Tumors and Tumor-Like Lesions of Bone During 5 Years in Hasan Sadikin General Hospital, Padjadjaran University of Bandung - Indonesia

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ABSTRACT: Bone tumors as reported in Indonesian literature were still uncommon and usually limited on some cases report. Cases of bone tumors for a period of five years in the Department of Pathology School of Medicine, Padjadjaran University of Bandung-Indonesia, were studied, Diagnosis was based on histopathology. The result of the study could give bone tumors pattern in Bandung and surrounding cities (West – Java). The tumors and tumor-like lesions of bone were found as followings: osteoma 22.7 per cent, osteosarcoma 11.4 per cent, osteochondroma 13 per cent, chondromyxoid fibroma 0.8 per cent, chondrosarcoma 3.1 per cent, fibrosarcoma 0.4 per cent, aneurysmal bone cyst 1 per cent, fibrous dysplasia 0.4 per cent, chondroblastoma 0.4 per cent and osteofibroma 0.4 per cent. Metastatic tumors, soft tissue tumors and tumors of the jaw were excluded. Histologic types of osteosarcoma in our series were: 7 (24%) fibroblastic type, 9 (31%) chondroblastic type and 13 (45%) osteoblastic type.

INTRODUCTION

Tumors of the bone are rare. Report from the SEER ("Surveillance, Epidemiology and End Results") programs of the National Cancer Institute for the period from 1973 through 1977 reveal that bone tumors make up only 0.2 per cent of all malignant tumors diagnosed in the United States. The incidence is higher in male. The highest incidence is in the second decade of life and past 60 years of age. It is estimated that 1900 new cases of malignant tumors of bone were diagnosed in the United States in 1984.[1] The classification of bone tumors or tumorlike lesions and terminology based on those recommended by the WHO International Reference Center for the Histological Definition and Classification of Bone Tumors.[2] The classification includes benign and primary malignant neoplasm in bone, together with certain "tumor – like" lesions that are introduced for purposes of comparison and because of their importance in differential diagnosis. Metastatic tumors, soft tissue tumors and tumors of the jaw are separately excluded.[3]

The diagnosis of bone tumors requires the combined efforts of an experienced surgeon, roentgenologist and pathologist. Once the presence of a bone tumor is established, there are further and important identifying factors: age distribution and location of the tumors.[1] The most important clinical parameter is the patient's age. Some bone tumors show a definite preference for a given age range and are distinctly unusual in another.[4] Therefore, of great usefulness in arriving at a correct diagnosis is the information related to age distribution. Similarly, the unequal distribution of bone tumors can be useful in diagnosis. On the other hand, certain tumors almost never occur in some bones.[5] Despite of radiological information, biopsy should always be available for the pathologist in making a histological diagnosis of a bone lesion, histological study alone is, of course, the most essential study for the precise diagnosis of any case of bone tumor.[3]

This report will review our study in making diagnosis of tumors and tumor-like lesions of bone with/without complete radiological informations. This study was collected from bone tumor data in Indonesia which was still rarely reported.

MATERIALS AND METHODS

All cases diagnosed as tumors and tumor-like lesions of bone sent to the Department of Pathology, Hasan Sadikin General Hospital, School of Medicine, Padjadjaran University of Bandung-West Java, during a period of five years from January 1979 to December 1983 were reviewed. The work included a review of histopathological materials

and clinical histories, as well as radiological records if any were available. There were 255 patients with pathologic diagnosis of bone tumors during this five years period. The histological diagnosis were based on excisional biopsies and resected surgical specimens. The pathologic features of these tumors included in this series all satisfy the following criteria: 1. A dominant histopathology as primary tumor of bone; 2. Tumor was not metastatic origin; 3. Tumor was not soft tissue origin or tumor of the jaw.

RESULT

All diagnoses of bone tumor in this series for the greater part were established without radiological information. Of 255 tissue slides of patient with bone tumors, 138 patients had diagnosis of primary bone tumor. Thirty eight of 138 patients with primary bone tumor were the malignant tumor including osteosarcoma in 29 cases (11.4%), chondrosarcoma 8 cases (3.1%) and fibrosarcoma 1 case (0.4%). The remaining ones were benign tumors including osteoma 58 cases (22.7%), osteochondroma 33 cases (13%), chondromyxoid fibroma 2 cases (0.8%), aneurysmal bone cyst 3 cases (1%), fibrous dysplasia 1 case (0.4%), chondroblastoma 1 case (0.4%) and osteofibroma 1 case (0.4%). The remainder of 117 cases were excluded, those consisted of metastatic tumors, soft tissue tumors and tumors of the jaw.

