The Frequency of Primary Malignant Bone Tumors in the Philippine General Hospital from 1985 to 1989

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ABSTRACT : A review of 125 primary malignant bone tumor with a histopathologic diagnosis from 1985 to 1989 in the UP-PGH Medical Center was done. The frequency, age-sex distribution and bone involvement were tallied. The most common primary malignant bone tumors in decreasing frequency were as follows: osteosarcoma, plasma cell myeloma, chondrosarcoma, giant cell tumor, and Ewing's sarcoma. Osteosarcoma was seen to involve mostly the latter half of the second decade. There were more males than females with the distal femur as its most common site. Plasma cell myeloma was predominant in the sixth decade of life with more females involved than males. The flat bones such as the pelvis, ribs, and skull were the more common sites of involvement. Chondrosarcoma was seen more frequently in the third decade of life, affecting more females. The humerus was slightly more commonly involved than the other bones. Giant cell tumor of bone was mostly seen in the third and fifth decades, with an equal frequency among the sexes. The knee joint was the predilection site.

INTRODUCTION

One of the more dramatic presentation to an orthopaedic surgeon is a case of a primary malignant bone tumor seen at its late stage. Such the condition, in our country, is that very few cases are picked up early in the course of their disease. This situation may be attributed to the lack of education of our people with regard to these tumors and possibly also to the low index of suspicion of the local physicians when confronted with such cases. The frequency of primary malignant bone tumors have been described mostly in foreign literature. Their results have been taken to reflect the conditions in our setting due to the paucity of such studies in our local literature. It is the purpose of this paper to present the experience of the UP-PGH Medical Center and compare the results with other studies done locally and aboard.

MATERIALS AND METHODS

A review of the files covering the years 1985 to 1989 of the PGH Records Section, the Department of Orthopaedics, the Department of Pathology and the Section of Hematology was done. All cases with a histopathologic diagnosis of a primary malignant bone tumor were included in the study. For plasma cell myeloma, cases diagnosed via biopsy or bone marrow aspiration were included. A total of 125 cases and only 70 patient's records were encountered. The slides of the histopathologic specimens were histopathologic specimens were not reviewed. The cases were classified according to their histologic diagnosis. The age and sex distribution, as well as the localization of the more common bone tumors were tallied.

RESULTS

Of the 125 cases, 33.6 per cent were osteosarcoma cases. This was followed by plasma cell myeloma with 26.4 per cent of the cases. Chondrosarcoma and giant cell tumor were the third and the fourth respectively but with a very narrow margin of difference at 16 per cent for chondrosarcoma and 14.4 per cent for giant cell tumor. Ewing's sarcoma was the fifth with 5.6 per cent. The other bone tumors were fibrosarcoma (2), reticulum cell sarcoma (1), malignant fibrous histiocytoma of bone (1), and angiosarcoma (1). (Figure 1)

The age and sex distribution of osteosarcoma showed a predominance cases at the latter half of the second decade (Figure 2). The age range for males was 4-57 years (21.5 years). The age range for females was 7-40 years (17.7 years). The male to female ratio was 1.3 : 1. These values included one case of periosteal sarcoma, two cases of parosteal sarcoma and seven cases of craniofacial osteosarcoma. For plasma cell myeloma, which included 18 cases of multiple myeloma and 5 cases of plasmacytoma, the age-sex distribution showed a predominance at the sixth decade (Figure 3). The age range for males was 28-66 years (48.9 years), while that for females was

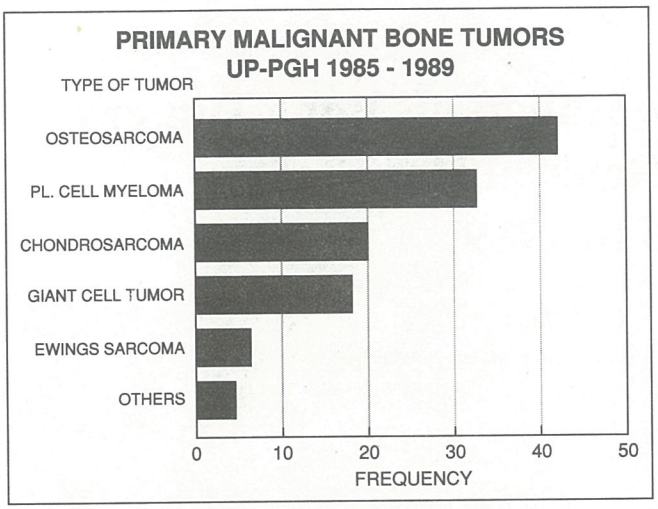

Fig. 1 Frequency of Primary Malignant Bone Tumors in the UP-PGH Medical Center from 1985-1989

