

Clinicopathological Pattern of Non neoplastic Skeletal Diseases Seen in a Tertiary Care Hospital in Lahore

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ABSTRACT

Aims: Non neoplastic skeletal lesions especially pyogenic and tuberculous osteomyelitis constitute a significant subgroup of bone and joint diseases.

Methods: A cross sectional descriptive study in Lahore from January 2006 to January 2009. After detailed documentation of the clinical account, bone biopsies were reviewed under microscope from 172 cases presenting with variable clinical symptoms.

Results: There were 117 males and 55 females (M:F=2.2:1). The mean age of the patients was 49.5±6 years, (age range 02-97 years) with the maximum number of cases (n=51) in the age range of 11–20 years. A wide variety of clinical lesions including inflammatory (n=92), Infectious (n=53), cysts(n=07) and synovial diseases (n=20) were seen. Non specific inflammation (n=52), followed by pyogenic infections (n=32) and tuberculous osteomyelitis (n=) constituted the major group.

Conclusion: Non neoplastic bone diseases present in a wide variety. Males are twice affected as compared to females and most diseases present in younger age group. Non specific inflammation and tuberculous osteomyelitis constitute the major group. Lower limbs are commonly affected sites.

Keywords: Non neoplastic skeletal disease, tuberculous osteomyelitis, synovial disease

INTRODUCTION

Bone infections are relatively uncommon lesions and pathologists generally lack clinical experience with these lesions. A large number of non-neoplastic bone lesions occur at typical sites and in certain age groups. A systematic approach to clinical history, radiographic evaluation and histopathology (in certain cases) is necessary for accurate diagnosis. As many bone lesions overlap, an experienced clinician systematically integrates the radiological and histopathological results to plan and offer the best possible management to the patient. By far a fewer of the biopsied bone lesions turn out to be non neoplastic conditions¹. It can be usefully subclassified on the basis of the causative organism (pyogenic bacteria or mycobacteria), the route, duration and anatomic location of the infection. In children, the long bones are usually affected. In adults, the vertebrae and the pelvis are most commonly affected. Acute osteomyelitis almost invariably occurs in children. When adults are affected, it may be because of compromised host resistance due to debilitation, intravenous drug abuse, infectious root-canal teeth, or other disease or drugs (e.g., immunosuppressive therapy).

Osteomyelitis is a secondary complication in 1–3% of patients with pulmonary tuberculosis. In this case, the bacteria, in general, spread to the bone through the circulatory system, first infecting the synovium (due to its higher oxygen concentration) before spreading to the adjacent bone. In tubercular osteomyelitis, the long bones and vertebrae are the ones that tend to be affected².

Diagnosis of osteomyelitis is often based on radiologic results showing a lytic center with a ring of sclerosis. Culture of material taken from a bone biopsy is needed to identify the specific pathogen; alternative sampling methods such as needle puncture or surface swabs are easier to perform, but do not produce reliable results³.

Skeletal TB accounts for 10 to 35 percent of cases of extrapulmonary tuberculosis and, overall, for almost 2 percent of all TB cases^{4,5}. Reported rates of extrapulmonary TB are higher among immigrants from endemic areas to developed countries; this may be due in part to immigration screening procedures for pulmonary TB⁶.

The most common form of skeletal TB is Pott disease, a disease of the spine; this entity comprises approximately half of musculoskeletal TB cases. The next most common form of musculoskeletal TB is tuberculous arthritis, followed in frequency by extraspinal tuberculous osteomyelitis⁷.

MATERIALS AND METHODS

One hundred and seventy two consecutive patients presenting for the primary diagnosis of their various bony diseases at the inpatient department of Ghurki Trust Hospital Lahore Pakistan from Jan 2006 to Jan 2009 (mean age 49.5±6 years, age range 02-97 years) were selected for this study. Relevant clinical and laboratory data of these patients including age, family history, co-morbid conditions including any history of traumatic were recorded in separate proformas. Gross observations took account of location, laterality, size, colour, consistency of the biopsy, radiological findings and the type of surgical procedure performed. Microscopic features tabulated included type of lesion, degree and stage of inflammation, necrosis, and stromal reaction etc. All selected patients gave written informed consent. Locations were divided into 8 groups, craniofacial, vertebra including sacrum, scapula, clavicle, rib, sternum, pelvic bone, bones of limbs, and bone marrow biopsy.

The specimens were fixed in formalin and initially decalcified in HNO₃ followed by routine processing in an automatic processor in ascending grades of alcohol, cleared in xylene and embedded in paraffin wax. Sections 3-5mm thick were cut using a rotary microtome. The slides were stained with haematoxylin and eosin (H&E) for the morphological diagnosis. Special stains were performed whenever required. The data was entered and analysed using SPSS 18.0. Mean±S.D. (standard deviation) were given for quantitative variables. Frequencies and percentages were given for qualitative variables. Pearson Chi Square and Fisher Exact test were applied to observe associations, if any, between the qualitative variables. A p value of < 0.05 was considered as statistically significant.