Most of osteosarcomas occurred in 10 to 20 years of age (19 cases) and was high in male (17 cases) (Table 1). Anatomical site of the lesion mostly in femur and cruris. They represented the greatest part of locations of tumors (Table 2). Osteosacoma in our series displayed a pattern of differentiation as fibroblastic type 7 cases, chondroblastic type 9 cases and osteoblastic type 13 cases (Table 3). Chondrosarcoma was also similar, higher in males (6 cases), and higher in 21-30 years of age. The cranium was the most frequent location of involvement (Tables 4 and 5). Osteochondroma was one of the benign lesion in our study and showed that it occurred mostly in pa-

TABLE 1
Sex and Age Distribution in Series of Osteogenicsarcoma.

Age (yr)	Male	Female
0 – 10	–	3
11 – 20	12	7
21 – 30	4	1
31 – 40	1	–
41 – 50	–	1
51 – 60	–	–

TABLE 2
Site Distribution of Osteosarcoma.

Sites	With XR	No XR	Total
Deltoid	1	2	3
Femur	2	9	11
Cruris	3	4	7
Pelvic	–	1	1

*Note: Histopathologi*cal diagnosis established with or without radiological information.
XR = Radiological information

TABLE 3
Histologic Pattern of Osteosarcoma.

Type	Number	Per cent
Fibroblastic	7	24
Chondroblastic	9	31
Osteoblastic	13	45

TABLE 4
Sex and Age Distribution of Chondrosarcoma.

Age (yr)	Male	Female
0 – 10	2	–
11 – 20	–	1
21 – 30	3	1
31 – 40	–	–
41 – 50	–	–
51 – 60	1	–

TABLE 5
Site Distribution of Chondrosarcoma.

Sites	With XR	No XR	Total
Femur	–	2	2
Cruris	–	2	2
Pedis	–	1	1
Cranium	–	3	3

XR = Radiological information

TABLE 6
Sex and Age Distribution of Osteochondroma.

Age (yr)	Male	Female
0 – 10	3	1
11 – 20	13	5
21 – 30	4	2
31 – 40	–	1
41 – 50	2	2
51 – 60	–	–

TABLE 7
Site Distribution of Osteochondroma.

Sites	With XR	No XR	Total
Humerus/deltoid	–	3	3
Antebrachii	–	3	3
Femur	1	6	7
Cruris	–	7	7
Pelvic	–	1	1
Pedis	1	4	5
Cranium	–	2	2
Scapula	–	2	2
Manus	–	2	2
Costa	–	1	1

XR = Radiological information

tients with 11-20 years of age, and most frequent in femur (Tables 6, 7).

Tables 2, 5 and 7 showed that only 8 cases (12.5%) out of 63 cases of bone tumors from our Department obtained the diagnosis by mean of radiological esamination.

DISCUSSION

Osteosarcoma

Osteosarcomas are those in which the tumor parenchyma displays recognizable differentiation of bone or osteoid tissue.[7] It is an exceptionally virulent and most frequently encountered malignant tumor of bone in children,[8] and it is encountered nearly twice as often as chondrosarcoma and about three times as often as fibrosarcoma. In almost all reported series its incidence in male is greater than in female and in some, twice as great.[9]

The histological pattern of osteosarcoma is so variable that no two specimens are exactly alike. In any event, whatever this pattern may be in any particular instance, the essential criteria for diagnosis are (1) the presence of frankly sarcomatous stroma and (2) the direct formation of tumor osteoid and bone by this malignant connective tissue.[6]

Histologically, classic osteosarcoma is not difficult to diagnose; it basically consists of a malignant stroma and malignant neoplastic osteoid and bone. The malignancy of osteoid and bone are based on features of pleomorphism, hyperchromaticity, and bizarre mitoses of the osteoblasts around and within the osteoid and bone. In other areas of tumor, the sarcomatous stroma or the bone and osteoid may dominate while in many lesions all three elements are seen. Malignant cartilage may either be seen in tiny foci or comprising the bulk of the tumour.[5]

