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RESEARCH ARTICLE
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CHALLENGES IN MANAGING NEGLECTED MALIGNANT BONE TUMORS, EXPLORING THE CAUSES AND THERAPEUTIC HURDLES AT A TERTIARY CARE INSTITUTE IN A LOW –MIDDLE INCOME COUNTRY

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ABSTRACT

Background: Orthopedic oncology commonly affect bones, soft tissue, and musculoskeletal system are generally neglected and have devastating effects on physical and emotional health if not treated. It is needed to explore therapeutic challenges associated with neglected orthopedic oncology.

Material and Method: A descriptive cross-sectional study was conducted at Hayatabad Medical Complex and Rehman Medical Institute, Peshawar from May 2016 to June 2021. Tumors were categorized as neglected if there was a delay of over three months in seeking treatment. Tumor staging included X-rays, chest radiographs, full blood workups, MRI of the affected limb, and chest CT scans, using the Enneking staging approach. Data on age, gender, tumor site, histology, educational and socioeconomic status, prior treatments, and reasons for delay were collected and analyzed with SPSS-22.

Results: Of 470 orthopedic oncology cases, 116 (24.6%) were neglected malignant bone and soft tissue tumors. These included osteosarcoma (62.5%), Ewing sarcoma (25%), and chondrosarcoma (12.9%). Delays in treatment averaged 9.4 months, mainly due to financial constraints (88%), lack of awareness (90%), and limited healthcare facilities (27%). Traditional bone setters were consulted in 68% of cases, with 10% misdiagnosed by surgeons. Most cases were advanced (stage III or II-B) and treated with amputation, chemotherapy, or radiation.

Conclusion: Study found a high proportion 24.6% cases as neglected malignant bone and soft tissue tumors. The majority were osteosarcomas 62.5%, followed by Ewing sarcomas 25% and chondrosarcomas 12.9%. Delays in seeking treatment averaged 9.4 months, primarily due to financial constraints, lack of awareness, and limited healthcare facilities.

Keywords: Orthopedic Oncology, Neglected Orthopedic Oncology Cases, Etiology, Treatment Challenges.

INTRODUCTION:

Orthopedic oncology is a subspeciality of orthopedic surgery that focuses on diagnosing and treating tumors and other conditions of the musculoskeletal system. Bone and soft tissue cancers are low, accounting for only 0.5% of all UK cancers(1). However, treating bone and soft tissue tumors is a difficult task for orthopedic surgeons around the world. Due to a lack of diagnostic and therapeutic facilities and public awareness, the task is even more difficult in countries like Pakistan.

Primary and secondary bone tumors are the two forms of bone tumors. Although the exact etiology of primary bone tumors is not known, predisposing factors include trauma(2), irradiation(3), and mutation(4). Males are more likely than females to develop bone tumors, which are more common in the second and third decades of life(5). The blight of bone and soft tissue tumors in Pakistan remains distressing. Our inability to address this issue stems primarily from the interaction of several epidemiological factors, including awareness, the poor socioeconomic status of our community, and insufficient diagnostic and therapeutic facilities.

Neglected orthopedic oncology cases refer to cancers of the bones or soft tissues that have been neglected or left untreated for a long period, leading to a poorer outcome and a worse prognosis. These conditions can be caused by a lack of access to medical care, delayed diagnosis, or even a lack of awareness of the problem(6). Treatment of these types of cancer often requires specialized care and may involve surgical procedures, radiation therapy, chemotherapy, and immunotherapy.

Unawareness is primarily caused by misguided cultural and religious beliefs in our society. Neglected tumors are often symptomatic and have a detrimental effect on the patient's quality of life. Extreme tumors, particularly those of the lower limbs, restrict the ability to move and do everyday tasks, worsening the condition and decreasing the patient's quality of life(7). Significant pain, infection, tumor fungating, bleeding, thrombosis, pathologic fractures, radiation-induced necrosis, and severe functional impairment can all be symptoms of neglected malignancies(8, 9).

Malignant bone and soft tissue tumors have a terrible prognosis, with significant morbidity and mortality, and their neglect or incorrect management worsens the situation, leading to the loss of an extremity of life(10). Although there has been much discussion regarding neglected orthopedic soft tissue cancers. As a result, the current study was conducted to emphasize the reasons for this neglect as well as the therapeutic problems that these neglected tumors face in Pakistan.

