



ISSN (P): 2617-7226
ISSN (E): 2617-7234
www.patholjournal.com
2019; 2(2): 419-422
Received: 13-05-2019
Accepted: 15-06-2019

Dr. Anita B Sajjanar
Associate Professor,
Department of Pathology, D.Y
Patil Medical College, Kasaba
Bawada, Kolhapur,
Maharashtra, India

Dr. Archa Rajagopal
Post Graduate Resident,
Department of Pathology, D.Y
Patil Medical College, Kasaba
Bawada, Kolhapur,
Maharashtra, India

Dr. SS More
Head of Department,
Department of Pathology, D.Y
Patil Medical College, Kasaba
Bawada, Kolhapur,
Maharashtra, India

Corresponding Author:
Dr. Anita B Sajjanar
Associate Professor,
Department of Pathology, D.Y
Patil Medical College, Kasaba
Bawada, Kolhapur,
Maharashtra, India

A histopathological study of bone lesions in a tertiary care hospital in Kolhapur

Dr. Anita B Sajjanar, Dr. Archa Rajagopal and Dr. SS More

DOI: <https://doi.org/10.33545/pathol.2019.v2.i2g.137>

Abstract

Introduction: Bone lesions are relatively uncommon in comparison to other lesions. For the correct diagnosis of bone lesions, charting out treatment plan and estimating prognosis, interpretation of biopsy material proves to be absolutely necessary. This present histopathological study helps us to understand the variety of bone lesions and gives an idea of their relative frequencies, age, sex distributions and site of occurrence.

Materials and Methods: This study consists of 83 cases collected over a period of 2 years from October 2017 to October 2019 from patients admitted at Dr. D. Y Patil Hospital, Kolhapur a tertiary care centre with radiologically apparent bone lesions. Hematoxylin and Eosin sections were examined. Detailed microscopic study was done and findings and diagnosis were noted and compared to other studies.

Results: Out of the 83 cases studied over the period of 2 years, 41 lesions were non-neoplastic (49.4%), and 42 lesions were neoplastic (50.6%), out of which 33 cases are benign (39.7%) and 9 cases are malignant (10.8%). Males were affected more commonly than females, with a male: female ratio of 1.37:1. Bone lesions were more common in between the age group of 25 to 50 years. Amongst non-neoplastic lesions, Chronic osteomyelitis were the most common (21 cases, 51.3%), followed by avascular necrosis (10 cases, 24.4%). Amongst the benign neoplastic lesions, Giant cell tumor (Osteoclastoma) was the most common (10 cases, 30.3%), Osteochondroma (Exostosis) was the second most common (8 cases, 24.3%). The most common malignant lesion was Chondrosarcoma (3 cases, 33.33%), followed by metastasis to bone (3 cases, 33.33%). Most of the lesions were found in the femur (24 cases, 28.9%).

Conclusion: Histopathological study of bone lesions includes variety of non-neoplastic and neoplastic lesions. Although benign and malignant lesions of bone are distinct and well studied, there are some benign lesions that often mimic cancer-causing diagnostic dilemma. Therefore, if diagnosed with clinical, radiological and histopathology, proper diagnosis and treatment can be made.

Keywords: Histopathology, bone tumors, osteomyelitis, chondrosarcoma

Introduction

Bone lesions are relatively uncommon in comparison to other lesions. Bone lesions can present in any form varying from inflammatory, metabolic, degenerative and neoplastic tumors. Bone lesions can affect children, adults and even elderly persons, they can occur quickly or abruptly or can even occur as a slow growing palpable mass. Bone tumors constitute only 0.5% of total world cancer incidence [1-3].

It is important to remember that some inflammatory lesions such as osteomyelitis can mimic malignant lesions and some malignant lesions such as metastasis or myeloma can mimic benign. It is difficult to determine radiologically whether a bone lesion is benign or malignant [4].

For the correct diagnosis of bone lesions, charting out treatment plan and estimating prognosis, interpretation of biopsy material proves to be absolutely necessary.

In 1958, Jaffe pointed out the importance of cooperation among the surgeon, the radiologist and pathologist in diagnosing a lesion of bone. Therefore an integrated approach involving radiographic, histologic and clinical data are necessary to form an accurate diagnosis and to determine the degree of activity and malignancy in each lesion [5].