Chondrosarcoma

Chondrosarcoma of bone as a malignant tumor of cartilagenous tissue was encountered in the skeleton with the interpretation and the name given to it varied.[8] The chondrosarcoma arises only from chondroblasts, can produce only hyalin and hyalin-like myxoid substance. Chondrosarcoma can devided into those which occur within bone and those which arise from the outer bone and cartilage surfaces. The former is usually called central and the latter peripheral chondrosarcoma.[9]

Central chondrosarcoma

Chondrosarcoma within the interior of an affected bone may develop as a primary malignancy or, secondarily, through insidious malignant change in a preexisting enchondroma, which may be of long standing. The onset of pain in a patient with an old enchondroma and the demonstration of cortical perforation roentgenographically may be the indicater of early malignant change.

Peripheral chondrosarcoma

Chondrosarcoma may also develop through malignant change in the cartilage cap of an osteochondroma.[6]

In poorly differentiated chondrosarcoma, cartilagenous cells with plump nuclei, enlarge grotesque nuclei, multiple nuclei and mitotic figures may be seen. In a well differentiated chondrosarcoma, beside clinical data and radiographic information, histological finding such as abnormal nuclei, usually larger than normal, and slight irregulatrity in size and shape of nuclei, should be sought. In addition

to cartilagenous change, one may find foci of bone formation, myxoid zones and calcification.[5]

Osteochondroma

Cartilage cells of the cap are often lined up in a row similar to orientation of cells in a normal epiphysis. In young patients, occasional atypical cells including binucleated cells may be seen. The cartilage cells present few if any abnormalities. The underlying bone trabeculae usually exhibit foci of cartilage derived from enchondral ossification. These foci may be seen in osteochondroma removed from adult patients eventhough the cap is scant or absent.[5]

In the interpretation of the histopathologic examination from bone lesions in our study mostly were no radiological information. Usually, we received the incomplete information such as clinical examination and radiological information. On this conditions, histopathological diagnosis must be established. Some authors hold the view that clinical data and particularly radiological information was the most important one in making a proper diagnosis, but the rapid establishing diagenosis, in any case, could give help in the management of the patient or therapeutic procedures.

There is general agreement that when one excludes the malignant tumors of marrow origin (myeloma and leukemias), osteosarcoma is the most common primary malignant neoplasm, followed in frequency by chondrosarcoma and Ewing's sarcoma. Osteosarcoma is more common in males than in females, and the peak age incidence is between 10 and 20 years of age; relatively few osteosarcoma arise before the age of 10 and almost none before five. After the age of 20, the incidence of osteosarcoma gradually declines.[5] As comparison with our study, the data from our study is nearly similar, osteosarcoma has the peak age incidence between 10-20 years old (16 cases), and higher in males.

Chondrosarcoma represents the second most common primary malignant tumor of bone. In Ackerman's series, 91 chondrosarcomas comprise 22 per cent of 410 malignant tumors of bone,[2] whereas the data from our study shows 8 chondrosarcomas (21%) among 38 malignant tumors of bone.

IN our study, we divided osteosarcoma in to 3 subtypes: fibroblastic, chondroblastic and osteoblastic based on Dahlin's subclassification, in which, one of the major elements – stroma, cartilage or bone – was dominant.[5]

We believe that the diagnosis of tumors or tumor like lesions of bone will be easily if we received a complete information. However the characteristic features of histologic pattern, in some cases, may be sufficient to establish the diagnosis.

In our studies, we tried to decide to make histopathological diagnosis even through with minimal clinical information and sometimes without radiological information.

SUMMARY

The pathological examination of 255 patients treated for bone tumors during five years (1979-1983) were reviewed. At diagnosis, of 138 cases were found as ostoma in 59 cases (22.7%), osteosarcoma 29 cases (11.4%), osteochondroma 33 cases (13%), chondromyxoid fibroma 2 cases (0.8%), chondrosarcoma 8 cases (3.1%), fibrosarcoma 1 case (0.4%), aneurysmal bone cyst 3 cases (1%), fibrous dysplasia 1 case (0.4%), chondroblastoma 1 case (0.4%) and osteofibroma 1 case (0.4%). The remainder of 117 cases were excluded, those consisted of metastatic tumors, soft tissue tumors and tumors of the jaw.

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