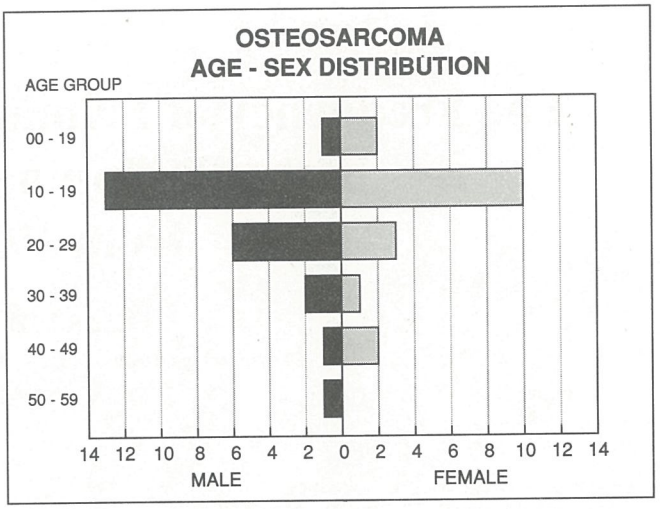

Fig. 2 Age-Sex Distribution of Osteosarcoma cases in the UP-PGH Medical Center from 1985-1989

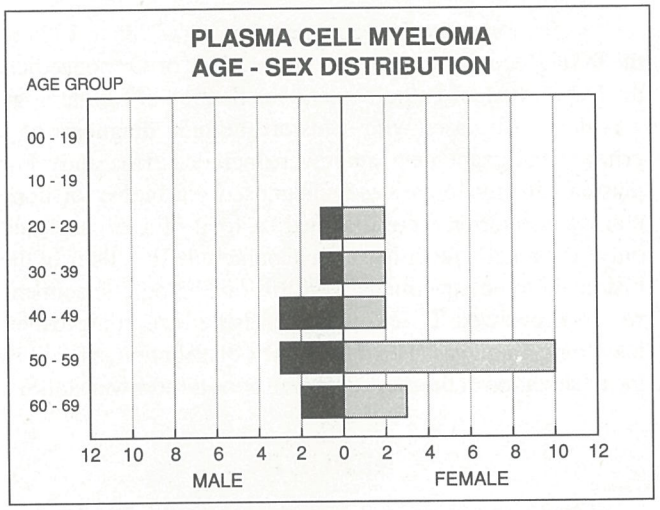

Fig. 3 Age-Sex Distribution of Plasma Cell Myeloma cases in the UP-PGH Medical Center from 1985-1989

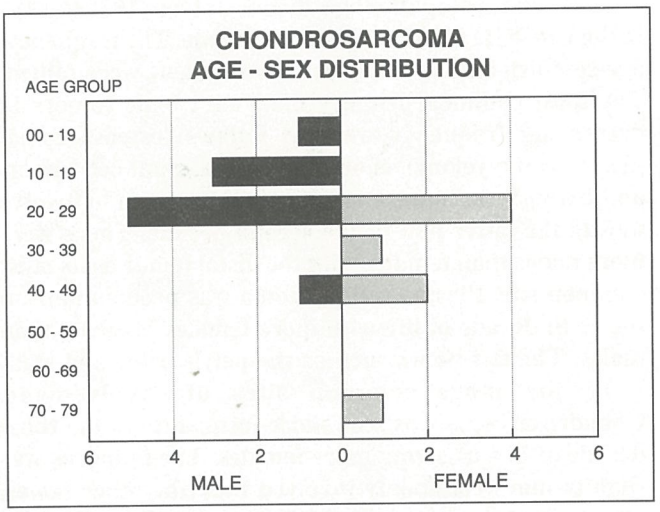

Fig. 4 Age-Sex Distribution of Chondrosarcoma cases in the UP-PGH Medical Center from 1985-1989

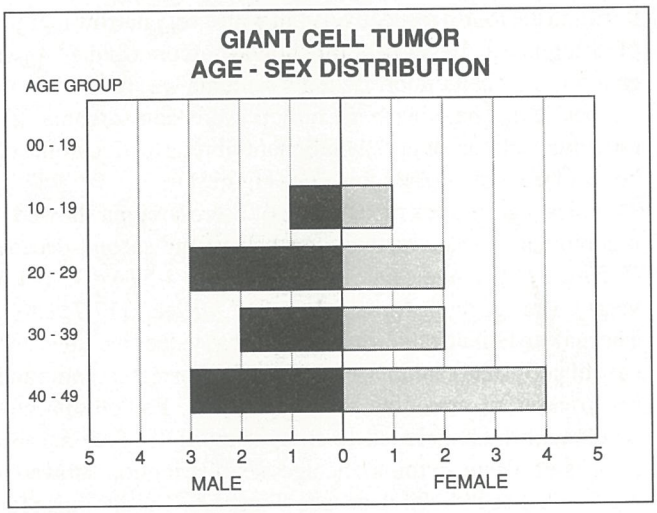

Fig. 5 Age-Sex Distribution of Giant Cell Tumor cases in the UP-PGH Medical Center from 1985-1989