This present histopathological study helps us to understand the variety of bone lesions and gives an idea of their relative frequencies, age, sex distributions and site of occurrence.

Materials and Methods

This study consists of 83 cases collected over a period of 2 years from October 2017 to October 2019. The material was obtained from patients admitted at Dr D. Y Patil Hospital, Kolhapur a tertiary care centre.

The inclusion criteria for selection were patients with radiologically apparent bone lesions.

The records of patients with a diagnosis of any bone lesion in the histopathological registers in the Pathology Department of D. Y Patil Medical College constitute the study materials

Brief essential clinical history such as the age, sex, anatomical site, radiological findings, histopathological findings as well as record of other investigations were noted from the patient’s case paper.

The histopathological slides were retrieved for re-examination. Where necessary when histopathological work up was required, new sections were prepared from the paraffin blocks and stained with hematoxylin and eosin stains.

For newly received specimens from the Orthopedics department, soft tissue was fixed overnight in 10% formalin while for bone 3 to 5 mm thick sections were made and adequately fixed in 10 % buffered formalin and then decalcification was done in 10 % nitric acid. After fixation, representative areas were sampled according to standard protocols. Paraffin embedded blocks were sectioned using microtome and stained with routine hematoxylin and eosin. Detailed microscopic study was done and findings and diagnosis were noted.

Results

Out of the 83 cases studied over the period of 2 years, 41 lesions were non-neoplastic (49.4%), and 42 lesions were

neoplastic (50.6%), out of which 33 cases are benign (39.7%) and 9 cases are malignant (10.8%). (Table 1)

48 out of the 83 lesions were seen in males (57.9%) and 35 out of the total 83 lesions were seen in females (42.1%), therefore males were affected more commonly than females, with a male: female ratio of 1.37:1. (Table 2)

Bone lesions were more common in between the age group of 25 to 50 years, followed by age less than 25 years and least common more than 50 years of age. (Table 3)

Amongst non-neoplastic lesions, Chronic osteomyelitis were the most common (21 cases, 51.3%), followed by avascular necrosis (10 cases, 24.4%), tuberculous osteomyelitis (3 cases, 7.3%), fibrous dysplasia (3 cases, 7.3%), Myositis ossificans (2 cases, 4.9%), Calcaneal spur (1 case, 2.4%), extra-medullary hematopoiesis (1 case,2.4%) (Table 1)

Amongst the benign neoplastic lesions, Giant cell tumor (Osteoclastoma) was the most common (10 cases, 30.3%), Osteochondroma (exostosis) was the second most common (8 cases, 24.3%), followed by Aneurysmal bone cyst(6 cases,18.3%), Simple bone cyst(3 cases,9.1%),Osteoma, Osteoblastoma, Chondroblastoma, Chordoma, Glomus tumor, Fibroma(1 case, 3% each). (Table 1)

Amongst the malignant neoplastic lesions, the most common lesion was Chondrosarcoma (3 cases, 33.33%), followed by metastasis to bone (3 cases, 33.33 %), Ewing’s sarcoma, Epitheloid osteogenic sarcoma, malignant round cell tumor (1 case, 11.11% respectively). (Table 1)

Most of the lesions were found in the femur (24 cases, 28.9%), followed by tibia and fibula (15 cases,18%), humerus and scapula (11 cases, 13.3%), small bones (9 cases,10.9%), radius and ulna, spine and skull, hip bone(6 cases,7.2% each), foot bones (4 cases,4.8%), patella and ribs (1 case,1.2% each). (Table 4)

Table 1: Proportion and distribution of the bone lesions

	Non neoplastic	Neoplastic	
		Benign	Malignant
	1. TB osteomyelitis-3	1. Chondroblastoma-1	1. Chondrosarcoma-3
	2. Avascular necrosis-10	2. Osteochondroma-8	2. Ewings sarcoma-1
	3. Chronic Osteomyelitis-21	3. Fibroma-1	3. Osteosarcoma-1
	4. Extramedullary hematopoeisis-1	4. Giant Cell Tumor-10	4.Secondaries-3
	5. Fibrous dysplasia-3	5. Glomus tumor-1	5. Malignant round cell tumor – 1
	6. Myositis ossificans-2	6. Osteoblastoma-1	
	7. Spur-1	7. Osteoma-1	
		8. Simple bone cyst-3	
		9. Aneurysmal bone cyst-6	
		10. Chordoma-1	
Total	41	33	9

