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ORIGINAL RESEARCH

Medicine Science 2017;6(3):546-50

Medicine Science International Medical Journal

Distribution and evaluation of primary bone and soft tissue tumors admitted from Malatya province and surrounding provinces

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Received 14 March 2017; Accepted 29 March 2017

Available online 12.04.2017 with doi: 10.5455/medscience.2017.06.8619

Abstract

In this study characteristics and distribution of primary bone and soft tissue tumors which were operated in Inonu University Turgut Ozal Medical Center Department of Orthopaedics and Traumatology between January 2000 and December 2016 and comparison with the literature is aimed. Our study is retrospective and descriptive and 710 patients [275 M, 435 F, mean age: 30,67 (1-92)] who hospitalized with pre-diagnosis of a tumor were evaluated. Patients were analyzed according to age, gender, tumor frequency and localization. Of 710 cases which were taken into evaluation as primary bone and soft tissue tumors; 391 (55%) were determined to be bone tumors and 319 (45%) were determined to be soft tissue tumors. The most commonly seen benign bone tumor was determined to be osteochondroma (86; 25,59%) and then non-ossified fibroma (54; 16%), whereas the most commonly seen malignant bone tumor was determined to be chondrosarcoma (16, 29%) and then multiple myeloma (14; 25,45%) and osteosarcoma (8;15,54%). Among soft tissue tumors, the most commonly seen benign tumor was found to be ganglion cyst (cystic hygroma) (107; 36,1%), followed by lipoma (41; 13,99%) and tendon sheath giant cell tumor (33; 11,26%), whereas the most commonly seen malignant soft tissue tumor was found to be liposarcoma (6; 23,07) and malignant mesenchymal tumor (5; 19,23%), followed by pleomorphic undifferentiated sarcoma (5; 19,23%). In our country, statistical studies concerning distribution of bone and soft tissue tumors are progressively increasing. We suggest that larger series published by collecting from different centers are of particular importance in regard to epidemiological characteristics of bone and soft tissue tumors, as well as guiding in diagnosis and treatment.

Keywords: Bone tumor; soft tissue tumor, demography

Introduction

60% of structure of human body is comprised of bones and soft tissues and malignant transformations of these tissues are extremely rare [1]. However, although they are rare, it is incontrovertible truth that these tumors comprise a complicated and challenging disease group in regard to diagnosis, follow-up and treatment [2]. Therefore, evaluation and formation of treatment process of a case admitted to a clinic with complaint of tumor with a multidisciplinary approach in centers in which departments such as orthopaedics and traumatology, radiology, pathology, oncology, radiation oncology and nuclear medicine are available is appropriate [3].

In our study, 710 patients who were hospitalized in our department with pre-diagnosis of bone and soft tissue tumor within approximately last 16 years were evaluated. Cases were analyzed according to age, gender, tumor frequency and localization, and retrospective analyses of tumors are tired to be represented.

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Materials and Methods

After the approval of ethics committee number 2017/1-3 from Inonu University Committee on Scientific Research and Publication Ethics was obtained; following retrospective evaluation of 920 patients admitted to our department with pre-diagnosis of tumor between January 2000 and December 2016, 710 patients [275 M, 435 F; mean age: 30,67 (1-92)] were determined to be patients with bone and soft tissue tumors. For screening, operating theatre and ward records were reviewed. The patients were divided as benign and malignant bone and soft tissue tumors based on their pathology results and then examined in regard to age, gender, tumor frequency and localization.

Metastatic tumors were excluded from the study. All data were analyzed by using SPSS v.15 (SPSS Inc., Chicago, IL, USA) statistical package program.

Results

710 [275 M, 435 F; mean age: 30,67 (1-92)] of a total of 920 cases were diagnosed with tumor. Mean age of cases was 32,6 in males and 35,1 in females. In regard to localizations of tumors; tumors were recognized in hip, thigh, knee bones in 387 (54.5%), in shoulder, arm and

elbow bones in 167 (23.5%) and in ankle and hand bones in 156 (21.9%) of the cases.