METHOD AND MATERIAL

It was a descriptive cross-sectional study conducted at Hayatabad Medical Complex and Rehman Medical Institute Peshawar Pakistan. It was longitudinal five years study carried out from May 2016 to June 2021. The cases of neglected bone and soft tissue tumors presented to clinics were assessed according to set inclusion criteria. Tumors were categorized as neglected if there was a delay of more than three months in seeking treatment, or if they presented with ulceration, locally advanced disease, fungating masses, sepsis, or metastases. Locally advanced disease included tumors affecting all compartments of an extremity or major nearby tissues such as neurovascular bundles or organs like the chest wall or vertebrae (11). A tumor covering all compartments of an extremity or a major nearby tissue such as the neurovascular bundle or organs such as the chest wall or vertebrae was described as a locally advanced disease. Workup for staging the tumor was carried out after the admission of the patients. X-rays in two projections (anteroposterior and lateral) were taken of the affected limb and a plain radiograph of the chest was obtained. A complete blood workup, including a full blood count, renal function test, liver function test, and serum electrolytes, was obtained. When necessary, an MRI of the affected extremity and a computed tomography scan of the chest were performed. The histological diagnosis of the tumor was established using a core needle biopsy or an open biopsy of the lesion. The tumor was staged using the Enneking staging approach. Age, gender, anatomical site involved, histological type, educational status and socioeconomic status of the family, any prior treatment by traditional bone setter or registered medical practitioners, and the cause of delay in seeking medical guidance were all examined and evaluated in all cases. Data was collected and analyzed through SPSS-22.

RESULTS

Out of 470 orthopedic oncology cases, 116 (24.6%) were identified as neglected malignant bone and soft tissue tumors. These included 72 cases of osteosarcoma (62.5%), 29 of Ewing sarcoma (25%), and 14 of chondrosarcoma (12.9%). The majority of patients were male (87%) with a mean age of 42.18 years (range 24-60 years). The average delay in seeking treatment was 9.4 months, with delays ranging from 3.5 to 24 months. Financial constraints (88%), lack of awareness (90%), and limited healthcare facilities (27%) were the primary reasons for delayed treatment. Traditional bone setters were consulted in 68% of cases, and 10% were misdiagnosed by qualified surgeons. Most cases were advanced (stage III or II-B) and required amputation, chemotherapy, or radiation **(Table 1).**

It was found during this study that a distal femur pathological fracture treated as a simple fracture with an intra-medullary implant presented significant challenges. The failure to recognize and address the underlying pathology led to complications such as delayed healing and implant failure. This case underscores the critical need for accurate diagnosis and a multidisciplinary approach in managing pathological fractures. Proper treatment requires both mechanical stabilization and addressing the underlying disease **(Figure 1).**

It was also found that proximal tibia malignant lesion mistakenly treated as osteomyelitis poses serious management challenges. Misdiagnosis delayed appropriate oncological intervention, allowing the lesion to progress and complicate treatment. This case highlights the critical need for accurate early diagnosis to differentiate between infection and malignancy. Effective management relies on timely and correct identification to prevent poor outcomes **(Figure 2).**

It was found during this study that managing a distal femur with a large, near-fungating malignant bony lesion presents significant challenges. The advanced stage of the mass necessitates an ablative procedure, complicating both surgical and post-operative care. Delayed intervention can result in further tissue compromise and increased morbidity. This case emphasizes the importance of early detection and aggressive management in preventing such extensive, debilitating conditions **(Figure 3).**

Table 1: Consolidative Descriptive Variables Analysis of the Study Population in Peshawar

Variable	**N (%)**	**Total (%)**
Gender		
Male	101 (87)	116 (100)
Female	15 (12.5)	
Age		
Mean (Years)	42.18	
SD	17.3	
Range	24-60	
Negligence Duration		
Mean (Months)	9.4	
SD	6.51	
Range	3.5-24	
Type of Cases		
Osteosarcoma	72 (62.5)	116 (100)
Ewing sarcoma	29 (25)	
Chondrosarcoma	14 (12.5)	
Negligence Causes		
Financial restrictions	Yes	103 (88.7)
	No	13 (11.2)
Lack of awareness	Yes	105 (90)
	No	11 (9.4)
Shortage of healthcare facilities	Yes	32 (27)

