Original Research Paper

Radiodiagnosis

EPIDEMIOLOGICAL PATTERN OF MUSCULOSKELETAL TUMORS- STUDY FROM TERTIARY CARE HOSPITAL OF NORTH INDIA

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ABSTRACT

Background: Primary malignant musculoskeletal tumors in adults can be more aggressive with a high potential for systemic spread, are rare affections & its treatment is still a real challenge today. Magnetic resonance imaging is a valuable technique for non invasive evaluation of musculoskeletal tumors.

Aims: The objective of the study was to see epidemiological pattern of musculoskeletal tumors.

Materials & Methods: The present study was conducted on all patients suspected of musculoskeletal tumors referred for magnetic resonance imaging from department of orthopedics to the department of radiodiagnosis of tertiary care hospital of north India. After meeting inclusion & exclusion criteria data such as age, sex, type & nature of tumor etc. were collected.

Results: Maximum number of patients were in the age group 11-20 years i.e. 19 (30.7%). Males constituted 37 (59.7%) patients while females were 25 (40.3%). Bone tumors constituted the most common musculoskeletal tumors i.e.39 (62.9%). Femur 10 (25.6%) was the most common bone involved followed by tibia & vertebrae.

Conclusion: From present study, we may conclude that maximum incidence of musculoskeletal tumors were noticed in young age group with more preponderance in males. Bone tumors constituted the most common musculoskeletal tumors in comparison to soft tissue tumors.

KEYWORDS : Epidemiology, Femur, Musculoskeletal tumors

INTRODUCTION:

Primary malignant musculoskeletal tumors in adults can be more aggressive with a high potential for systemic spread, are rare affections & its treatment is still a real challenge today.[1] The most frequently diagnosed cancer among people aged <20 are bone and joint cancer. It is estimated in 2016 that 1490 people will die of this disease & there will be 3300 new cases of bone and joint cancer. Among all cancers worldwide primary bone tumors are relatively uncommon lesions & constitute less than 1%.[2] A multimodality approach is involved for evaluation of bone tumors but MRI plays an important role in the evaluation of effectiveness and follow-up of treatment.[3] A complex & difficult group of diseases in developing countries are formed by these malignancies where poverty as well as ignorance coexist & patients consult at very advanced stage as notified by publications from sub-Saharan Africa.[1] It is important to understand the magnitude & characteristic of the disease in our population due to the high potential morbidity associated with bone tumor. Thus the present study was conducted to see the epidemiological pattern of musculoskeletal tumors among patients at tertiary care hospital.

MATERIAL AND METHOD:

The present study was conducted on all patients suspected of musculoskeletal tumors referred for magnetic resonance imaging from department of orthopedics to the department of radiodiagnosis of tertiary care hospital of north India. Informed written consent was taken from all participants prior to conduct of study.

Inclusion Criteria:

Patients with clinically suspected / diagnosed musculoskeletal tumors.

Exclusion Criteria:

Patient's general condition not permitting the study to be carried out, patients having pacemaker/ metallic implants in place.

After meeting inclusion & exclusion criteria all patients underwent magnetic resonance imaging.

Statistical Analysis:

Analysis of data was done using statistical software MS Excel / SPSS version 17.0 for windows. Data presented as percentage (%) as discussed appropriate for quantitative and qualitative variables.

OBSERVATION & RESULTS:

Following observations were made:

Table no.1 shows that maximum number of patients were in the age group 11-20 years i.e. 19 (30.7%) followed by >50 years i.e. 15(24.2%). The youngest patient was 3 yrs old & the oldest patient was 78 yrs old. Males constituted 37 (59.7%) patients while female were 25 (40.3%).

Table no. 2 shows that bone tumors constituted the most common musculoskeletal tumors i.e. 39 (62.9%) whereas soft tissue tumors account 23 (37.1%) cases. As per nature of tumor malignant tumor comprised 33 (53.2%) lesions while benign lesions were 29 cases (46.8%).

