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BY C. R. R. M. REDDY, M.D., PH.D.*, P. S. RAO, M.D.*, AND
K. RAJAKUMARI, M.D.*, VISAKHAPATNAM, INDIA

From the Andhra Medical College, Visakhapatnam

Giant-cell tumors of bone are rare or uncommon [2,3,5,7,8,9,10,12,13,15]. Dodge reported that giant-cell tumor is rare in Ugandan Africans, but Hadley and associates and Rockwell and Small noted that giant-cell tumor of bone is comparatively common in South India. In this paper we give an account of the general prevalence of giant-cell tumors of bone in our part of South India.

Materials and Methods

All of the bone tumors recorded in the files of Bhaskara Menon School of Pathology of Andhra Medical College from 1948 to 1972 were reviewed. This general teaching hospital and its Department of Pathology respond to the needs of two districts on the east coast of India. There is no other large hospital within a radius of ninety-six kilometers. The Orthopaedic Department is one of several departments of the hospital. The hospital is not a special orthopaedic center. The Department of Pathology is not specialized and does not deal exclusively with bone tumors.

The giant-cell tumors of bone found in our patients were analyzed according to the age and sex of each patient and the site of the tumor. Care was taken to differentiate giant-cell tumors from other lesions containing giant cells, such as chondroblastoma, aneurysmal bone cyst, and non-ossifying fibroma. The histological criteria used for diagnosis of giant-cell tumor are as follows:

The tumor consists of stromal cells which are mononuclear, plumpish, and spindle-shaped or ovoid. Many multinucleated giant cells are found between the stromal cells. The nuclei of the giant cells are numerous and agglomerated in the center of the cell. The numbers of stromal and giant cells vary. Areas of hemorrhage and necrosis are present, and areas of osteoid material can be seen. There is an absence of intercommunicating cavernous vascular spaces and no abnormal features of the walls of the blood vessels are present. The giant-cell tumor is distinguished from the aneurysmal bone cyst by the vascular feature [8,14].

Since the present study was carried out only to determine the incidence of this tumor, the clinical character of the lesions was not analyzed.

Results

There were altogether 459 tumors of bone, including those in the jaw, that were recorded in the twenty-five-year period. Of these, 102 were in the jaw and 357 in the rest of the skeleton. In this group of 357 tumors there were 153 malignant tumors, 108 giant-cell tumors, and ninety-six benign tumors of bone. Thus, 30.3 per cent of bone tumors (other than those located in the jaw) were giant-cell tumors. The 153 malignant tumors included osteogenic sarcoma (fifty-eight cases), chondrosarcoma (thirty-seven cases), Ewing's sarcoma (twenty-eight cases), multiple myeloma (thirteen cases), fibrosarcoma (nine cases), lymphoma (seven cases), and one neurofibrosarcoma. Thus the commonest bone tumor seen in this area was giant-cell tumor.

Fourteen tumors occurred in the second decade, fifty-two in the third, thirty-one in the

* Department of Pathology, Andhra Medical College, Visakhapatnam – 2, India.

fourth, and eight in the fifth; age was not recorded in three patients. Sixty-nine tumors were in males and thirty-nine in females.

The peak age incidence in this series was the third decade. The male preponderance in the series might be due to the fact that in this hospital there are more beds for males than for females, and more males than females attend the out-patient clinic.

In our series thirty-two of the giant-cell tumors occurred in the distal end of the radius. There were twenty-three in the proximal end of the tibia, twenty in the distal end of the femur, eight in the proximal end of the femur, six in the metacarpal bones, five in the proximal end of the fibula, four in the finger bones, two in the sacrum, and one each in the talus, rib, distal end of the ulna, and distal end of the humerus. In four cases the site was not recorded.

Comments

Williams and associates reported on 101 cases of giant-cell tumors of bone seen over a period of forty-eight years at the Mayo clinic. These represented 5 per cent of all bone tumors. Hutter and co-workers reported seventy-six cases from the Memorial Hospital in New York and Mnaymneh and associates saw forty-one giant-cell tumors over a period of thirty-five years at the Massachusetts General Hospital in Boston. McGrath collected fifty-five tumors in fifty-two patients from the Bristol, England, registry, where giant-cell tumors of bone represented 3 per cent of all bone tumors. Dahlin [2] reported that giant-cell tumors comprise 4 per cent of all bone tumors and 15 per cent of all benign bone tumors.

Statistics which contrast with the aforementioned have been gathered. Hadley and associates recorded twenty-eight giant-cell tumors of bone and twenty-seven other malignant tumors of bone in a large hospital (Vellore) in South India between 1943 and 1955. From the same hospital Rockwell and Small reported thirty-three giant-cell tumors in a ten-year period from 1950 to 1959.

The present series of giant-cell tumors is from a large hospital about 966 kilometers north of the Vellore hospital. The people who frequent this hospital for treatment are Dravidian in origin, as were most of the people seen at the hospital in Vellore.

Anand and associates hypothesized that the high frequency of certain tumors in particular areas may be due to a selection phenomenon, in which untreated tumors that grow slowly and are seldom fatal accumulate in a population in which there is a lack of doctors to treat them. In this way a pool of cases is available when a new hospital is opened. This phenomenon was not in effect in the present study because the hospital from which this series is reported is more than fifty years old and the collection of cases is recent.

The age incidence in the present series is similar to that in other recorded series, but the site of incidence is different. None of the large series reported so far reveals that the lower end of the radius is the most common site. This is the third most frequent site in all of the recorded series.

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