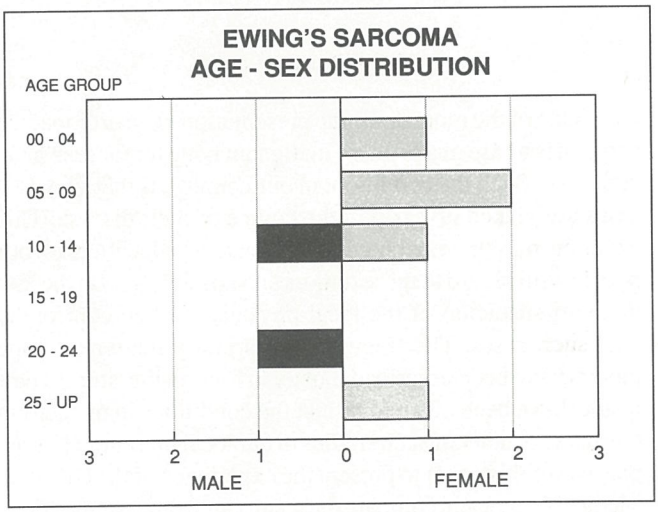

Fig. 6 Age-Sex Distribution of Ewing's Sarcoma cases in the UP-PGH Medical Center from 1985-1989

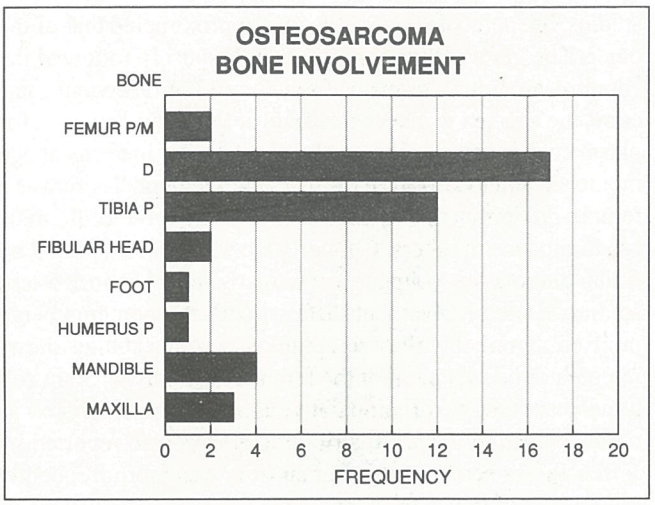

Fig. 7 Bone Involvement in Osteosarcoma cases in the UP-PGH Medical Center from 1985-1989

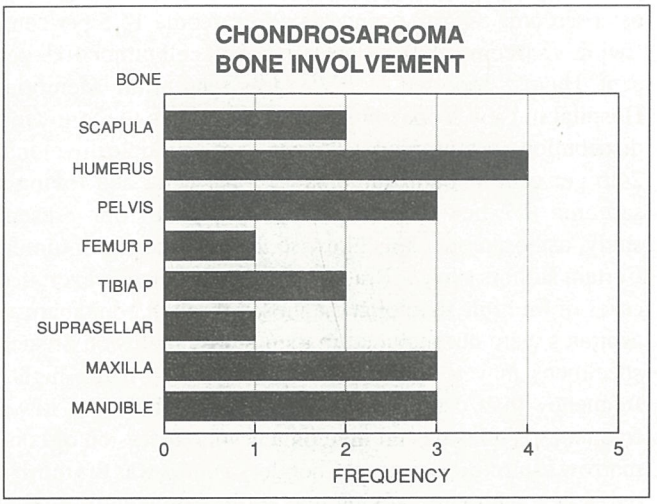

Fig. 8 Bone Involvement in Chondrosarcoma cases in the UP-PGH Medical Center from 1985-1989

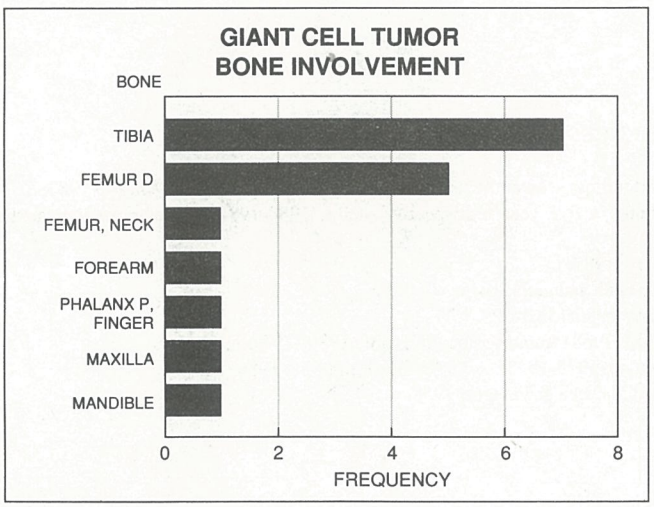

Fig. 9 Bone Involvement in Giant Cell Tumor cases in the UP-PGH Medical Center from 1985-1989