In regard to screening results; of all cases; 336 patients [144 M-192 F, mean age: 22,79 (2-68)] were determined to have a benign bone tumor, 55 patients [35 F, 20 M, mean age: 43 (3-80)] were determined to have a malignant bone tumor and 293 patients [201 F, 92 M, mean age: 35,27 (1-92)] were determined to have a benign soft tissue tumor, whereas 26 patients [19 M, 7 F, mean age: 54,53 (12-84)] were determined to have a malignant soft tissue tumor (Figure 1). Extra-tumoral causes were determined in the 210 cases which were excluded from the study.

When tumors were examined according to age groups; it was observed that benign tumors were most common in 30-40 age range and malignant tumors were most common in 50-61 age range. Of primary bone tumors (391); 164 (42%) occurred in males and 227 (58%) occurred in females. Mean age of these cases was 32.8. Primary bone tumors were of benign type in 336 (85.9%) patients whose mean age was 22.79 and of malignant type in 55 (14%) patients whose mean age was 43.

It was determined that of the primary benign bone tumors; 86 (25.59%) were osteochondroma and 54 (16%) were non-ossified fibroma (Table 1).

Table 1. Rates of benign bone tumors

Tumor	Number	%
Osteochondroma	86	25,59
Non-Ossified Fibroma	54	16
Aneurysmal	51	15
Simple Cyst	44	13
Enchondroma	37	11
Osteoid Osteoma	25	7,4
Giant Cell Bone Tm	17	5
Lipoma	6	1,7
Ganglion	4	1,19
Fibroma	4	1,19
Osteoblastoma	3	0,89
Eosinophilic Granuloma	2	0,59
Fibrous Dysplasia	1	0,29
Desmoid	1	0,29
Hemangioma	1	0,29

It was determined that of the primary malignant bone tumors; 16 (29%) were chondrosarcoma, 14 (25.45%) were multiple myeloma and 8 (16.7%) were osteosarcoma (Table 2).

In regard to the most commonly involved regions of benign bone tumours; 88 (26.1%) were localized in femur, 61 (18.1%) were localized in tibia and 67 (19%) were localized in humerus (Figure 1).

It was noted that of the primary malignant bone tumours, however; 15 (27.2%) were localized in femur and around the knee and 14 (25.4%) were localized in vertebral-pelvic girdle (Figure 2).

Table 2. Rates of malignant bone tumors

Tumor	Number	%
Chondrosarcoma	16	29
Multiple Myeloma	14	25,45
Osteosarcoma	8	14,54
Ewing	6	10,90
Lymphoma	5	9,09
Fibromixoid Sarcoma	3	5,45
Langerhans Cell	1	1,81
Histiocytosis		
Pleomorphic Cell Tumor	1	1,81
Chandromixoid Sarcoma	1	1,81

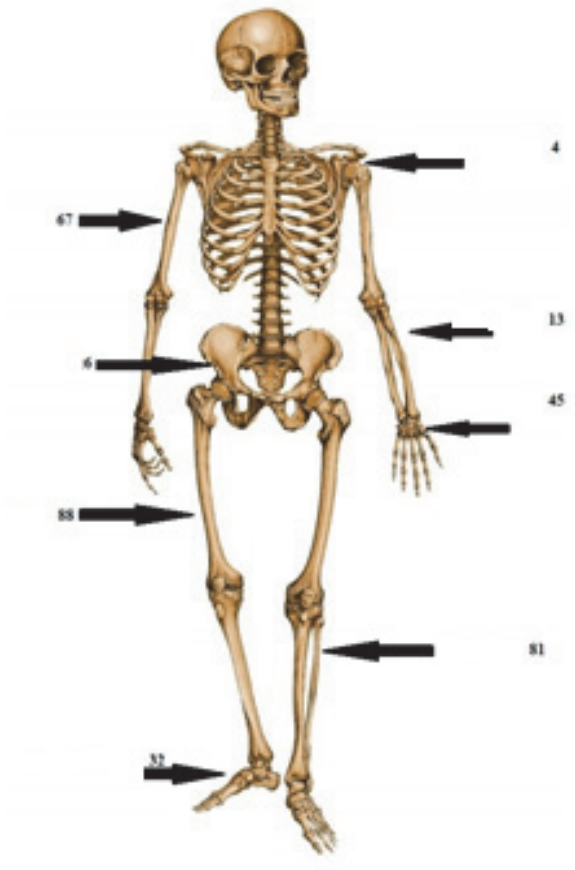

Figure 1. Common involved regions of benign bone tumors

Of the primary soft tissue tumors (319); 111 (45.6%) were in males and 208 (54.4%) were in females. Mean age of all cases was 45.5. It was determined that, in regard to the most common localizations, of primary benign soft tissue tumors; 150 (47.6%) were localized in wrist and hand

region, 49 (15.1%) were localized at the level of the ankle and 28 (8%) were localized in thigh and knee region (Figure 3).