	No	84 (72.4)
Enneking staging system		
Stage III	51 (44)	116 (100)
Stage IIB	65 (56.25)	

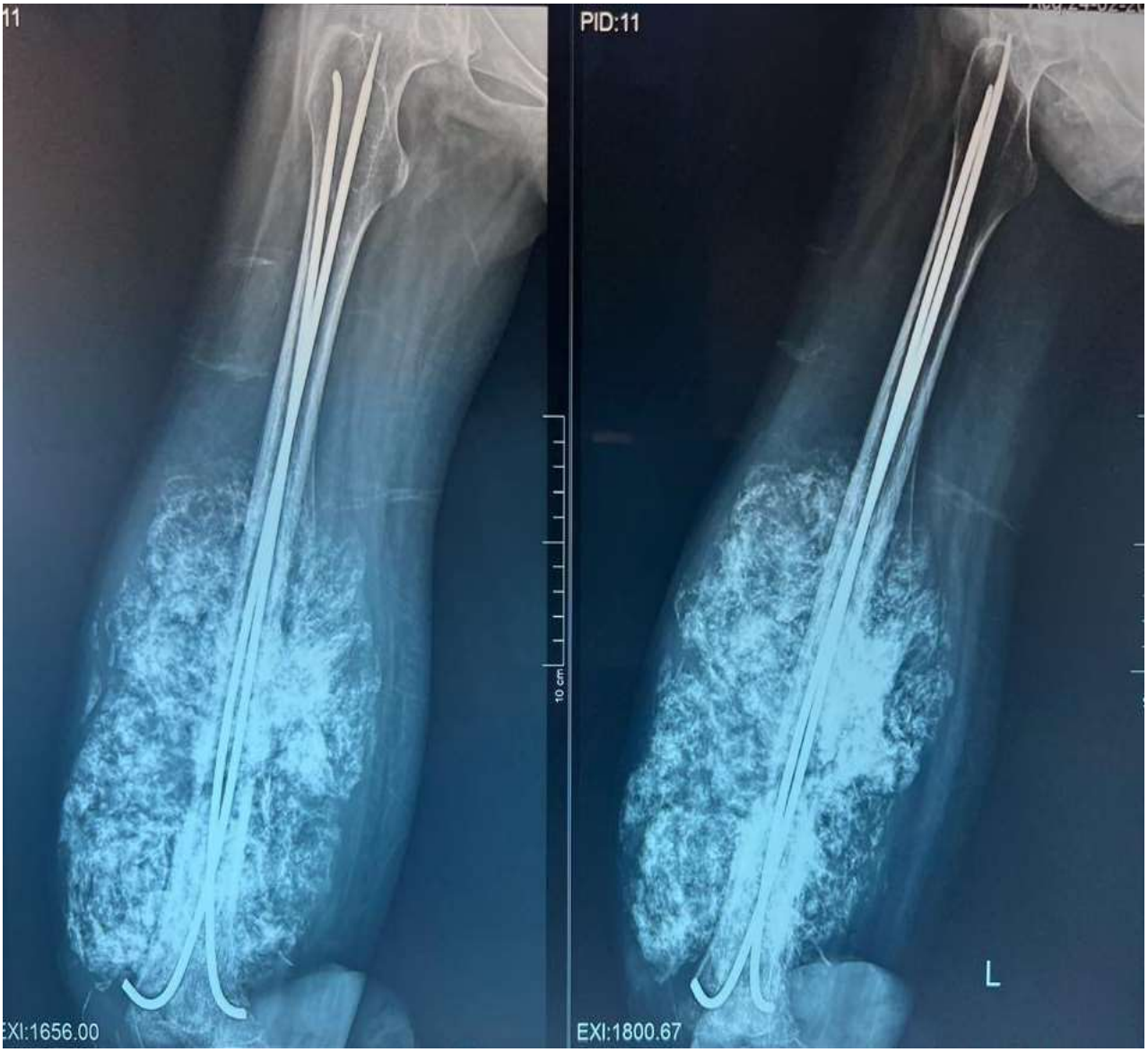

Figure 1: Distal femur pathological fracture treated as a simple fracture and fixed with only an intra-medullary implant.