Table 2: Gender distribution of the bone lesions

Bone lesions	Non neoplastic	Neoplastic		Total
		Benign	Malignant	
Male	26	18	4	48
Female	15	15	5	35
Total	41	33	9	83

Table 3: Age wise distribution of the bone lesions

Age (in years)	Non neoplastic	Neoplastic		Total
		Benign	Malignant	
<25	13	17	2	32
25-50	19	14	4	37
>50	9	2	3	14
Total	41	33	9	83

Table 4: Anatomical distributions of the bone lesions

Bone	Non neoplastic	Neoplastic	
		Benign	Malignant
Femur	11	8	5
Tibia and fibula	7	8	0
Humerus and scapula	5	6	1
Radius and ulna	2	3	1
Spine and skull	3	3	0
Small bones	6	3	0
Foot	2	2	0
Hip	5	0	1
Patella	0	1	0
Ribs	0	0	1
Total	41	33	9

Discussion

Bone lesions contribute a small fraction compared to other lesions in a person. It is very important to know all the clinical details like age, gender, site of lesion and radiological findings before giving a histopathological diagnosis of any bone lesions. Few benign entities can be confused clinically with malignant entities, for example, osteomyelitis and Ewing's sarcoma, traumatic and pathological fracture, Osteoblastoma and osteosarcoma, Tuberculosis and malignancy.

Therefore, histopathological diagnosis is the gold standard for exact diagnosis and for helping the clinician to predict the prognosis of the variety of bone lesions.

This present study helped us understand the variety of bone lesions in a tertiary hospital in Kolhapur and gives an idea of the relative frequencies, age, sex and site of occurrence.

In our study of 83 bone lesions in Dr D.Y Patil Hospital, Kolhapur. Most bone lesions showed male predominance, with a male: female ratio of 1.37:1. Same findings were

found in other studies done in other parts of the world [6-8].

In our study, neoplastic lesions are more common than non – neoplastic lesions confirming to study done by Settakom *et al.* [9]. Benign lesions are more common than malignant lesions [10-14]. Amongst non-neoplastic lesions, Chronic osteomyelitis were the most common similar to Kethireddy S, Raghu K, Chandra Sekhar KPA, *et al.* 2016, followed by avascular necrosis.

In our study, Giant cell tumor was the most common benign tumor followed by Osteochondroma similar to studies like in Modi D, Rathod GB, Delwadia KN, *et al.* 2016 [15], in some other studies Osteochondroma was the most common followed by giant cell tumor [16-17].

The peak incidence for bone lesions was between 25 to 50 years of age. Most metastatic bone tumors were found in older age above 40 years.

Most common site of involvement is the femur similar to Kethireddy S, Raghu K, Chandra Sekhar KPA, *et al.* [18].

Table 5: Comparison of our study with other studies from different countries

	Our study	Nigeria ¹⁹	Pakistan ²⁰	Mexico ⁶	Cameron ²¹	India ¹⁶	Thailand ²¹
Total number of cases	83	79	222	566	268	50	1001
Males	48	51	150	304	166	31	550
Females	35	26	72	262	102	19	451
Benign	33	61	179	405	129	34	147
Malignant	9	16	43	161	139	3	854
Giant cell tumour	10	18	17	59	17	10	37
Osteochondroma	8	34	15	117	26	22	25
Chondrosarcoma	3	1	0	14	9	0	10
Osteosarcoma	1	7	7	48	48	1	58

Conclusion

Histopathological study of bone lesions includes variety of non-neoplastic and neoplastic lesions. Although benign and malignant lesions of bone are distinct and well-studied, there are some benign lesions that often mimic cancer-causing diagnostic dilemma. Therefore, if diagnosed with clinical, radiological and histopathology, proper diagnosis and treatment can be made.

