CLINICAL CONTRIBUTION Rhinology, 29, 151-153, 1991

Frontal bone osteomyelitis complicating frontal sinusitis caused by Haemophilus influenzae type a

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Osteomyelitis of the frontal bone is a serious life-threatening complication of frontal sinusitis that requires radical treatment. The widespread administration of antibiotics made this condition quite rare today. However, insufficient antibiotic treatment might cause the process to remain more localized with a slower type of invasion, thus preventing early clinical recognition. Chronic frontal sinusitis might cause frontal osteomyelitis, orbital, periorbital and intracranial complications by direct and vascular spread of the infection. Frontal bone osteomyelitis is more frequent and dangerous than osteomyelitis in other facial bones. It is usually characterized by the classic "Pott's Puffy Tumor" which is a pericranial abscess that develops secondary to spread of the infection through the diploe and haversian system of the bone to the periosteum, with a break through of the outer table of the skull.

The usual pathogens of frontal sinusitis and osteomyelitis are staphylococcus and streptococcus. Other organisms are Haemophilus influenzae type b, Diphtheroids, E. coli, Pseudomonas and Bacteroides. We present hereby a case with an unusual and usually non-pathogen causative organism, and wish to emphasize the important role of computed tomography in detecting diseases of the paranasal sinuses and their complications.

CASE REPORT

A 26-year old white male, with no previous history of illness, was admitted to our clinic with a prolonged purulent active discharge from his left frontal region. Two months previously he began to suffer from severe localized left frontal headache which was not relieved by analgesics. Three weeks later he developed a subcutaneous abscess in the same region, which was opened and drained. Profuse discharge continued for five weeks despite local curettage and systematic

antibiotic treatment. X-ray films of the skull and paranasal sinuses did not reveal any pathology. Cultures taken from the pus were negative for aerobic, anaerobic and TB bacteriae.

On admission, he was afebrile, in good general condition. On palpation he had a 4 x 4 cm fluctuating puffiness in the upper left frontal region, with a thick yellowish purulent discharge. Ear, nose and throat examination was negative and the general examination indicated normal physical and neurological status. Computed tomographic scan of the head showed an irregular opacity of the left frontal sinus, as well as soft tissue swelling outside the sinus (Figure 1). Bone window slices revealed irregularity and erosion of the external sinus wall (Figure 2).

The patient was operated and an eroded osteomyelitic bone was found on the outer wall of the left frontal sinus with several round osteolytic lesions ranging from three to seven millimeters diameter. The sinus mucosa protruded through the largest hole in the bone. Profuse purulent discharge was obtained and cultured. The osteomyelitic bone was widely removed. Curettage of the frontal sinus walls and removal of all the sinus mucosa were performed along with removal of all the supraorbital and anterior ethmoid cells. The inner plate of the sinus was intact. A small mucocele was also found and removed. A drain was left in the sinus cavity for four days. Cultures from the pus and the osteomyelitic bone revealed Haemophilus influenzae type a. The histological examination showed acute and chronic inflammatory process of the sinus mucosa and chronic osteomyelitis of the frontal bone fragments. The patient received appropriate antibiotics for five weeks. Post-operative course was uneventful and the patient remained symptom free without evidence of recurrence after three years.

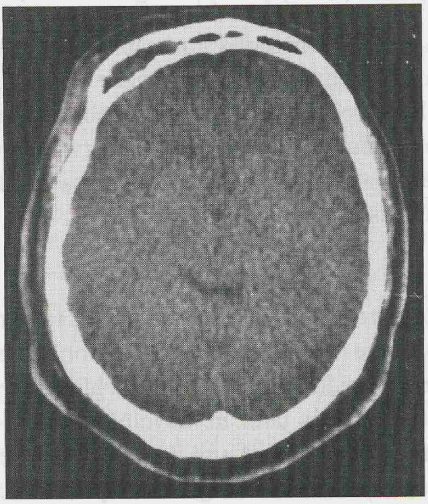

Figure 1.
Computed tomographic scan of the head at the level of the frontal sinuses shows opacity of the left frontal sinus, and soft tissue swelling outside the sinus.

Figure 2.
Computed tomographic scan with a bone window shows irregulatiry and erosion of the external sinus wall.

CONCLUSION

This case stresses few points: firstly, a potentially dangerous condition of frontal osteomyelitis can sometimes present with only minor symptoms and signs. Secondly, computerized tomography is superior to ordinary X-ray films, which might be negative, in detecting diseases of the paranasal sinuses. Proper bone windows, better soft tissue discrimination and quantitive analysis of X-ray attenuation in tissue makes CT the test of choice. Thirdly, frontal bone osteomyelitis secondary to frontal sinusitis requires radical treatment. Complete removal of all the involved bone and the obliteration or the excenteration of the involved frontal sinus and the neighbouring nasal sinuses, especially the supraorbital and anterior ethmoid cells, should be carried out and systematic antibiotic therapy should be given. Finally, the usually non-pathogen causative organism makes our case one of only a few sporadic reports of type a Haemophilus influenzae infections.

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