herniation of the basifrontal septal regions into the interclinoid space with obliteration of the chiasmatic
cistern. The reduction in olfaction also seemed attributable to this mechanism by pressure on the olfactory nerves. The right homonymous hemianopsia could be explained on the same grounds; however, because of the macular sparing and the extreme posterior displacement of the brain stem, it might be more plausible to ascribe it to obstruction of the posterior cerebral arterial circulation.

The actual pathogenesis of condensing osteomyelitis is not known. It will be interesting to see what happens to the site of the craniectomy in the future.

REFERENCE