References

- Mohammed A, Sani MA, Hezekiah IA, Enoch AA. Primary bone tumours and tumour-like lesions in children in Zaria, Nigeria. *Afr J Paediatr Surg.* 2010; 7:16-8.
- Katchy KC, Ziad F, Alexander S, *et al.* Malignant bone tumors in Kuwait: a 10-year clinicopathological study. *Int Orthop.* 2005; 29(6):406-11.
- Dorfman HD, Czerniak B. Bone Cancers. *Cancer.* 1995; 75:203-10
- Bonetumor.org, (internet), Massachusetts, Henry Degroot, Bone metastasis, Available from, <http://www.bonetumor.org/tumors/pages/page67.htm>. Accessed on 20-11-2015.
- Fletcher, Christopher D, Diagnostic M. *Histopathology of Tumors*, 4th Edition Elsevier Saunders, Philadelphia, 2013.
- Baena-Ocampo Ldel C, Ramirez-Perez E, Linares-Gonzalez LM, *et al.* Epidemiology of bone tumors in Mexico City: retrospective clinicopathologic study of 566 patients at a referral institution. *Ann Diagn Pathol.* 2009; 13(1):16-21.
- Sharma S, Mehta NP. Histopathological study of bone

- tumors. *International Journal of Science and Research*. 2015; 4(12):1970-1974.
8. Katchy KC, Ziad F, Alexander S *et al*. Malignant bone tumors in Kuwait: a 10-year clinicopathological study. *Int Orthop*. 2005; 29(6):406-11.
 9. Settakorn J, Lekawanvijit S, Arpornchayanon O *et al*. Spectrum of bone tumors in Chiang Mai University Hospital, Thailand according to WHO classification 2002: A study of 1001 cases. *J Med Assoc Thai*. 2006; 89(6):780-7.
 10. Rao VS, Pai MR, Rao RC *et al*. Incidence of primary bone tumours and tumour like lesions in and around Dakshina Kannada district of Karnataka. *J Indian Med Assoc*. 1996; 94(3):103-4, 121.
 11. Solooki S, Vosoughi AR, Masoomi V. Epidemiology of musculoskeletal tumors in Shiraz, south of Iran. *Indian J Med Paediatr Oncol*. 2011; 32(4):187-91.
 12. Mohammed A, Isa HA. Pattern of primary tumours and tumour-like lesions of bone in Zaria, northern Nigeria: a review of 127 cases. *West Afr J Med*. 2007; 26(1):37-41.
 13. Obalum DC, Giwa SO, Banjo AF *et al*. Primary bone tumours in a tertiary hospital in Nigeria: 25 year review. *Niger J Clin Pract*. 2009; 12(2):169-72.
 14. Rehman A, Qureshi H, Shafiullah. Bone tumors and tumor-like lesions: 10 years retrospective analysis of biopsy results. *J Postgrad Med*. 2004; 18:40-5. 13. Wani LA, Ashai FB, Banday BM *et al*. Primary bone tumours in Kashmir valley a retrospective histopathological study. *International Journal of Basic and Applied Sciences*. 2015; 4(1):51-56.
 15. Modi D, Rathod GB, Delwadia KN *et al*. Histopathological study of bone lesions-A review of 102 cases. *IAIM*. 2016; 3(4):27-36.
 16. Manoja V, Divya Chevakula, Suresh K. Histopathological evaluation of bone lesions: A retrospective institutional study. *Med Pulse International Journal of Pathology*. 2019; 12(1):01-04
 17. Negash BE, Admasie D, Wamisho BL, Tinsay MW. bone Tumors at Addis Abbas University Ethiopia, Agreement Between Radiological and Histopathological Diagnosis-A 5 year analysis at Black Lion Teaching Hospital, *Malawi Med J*. 1:62-5.
 18. Kethireddy S, Raghu K, Chandra Sekhar KPA *et al*. Histopathological evaluation of neoplastic and non-neoplastic bone tumours in a teaching hospital. *J Evolution Med. Dent. Sci*. 2016; 5(86):6371-6374. DOI: 10.14260/jemds/2016/1441
 19. Abdulkareem FB *et al*, Pathological study of Bone Tumors at National Orthopedic Hospital, Lagos Nigeria, *West African Journal of Medicine*.
 20. Muhammad Rafiq, Ashok Kumar Tanwani *et al*, spectrum of bone lesions at Pakistan institute of medical sciences, *Journal of Islamabad Medical & Dental College (JIMDC)*; 2012; 2:69-71.
 21. Bahebeck J, Atangana R, Eyenga V *et al*. Bone tumours in Cameroon: incidence, demography and histopathology. *Int Orthop*. 2003; 27(5):315-7.