Table no. 3 shows that maximum bone tumors were found to involve femur 10 (25.6%) followed by tibia and vertebrae each in 7 cases (17.9%). Maximum soft tissue tumors were found to involve muscle 13 (56.5%).

DISCUSSION:

Magnetic resonance imaging is a valuable technique for non invasive evaluation of musculoskeletal tumors. MR imaging may be more useful than clinical evaluation or other imaging modalities in diagnosing or local staging of different bone and soft tissue tumors. It has had a dramatic impact on treatment of such patients where instead of amputations or disarticulation, reconstructive or limb salvage procedures are being considered. [4]

In the present study it has been found that maximum number of patients were in the age group 11-20 years i.e.19 (30.7%). The youngest patient was 3 yrs old & the oldest patient was 78 yrs old. Baweja S et al in their study on 25 patients found maximum number of patients with musculoskeletal tumors were found in the age group 10-20 years i.e.10 with mean age 24.64 years.[3]

In the present study maximum number of patients with musculoskeletal tumors were males i.e.37 (59.7%) while female were 25 (40.3%). Baweja S et al in their study found 21(84%) males while females were 4(26%) only.[3] Datir A et al in a study found that out of 571 patients there were 288 males & 283 females.[5] Bhuyan MH et al in a study on 50 patients found that males were 31(62%) & females were 19(38%).[6] Gulia A et al found 1307 men & 700 women in a study on bone & soft tissue disease.[7]

In the present study out of all musculoskeletal tumors, bone tumors constituted the most common musculoskeletal tumors i.e. 39 (62.9%) whereas soft tissue tumors account 23 (37.1%) cases. Gulia A et al in a study found 1207 (60%) cases were bone tumors while 723(36%) cases were soft tissue tumors. [7] Daniel A et al & Bhuyan MH et al in a study found that bone tumors comprised 32(64%) while soft tissue tumors were 18(36%) only.[8,6] As per nature of tumor malignant tumor comprised 33 (53.2%) lesions while benign lesions were 29 cases (46.8%). Datir A et al in a study on 571 patients found that 197 (34.5%) were benign, 288(50.4%) were malignant & 86(15%) were non neoplastic.[5]

Maximum bone tumors were found to involve femur 10 (25.6%) followed by tibia and vertebrae each in 7 cases (17.9%) in the present study. Diaphysis was the most affected part i.e.13 cases (50%) followed by metadiaphysis & Epimetdiaphyseal region. Verma N et al found that femur was involved in 15(23.4%) cases whereas tibia was involved in 16(25%) cases in study on bone tumors.[2] Gulia A et al in their study found that in benign bone tumors tibia (24.9%) was most common site of affection followed by femur (23.2%) while in malignant bone tumors femur (32.5%) was most common site of affection followed by tibia (18.4%).[7]

CONCLUSION:
From present study, we may conclude that maximum incidence of musculoskeletal tumors are in young age group with more preponderance in males. Bone tumors constituted the most common musculoskeletal tumors in comparison to soft tissue tumors & the most commonly involved bones are femur & tibia.

Table no. 1 Age & sex distribution of studied patients.

	No. of patients	Percentage
Age (in years)		
0-10	7	11.3%
11-20	19	30.7%
21-30	10	16.1%
31-40	8	12.9%
41-50	3	4.8%
>50	15	24.2%
Sex		
Males	37	59.7%
Females	25	40.3%

Table no. 2 Distribution of studied cases of musculoskeletal tumor as per type & nature of tumor.

Type of tumour	No. of cases	Percentage
Bone	39	62.9%
Soft tissue	23	37.1%
Nature of tumour		
Benign	29	46.8%
Malignant	33	53.2%

Table 3: Distribution of studied cases of musculoskeletal tumors as per bone & soft tissue involvement.

Bone involved	No. of Cases	Percentage
Femur	10	25.6
Tibia	7	17.9
Humerus	6	15.4
Pelvis	3	7.7
Vertebrae	7	17.9
Others	6	15.4
Soft tissue involved		
Tendon	3	13
Muscle	13	56.5
Nerve	2	8.7
Dermis/subcutaneous plane	4	17.4
Others	1	4.4

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