Pattern of Malignant Bone Tumour in Northern Areas of Pakistan

Pages with reference to book, From 203 To 205

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Abstract

A review of 280 primary malignant bone turnouts diagnosed during 1984-1988 is presented. These constituted 3.14% of all malignant tumours. Male to female ratio was 2.3:1. Majority of these patients presented with rapidly growing mass, pain and deformity. Histologically, osteosarcoma was the most frequent (36.4%) primary malignant tumour. Male to female ratio was 3.31:1. More than 49% of these cases were in their second decade of life. In females the greatest frequency was in 10-15 years and in males 16-20 years age groups. Femur was the most frequent site. Other common malignant bone turnouts included chondrosarcoma (22.1%), plasma cell myeloma (15.0%) and Ewings's sarcoma (8.6%). Miscellaneous cases of fibrosarcoma, chrodoma, adamentinoma and ameloblastoma were also seen. This study outlines the frequency, symptomatology and histological pattern of various malignant bone tumours in northern areas of Pakistan (JPMA 44:203,1994).

Introduction

According to western literature, malignant bone tumours are not very common[1-4]. Information on clinic pathological features of malignant bone turnouts in Pakistanis sketchy. However, a study of 14,018 cases of malignant tumours diagnosed at the Armed Forces Institute of Pathology (API?), Rawalpindi from 1977-1988 has shown bone turmours tube fairly frequent[5,6]. They ranked amongst the ten commonest malignancies both in males and females. It was, therefore, decided to carry out a study of these turnouts diagnosed at AFIP.

Material and Methods

All cases of malignant bone tumours examined at AFIP, between January, 1984 to December, 1988 were reviewed. Age, sex, clinical features, histological findings and site of the tumours were recorded from available documents and the data of tumour registry at AFIP, Rawalpindi. Histopathology slides were reviewed. Giant cell turnouts which were not histologicallyor clinically malignant were excluded.

Results

During the five year period (1984-1988), a total of 8,893 malignant turnouts were diagnosed at the Institute. Out of these, 280 (3.14%) were primary malignant bone turnouts.

Age and Sex

The age ranged between[6] and 9Oyears. Age distribution showed two peaks; an early peak due to osteosarcoma and Ewing's sarcoma and a late taller peak due to chondrosarcoma and plasma cell myeloma. There was considerable variation of age frequency in different types of tumours;osteosarcoma and Ewing\'s sarcoma were common in younger and chondrosarcoma, plasma cell mycloma and chordoma in the older age group (Table I).

Table I. Age distribution of malignant bone tumours (n=280).

Types	<10	11-15	16-20	21-30	31-40	41-60	>60
Osteosarcoma	6	34	32	17	2	8	3
Chondrosarcoma	-	1	-	8	11	33	9
Plasma C. Tumour	-	-	-	3	2	31	6
Ewing's sarcoma	2	11	6	4	1	-	-
Chordoma	-	-	-	-	2	5	1

Male to female ratio was 2.3:1.

Clinical Features

Clinical diagnosis of malignant bone tumour was made in 36.2% of cases, unspecified tumours in 34.3% and benign tumours in 8.6%. In 4.5% of patients the mode of clinical presentationwas paraplegia. Only three patients had history of trauma. In other patients the clinical diagnosis was caries spind (3), pyogenic osteomyelitis (2), injection abscess(1)and fungal infection of bone marrow (1). In 5.6% of cases no clinical information was available.

Histological Types

The most common type was osteosarcoma (36.4%), followed by chondrosamoma (22.1%), plasma cell myeloma (15.0%) and Ewing's sarcoma (8.6%) (Table II).

Table II. Primary malignant bone tumours - histological types.

Types	No. of cases	Percentage
Osteosarcoma	102	36.40
Chondrosarcoma	62	22.10
Plasma cell tumour	42	15.00
Ewing's sarcoma	24	8.60
Miscellaneous	50	17.90
Total	280	100.00

Oestosarcoma (Osteogenic Sarcoma)

A total of 102 cases (36.4%) were reported. Male to female ratio was 3.3:1. Fifty-four percent of patients were up to 20 years of age, three were <10 years and the youngest was only 6 years old. A second smaller peak occurred after60years of age. One tumour in this age group occurred in pre-existing paget\'s disease. In females the highest frequency was at the age of 10 to 15 and in males between 16 and 20 years. Mean age was 18.5 years. Femur was the most frequent site of involvement (58.35%), followed by tibia (20.84%) and humerus (8.3 3%). Swelling and pain were most common symptoms and their duration was less than 6 months.

Chondrosarcoma

A total of 62 (22.1%) cases were diagnosed. Male to female ratio was 2.6:1. Eighty percent of cases occurred after the age of 40 years (mean age 48 years). Two cases were mesenchymal variants. Pelvis (17.62%), ribs (14.30%) and spines (11.44%) were common sites of involvement. Main symptom was painless swelling and duration of symptoms varied from 6-46 months.

Plasma Cell Myeloma

Forty-two cases (15.0%) were recorded. Highest frequency (74.0%) was in the fifth and sixth decade of life. Ages ranged between 24-90 years (mean 52.4years). Male to female ratio was 3.2:1. Commonest sites were vertebral column (42.12%) and long bones (26.32%) and symptoms were pain, pathological fractures and paraplegia. Duration of symptoms varied from 2 to 6 months in majority of cases.

Ewing's Sarcoma

Twenty-four (8.6%) cases belonged to this group. Male to female ratio was 1:1. Majority of cases were between 11 to 15 years of age but about 25% occurred after second decade. Two patients were less than 10 years of age. Mean age was 17.4 years. Sites of involvement were long bones, ribs and pelvis in descending order. Pain and swelling were common symptoms and duration of symptoms varied from 3 to 18 months.