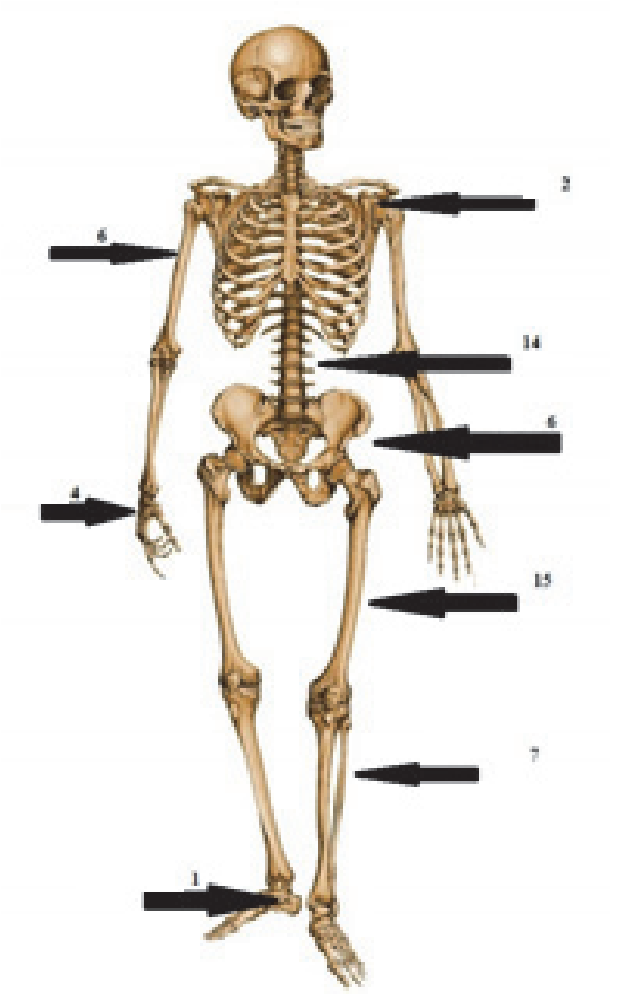

Figure 2. Common involved regions of malignant bone tumors

It was determined that 293 (91.8%) of primary soft tissue tumors were benign and mean age in this group was 35.2, whereas tumors were of malignant type in 55 (8.2%) individuals whose mean age was 43. It was determined that, of primary benign soft tissue tumors; 107 (36.1%) were ganglion cyst (cystic hygroma), 41 (13.9%) were lipoma and33 (11.2%) were tendon sheath tumor (Table 3). As the most common localization of primary benign soft tissue tumors, hand and wrist regions were the most commonly involved sites.

It was determined that, of primary malignant soft tissue tumors; 6 (23.7%) were liposarcoma, 5 (19.23%) were malignant mesenchymal tumour and 5 (19.23%) were pleomorphic undifferentiated sarcoma (PUS) (Table 4). Of malignant soft tissue tumors; 17 (65.3%) were in thigh, whereas 3 (11.7%) were localized in calf and around knee (Figure 4).

Figure 3. Benign soft tissue tumor

Table 3. Rates of benign soft tissue tumors

Tumor	Number	%
Ganglion	107	36,51
Lipoma	41	13,99
Tendon Sheath	33	11,26
Hemangioma	28	9,55
Glomus	17	5,8
Fibroma	16	5,4
Neuroma	11	3,75
Synovial Cyst	6	2
Angiolipoma	4	1,36
Schwannoma	4	1,36
Mixoma	4	1,36
Epidermoid Cyst	4	1,36
Desmoid	3	1
Hamartoma	3	1
Synovial Chondromatosis	3	1
Baker	3	1
Xantoma	3	1
Villonodular Synovitis	2	0,68
Lymphangioma	1	1,034

Figure 4. Involved regions of malignant soft tissue tumors

Discussion

Although bone and soft tissue sarcomas account for a very few part of all body malignancies, 1%, they threaten the life due to the metastases they cause. Most common reason for this is that stage of the disease at the time of diagnosis is advanced [4]. Although definitive causes of these tumors are unknown, some etiological factors (radiation, chemical agents, antineoplastic medications, various chromosomal abnormalities) have been blamed [5].