28-64 years (50.5 years). The M:F ratio was 1:2. For chondrosarcoma, which included two cases of mesenchymal chondrosarcoma, the age-sex distribution showed a predominance of cases at the third decade (Figure 4). The age range for males was 9-46 years (21.6 years). For females, the range was 20-71 years (35.9 years). The M:F ratio was 1.5:1. Giant cell tumors were mostly seen in the third and fifth decades (Figure 5). The males had an age range of 15-48 years (31.3 years), while females had an age range of 19-44 years (33.4 years). The M:F ratio was 1:1

There were 7 Ewing's sarcomas which mostly involved the first decade of life (Figure 6). The youngest was a 3 year old female while the oldest was a 78 year-old female who was diagnosed as having Ewing's sarcoma of the thumb. It was unfortunate that the chart and histopathologic slide of the elderly Ewing's sarcoma were not available for review. There were more females than males. Bone involvement in osteogenic sarcoma showed a localization of 78.9 per cent around the knee joint (Figure 7). The distal femur was the most frequently affected followed by the proximal tibia. Craniofacial involvement comprised 18 per cent. For plasma cell myeloma, the flat bones most commonly affected were the skull, pelvis ribs and spine. The chondrosarcoma showed involvement of different bones at almost similar frequencies (Figure 8). The humerus was most commonly involved followed by the craniofacial bones. The scapula, pelvis and proximal tibia were equally affected. The craniofacial bones comprised 36.8 per cent. The giant cell tumors frequently involved the knee with 70.6 per cent affecting either the proximal tibia or the distal femur (Figure 9). Craniofacial bones were involved in 11.8 per cent of cases. The bones involvement for Ewing's sarcoma were as follows: 2 femur, each for the hemipelvis, skull, scapula and thumb.

DISCUSSION

Most of the local studies on the frequency of primary malignant bone tumors were reports of the National Orthopaedic Hospital and of some specific tumors at the Philippine General Hospital. The frequency of primary malignant bone tumors of 227 cases seen at the National Orthopaedic Hospital from 1977 to 1982 were as follows : osteogenic sarcoma 51.5 per cent, giant cell tumor 27.7 per cent, multiple myeloma 13.7 per cent, Ewing's sarcoma 3.5 per cent and chondrosarcoma 3.5 per cent[1]. Studies by Bratatjandra[2] of 127 tumor cases seen at Indonesia from 1980 to 1984 showed the following results : osteogenic sarcoma 51.1 per cent, chondrosarcoma 18.1 per cent, giant cell tumor 13.4 per cent, and plasma cell myeloma 6.3 per cent. Sibly[3], reported the frequency of primary malignant bone tumors in the United Kingdom as follows:

osteosarcoma 54.5 per cent, chondrosarcoma 14.5 per cent, Ewing's sarcoma 10.9 per cent and giant cell tumor 10.9 per cent. Havos[4], reported of 1725 cases seen at the Memorial Hospital in New York from 1949 to 1973 with the following distribution: osteosarcoma 35 per cent, multiple myeloma 24.6 per cent, chondrosarcoma 15.3 per cent, and Ewing's sarcoma 9.7 per cent. In comparison with our present study, osteosarcoma was likewise the most common tumor. Certain authors such as Bratatjandra[2] qualified, however, that cases of multiple myeloma diagnosed through bone marrow aspirates were not included in their study. Inclusion of such specimens may show that multiple myeloma had a higher frequency than osteo-sarcoma. Our series showed a lower frequency of plasma cell myeloma despite inclusion of bone marrow aspirate specimens. Chondrosarcoma was the third in our series. Although ranking may differ from that of foreign studies, the percentage of cases was approximated that of the other. The giant cell tumor in our study closely followed the chondrosarcoma in terms of frequency[5]. For osteogenic sarcoma the age-sex in cidence and site of involvememt were for plasma cell myeloma, the results were similar in terms of age incidence and localization of bone involvement. There was a female predominance in our cases as compared to the male predominance in others. Chondrosarcoma[6] cases reported by Asian authors are younger as compared to those in western studies. Bone involvement differed with the humerus being more commonly involved as compared to other studies showing greater involvement of the femur or the pelvis. Giant cell tumor[7] cases showed a comparative age distribution. There was no difference in the sex distribution as was also reported by Jaffe[8]. In our series, the proximal tibia was more frequently involved than the distal femur.

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