EOSINOPHILIC GRANULOMA OF THE SKULL
REPORT OF A CASE

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(Received for publication July 25, 1944)

IN 1940, two papers appeared in the American literature, one by Otani and Ehrlich 6 and the other by Lichtenstein and Jaffe, 5 dealing with a benign granulomatous lesion of bone which has been called solitary granuloma or eosinophilic granuloma of bone. Previous to that time there were occasional references to the German literature concerning rare cases of the same condition, but no correlation was made of the widely scattered reports. Other case reports have appeared since then by Bass (1941), 1 and by Kernwein and Queen (1943), 4 and the latter stated that only nineteen cases of eosinophilic granuloma had appeared in the literature up to that time. They, however, did not include the excellent study by Green and Farber, 2 published in 1942, in which a forthright attempt was made to correlate this condition with others, somewhat more widely publicized in the literature, namely, Hand-Schueller-Christian disease and Letterer-Siwe disease. Previous to that Otani and Ehrlich 6 had noticed the similarity of microscopic sections of their cases of eosinophilic granuloma to those of Hand-Schueller-Christian disease, but no correlation between the two conditions was drawn and it was felt by them that the etiology of solitary or eosinophilic granuloma of bone was probably local trauma.

The etiology of eosinophilic granuloma of bone is still not definitely known but there are certain points about the reported cases which make a diagnosis possible. It is a granulomatous lesion of bone which affects children or young adults predominantly and shows a distinct tendency to affect males more often than females. The lesion is not always solitary as was first considered, since in several instances multiple bones have been affected, but in approximately half of the reported cases the skull has been involved either alone or in combination with other bones. 1 No cases are recorded in which any bones of the skull other than those of the cranial vault were affected, and apparently the lesion has not been noted to affect the bones of the hands or feet. The condition is rarely associated with any significant degree of generalized illness, and the initial complaint as a rule has been local pain. When the lesion has affected a bone that is superficially located under the skin, local heat and tenderness have been prominent. Occasionally lesions situated in strategic locations, such as the vertebrae, have given symptoms referable to a system or organ. Some cases have been free of complaints, having been discovered incidentally when x-rays were taken for some other reason.

By x-ray the lesions are usually radiolucent areas which may vary widely in size. In the skull they tend to be circular, sharply outlined, often giving a punched-out appearance. There is nothing really distinctive about the
Roentgenographic appearance and solitary lesions may closely resemble bone cysts, osteomyelitis, or even primary or metastatic malignancy. Multiple lesions often suggest multiple myeloma and some cases are exactly similar to Hand-Schueller-Christian disease. The areas seen by x-ray frequently develop quite rapidly, and, as will be later noted, often resolve just as rapidly after treatment.

In many of the cases of eosinophilic granuloma of bone, a very mild eosinophilia varying between four and ten per cent has been found, particularly in the early cases. There has been no other consistently abnormal laboratory finding although studies of blood lipids, blood cholesterol, total protein of the blood, serologic tests for syphilis, and urine tests for Bence-Jones protein have been repeatedly carried out. Many lesions of eosinophilic granuloma have been biopsied or removed, and cultures or special studies for the presence of a virus have been made in numerous instances. So far all of these studies have met with negative results.

PATHOLOGY

Eosinophilic granuloma usually starts as a well localized lesion in the medullary cavity, tending to erode, expand, and perforate the cortex. In the calvarium, it may erode either inward or outward and several cases have been recorded in which a considerable area of the dura underlying the bone lesion has been directly involved. There have not been cases in which the brain has been involved, nor does the tumor apparently have any tendency to erode into blood vessels. Grossly the tumor appears soft, sometimes quite hemorrhagic and gives the distinct impression of being malignant.

Microscopically the picture varies considerably from case to case, apparently depending on the length of time that the lesion has been present. As a general rule, the lesion is characterized by the presence of compact aggregates of large phagocytic cells, called histiocytes by some, with conspicuous collections of eosinophiles. Indeed the eosinophiles may be such a prominent feature of the picture as to stain the entire field red to first inspection in a hematoxylin and eosin stained slide.

The publications of Green and Farber and of Lichtenstein and Jaffe have dealt most comprehensively with the correlation of this disease process and its possible etiology. For a detailed discussion of this subject one should refer to those papers. In spite of the fact that Otani and Ehrlich noted similarities of this condition to Hand-Schueller-Christian disease, they felt that, since a history of trauma preceding the development of eosinophilic granuloma was so common, it was probably an etiologic factor. However, since that time, Farber has carefully studied several cases of eosinophilic granuloma of bone, and he is of the opinion that this disease is actually the mildest and most benign expression of a generalized disease process of which Hand-Schueller-Christian disease is the most insidious and chronic form (occurring in older persons generally) and Letterer-Siwe disease is the most malignant and severe (usually occurring in infants or young children). This concept has received added impetus from Jaffe and Lichtenstein who state that in certain