While such patients are being evaluated; history, physical examination, radiological work-ups, as well as staging of the tumor, have an important place in formation of the treatment [6].

In our country, number of studies demonstrating distribution of bone and soft tissue tumors has been gradually increased and regional demographical data have been published [7]. For example, Gür and colleagues published the tumor patient series which was between 1981-1991, Kösem and Bayram published the tumor patient series which was between 1994-2000 Solakoğlu and Benzer published the tumor patient series which was between 1990- 2000, Güngör published the tumor patient series which was between 2000-2007, Yücetürk et al. published the tumor patient series which was between 1989-2009 and Dabak et al. published the tumor patient series which was between 1987 – 2012 [8-13]. We, thus, aimed to create an additional regional data resource by examining 16-year data in our department.

In our study, when bone and soft tissue tumors were compared, it was observed that, consistently with the literature, benign ones were more and benign tumors (629) were approximately four-fold more than malignant tumors (81) [14,15].

Dabak and colleagues observed that bone tumors were more common in males and in 2nd decade and around knee joint, whereas in our study, bone tumors were determined to be more in females compared to males and, consistently with the literature, bone tumors of both groups were observed in 10-20 age group and, similarly, most commonly around knee [13,16].

In the literature, both Solakoğlu and colleagues and Dabak and colleagues reported that among primary benign bone tumors they recognized osteochondroma most commonly, followed by enchondroma [10,13]. Yücetürk et al., however, reported enchondroma as the most commonly seen benign bone tumor [12]. In our study, osteochondroma was determined to be more common, consistently with the literature.

In our study, too, consistently with the literature, in regard to localizations of the tumors; majority of cases (54.4%) were detected in hip, thigh and knee bones and the remaining ones were detected in shoulder, arm and elbow bones (23.5%) and in wrist-hand bones (21.9%).

Among malignant bone tumors; whereas chondrosarcoma was determined to be the most common with 15 cases, multiple myeloma (14) and osteosarcoma (8) were other commonly seen malignant bone tumors.

Our cases of osteosarcoma were determined to be localized primarily in and around knee, of Ewing sarcoma were determined to be localized in pelvis and lower extremity and of chondrosarcoma were determined to be localized commonly in pelvis and femur. Our results were showing parallelism with the literature [18].

Dabak et al. stated that soft tissue tumours were more common in females compared to males, benign tumors were most commonly seen in 31-40 age group, malignant tumors were most commonly in 51-60 age group and their most common localization was wrist and hand [13]. In our study, similarly, we determined soft tissue tumors as more common in females compared to males. We also determined that, in regard to their localizations, they were

localized most commonly in thigh, followed by leg and hand-wrist and in regard to the age range, they were more commonly seen in 26-38 and 42-57 age ranges.

In our study, among benign soft tissue tumors, we determined Ganglion cyst (cystic hygroma) as the most common one with 107 cases. Dabak et al, too, similarly, reported cystic hygroma as the most common tumor [13]. Among malignant soft tissue tumors, liposarcoma was the most commonly seen tumor, followed by malignant mesenchymal tumor and PUS. Nevertheless, Yücetürk et al. observed PUS, which ranked at 3rd in our study, as the most common, followed by liposarcoma. Authors observed leiomyosarcoma, which was rarely seen with rate of 3.8% in our study, with rate of 8% [12,19].

Infection was the most common cause in 142 cases of 210 patients that were excluded from the study due to extra-tumoral causes, whereas it was observed that structures thought to be a lesion in 68 cases were normal tissues.

In conclusion, data collected in our department seems to be similar with the literature generally. We suggest that formation of larger series through collection of such studies, which include demographical data, from centers where bone and soft tissue tumor surgeries are performed will provide beneficial information in regard to distribution of bone and soft tissue tumors in our country.

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