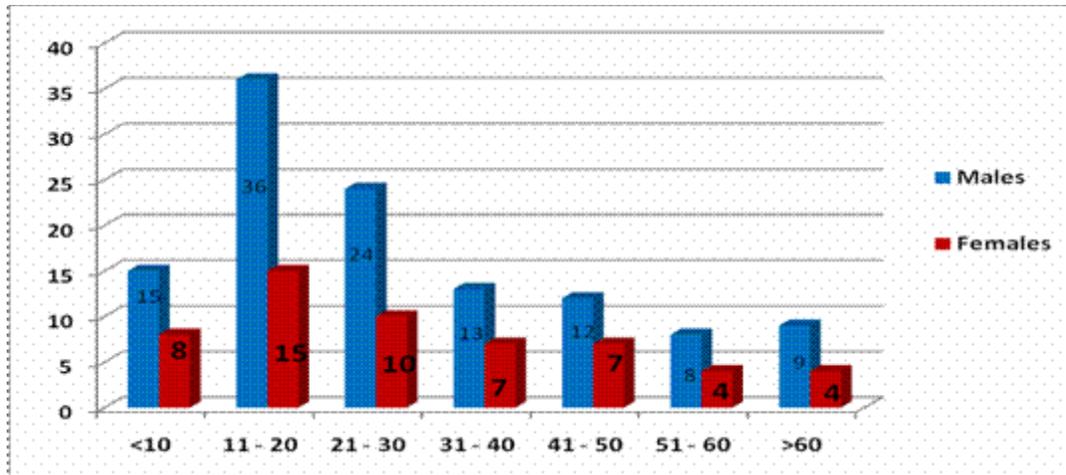
RESULTS

A total of 172 biopsies of patients with different skeletal lesions located at variable sites were included in this study. There were 117 males and 55 females (M:F = 2.2:1). The mean age of these patients was 49.5±6 years, (age range 02-97 years) with the maximum number of cases (n=51) in the age range of 11 – 20 years (Graph 1). Clinical history was variable according to the site and nature of the lesions, with most of the patients (75%) presenting with pain and localized tenderness, 65% patients with fever or / and ulcerating or draining lesions while 25% presented with bone fractures. The most common site was around the knee region (32.3%) followed by ankle and spine (21%), upper limb involving wrist to elbow area (12.1%), shoulder region (9.8%) and skull and jaw (8.2%). About 35% cases gave a history of previous trauma. A wide variety of lesions were seen (Table 1) including the inflammatory, infectious, cystic and synovial diseases. Whereas no significant association was found between (p-value>0.05) between the type, site or grade of the lesion and the age, gender or clinical symptoms etc.

Table 3: Subtypes of benign lesions seen in 172 patients

Diseases	Males	Female	n=	Age
Inflammation (92)				
Ac non specific	14	09	23	2-76
Chc non Specific	35	17	52	5-91
Rheumatoid arthritis	05	06	11	19- 63
Gouty Arthritis	03	03	06	22-26
Infection (20)				
Dentigerous	02	01	03	14-51
Keratinous	02	--	02	26& 42
Periapical radicular	02	--	02	31& 38
Synovial (20)				
Synovitis	--	02	02	42& 54
Hyperplasia	04	03	07	31-66
Fibrosis	02	--	02	73& 87
Degenerative	04	05	09	51-76

Graph 1: Distribution of 172 cases by gender. Note the maximum number of cases (n=51) in the age range of 11 – 20 years.



DISCUSSION

Non-specific osteomyelitis in children and adolescent can be diagnosed in patients 2 to 16 year old and may clinically present as acute, subacute or chronic disease⁸. Although acute osteomyelitis seems to be less prevalent, the diagnosis and management is the major challenge. *Staphylococcus aureus* accounts for 40-80% of infections followed by group A beta-haemolytic streptococcus⁹. This is in concordance with our study where maximum number of patients (54.2%) with infectious osteomyelitis were of staphylococcal positive cultures. Majority of pyogenic osteomyelitis cases were located in lower limbs followed by upper limb bones. The results were in accordance with those of Rasool, who also found the higher incidence of osteomyelitis in lower limbs¹¹. Tuberculosis has been reported in all bones of the body and remains a major public health problem¹⁰. Although osteomyelitis seems to become less common prevalent in industrialized countries, it still constitutes most of bone pathology seen in developing countries similar to the present study. Tuberculous osteomyelitis has been reported in all bones of the body. In addition the spine is the most frequently involved site in adults whereas it is rare in children¹². This is in accordance with our finding in which tuberculous osteomyelitis was observed mainly in bones of upper and lower extremities and mainly (67%) in adults.

CONCLUSION

Non-neoplastic bone diseases present in a wide variety. Males are twice affected as compared to females and most diseases present in younger age group. Non-specific inflammation and tuberculous osteomyelitis constitute the major group. Lower limbs are the most commonly affected sites.

Acknowledgement: The authors are extremely thankful to the staff of Pathology Department, Lahore Medical and Dental College, Lahore Pakistan, for their assistance in collecting the data.

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