Miscellaneous Group

Fifty cases (17.90%) of tumours comprised of the rare types. These included 15 cases of fibro-sarcoma (5.40%) and 8 of chordoma (2.90%). Two cases of malignant giant cell tumour and one case each of adamentinoma, reticulum cell sarcoma, angiosarcoma and malignant haemangiopericytoma were also seen.

Discussion

Malignant bone tumours show variable incidence in different parts of the world[7] (Table III).

Table III. Malignant bone tumour in developing countries.

Country	Total No. of malignant tumours	Bone tumour	Percentage
Angola	1195	52	4.35
Egypt	6981	295	4.22
Liberia	1552	63	4.03
Present series	8893	280	3.14
Bangladesh	15933	383	2.40
Sri Lanka	7334	179	2.40
Iraq	24101	387	1.60
Iran	7257	95	1.30
India	19348	223	1.15

The frequency of bone turnouts (3.14% of all malignant turnouts) is higher in this series when compared with 0.3% as reported by Cutleret al. [8], less than 0.5% by De Vita et al. [1] and 1-2% by Sisson[3]. No definite reason can be offered for these differences. It is possible that ethnic difference may be responsible. The frequency of tumours also varies within a geographical area. Pakistan Medical Research Council (PMRC) multicentre tumour study[9] indicates that the frequency of bone tumours in

AFIP is relatively higher than other centres. The data from other centres also included giant cell tumours, so the difference becomes even more. It is likely that there could be North to South gradient in the frequency of these tumours (Figure).

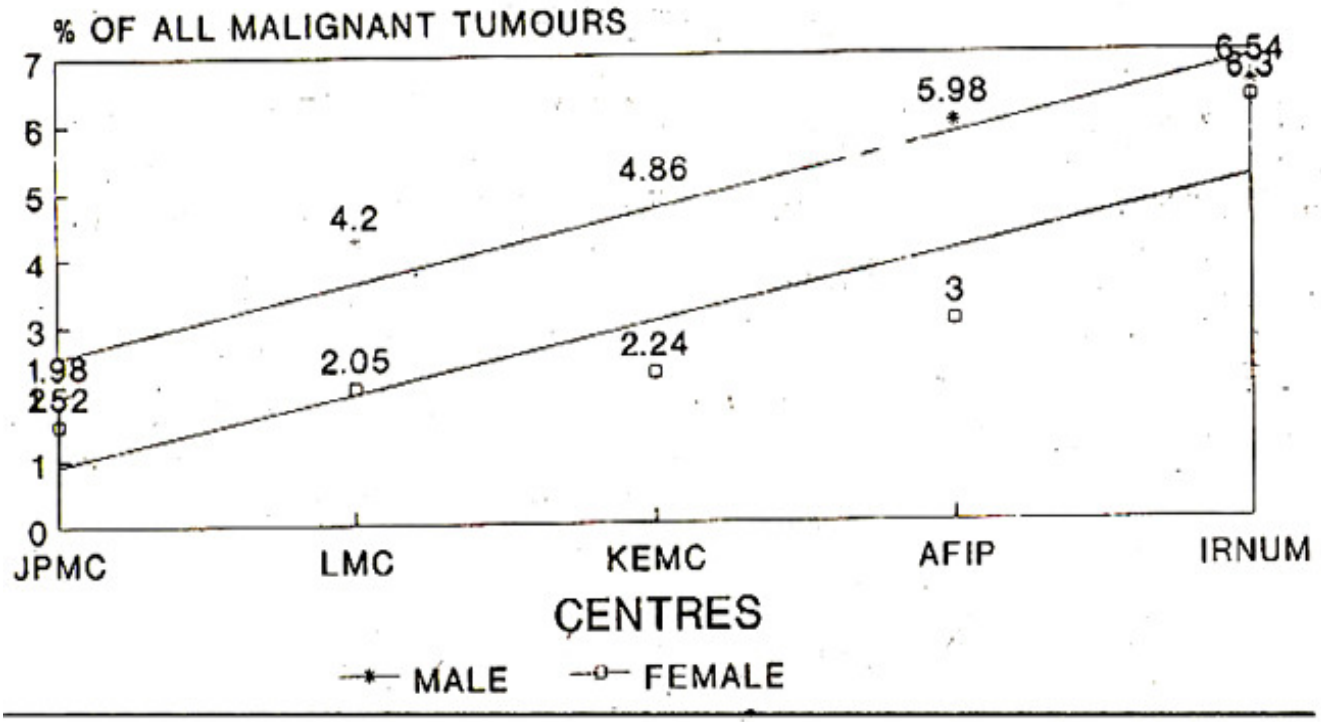

Figure. Frequency of malignant bone tumours at various centres in Pakistan. Data source (9).

However, more studies are required to substantiate these findings. Majority of our cases occurred in a younger age group. For osteosarcoma peak frequency in this study was in the age group of 10-20 years which is similar (10-30 years) to other reported series[10-12]. They oungest patient in this study was only 6 years old which was an uncommon finding in the literature[10,12,13]. For Ewing's sarcoma the peak age is 10-15 years in the present study and 10-20 years in earlier reports[11,14-16]. It could possibly be due to larger paediatric population in this region. It should be noted that 25% of Ewing's sarcoma occurred in patients over 20 years of age. They were noted earlier but medical treatment was sought after a considerable delay. The commonest tumour in this and other series is osteosarcoma[2,4,17] but osteosarcoma and Ewing's sarcoma are more frequent and Chondrosarcoma plasma cell myeloma less frequent than other series. Although it may represent true difference but is more likely due to the age composition of our population. The pattern of malignant bone tumours in this series confirms in general the pattern elsewhere, except that they appear to be more frequent particularly in North as compared to Southern parts of the country.

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