Figure 2: Proximal tibia malgnant lesion mistreated as osteomyeltis.

Figure 3: Distal femur huge mass due to a malignant bony lesion, near fungating requiring an ablative procedure.

DISCUSSION:

Because the problem of neglect is almost exclusive to developing countries and virtually unknown to affluent ones, there is little research on it in Western literature. As a result, the study is important since

it addresses the problem of malignant bone and soft tissue neoplasms being overlooked, even though there are few reports from our country (6, 12-16), highlighting the urgent need to raise public awareness about the dangers of ignoring bone and soft tissue cancers. Over the course of five years, our center has seen one hundred and sixteen cases of malignant bone and soft tissue tumor neglect, resulting in an annual average of 23 cases per year. We feel that these are only the tip of the iceberg, with many more patients dying without receiving traditional medical care or receiving a confirmed diagnosis. As a result, these figures may not accurately reflect the rarity of tumors in our environment, but they do emphasize our people's aversion to using mainstream medical services in favor of traditional bone setters and spiritual residences. Statistics on the incidence of bone and soft tissue cancers in developed countries are readily available from adequately maintained records and suitable recording of tumors through tumor registration. Such statistics are not available in developing nations, such as Pakistan, because of the lack of existence of a national tumor registry. Low socioeconomic position (poor), unawareness (illiteracy), lack of access to health care facilities, early visits to traditional bone setters, and even misdiagnosis at reputable hospitals by qualified orthopedic surgeons were all factors that contributed to delayed presentation in our study. Low socio-economic status (poverty)(17), ignorance (illiteracy)(18, 19), and lack of access to healthcare facilities are all epidemiological factors that act in a vicious circle causing the family and the patient to seek the services of traditional bone setters, resulting in the dangerous implications of neglect and delayed presentation.

Because of the overlap in clinical presentation, tumors (whether benign or malignant) are frequently mistaken as another thing, according to the literature (Figure 1). One of our patients with proximal tibial osteosarcoma was misdiagnosed as osteomyelitis and operated on elsewhere, causing a delay in final therapy (Figure 2). Another patient with ilium chondrosarcoma was misdiagnosed with radiculopathy because the patient's clinical presentation was similar to the above diagnosis, as the patient has ankle weakness due to tumor mass involvement of the sciatic nerve. Ewing's sarcoma, chondrosarcoma, and osteosarcoma were the most commonly overlooked primary bone tumors in our study. The high prevalence of osteosarcoma cases was most likely related to the disease's most common occurrence in children and teenagers(20). It affects the metaphysis of the long bones, with the majority of cases concentrated around the knee(21), as seen in our study.

It is worthwhile to explore the tough element of management of neglected bone and soft tissue neoplasms. Malignant bone and soft tissue tumors have a terrible prognosis, with significant morbidity and mortality, and their neglect or incorrect management worsens the situation, leading to the loss of an extremity or life(22). The advanced and metastatic nature of the disease needs life-threatening or extremely mutilating surgical operations, which can be difficult to manage(10)(Figure 3). Khurram et al in their study about sarcomas presenting late with fungating lesions and their outcomes saw that majority (75%) of these patients face ablative surgery and, in some, post op complications(23). Furthermore, executing mutilating procedures on such patients without a clear improvement in life expectancy not only raises ethical concerns but also has the potential to cause them psychosocial and emotional damage sepsis, tumor fungating, bleeding, arterial thrombosis, pathologic fractures, radiation-induced amputations(9). As mentioned by Malawer et al.(24), we have performed 7 palliative procedures on the above indications. Patients who had palliative surgery, in our view, had a significant improvement in their quality of life.

CONCLUSION

Study found a high proportion 24.6% cases as neglected malignant bone and soft tissue tumors. The majority were osteosarcomas 62.5%, followed by Ewing sarcomas 25% and chondrosarcomas 12.9%. Delays in seeking treatment averaged 9.4 months, primarily due to financial constraints, lack of awareness, and limited healthcare facilities.

Author Contribution:

- Farman Ullah: Main idea and manuscript writing, and statistical analysis

- Muhammad Ibrahim: Manuscript writing and statistical analysis.
- Zeeshan Khan; Overall supervision and manuscript review
- Amair Kamran, Yousaf gul. Data collection and paper writing

Conflict of interests and fund discloser: Nothing to declare

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