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Spindle Cell Sarcoma of the Thigh at the Site of Femoral Nailing in an Elderly Patient Managed with Palliative Care: A Rare Case Report

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ABSTRACT

Spindle cell sarcoma is a rare type of bone or soft tissue cancer, affecting the long bones of upper and lower limbs. We are presenting a case of a 70-year-old female with local spindle cell sarcoma of right thigh involving the bone, muscles, and surrounding soft tissues with overlying discoloration of skin at the site of a femoral nailing in the same limb. The diagnosis was made via PET scan and histopathology of biopsy. Due to old age, previous surgery, and malnourishment, the patient underwent palliative treatment. This case emphasises on locally advanced spindle cell sarcoma at the site of previous femoral nailing in an elderly female, thus leaving limited management options.

Keywords: Sarcoma, Aggressive, Implant, Palliative

INTRODUCTION

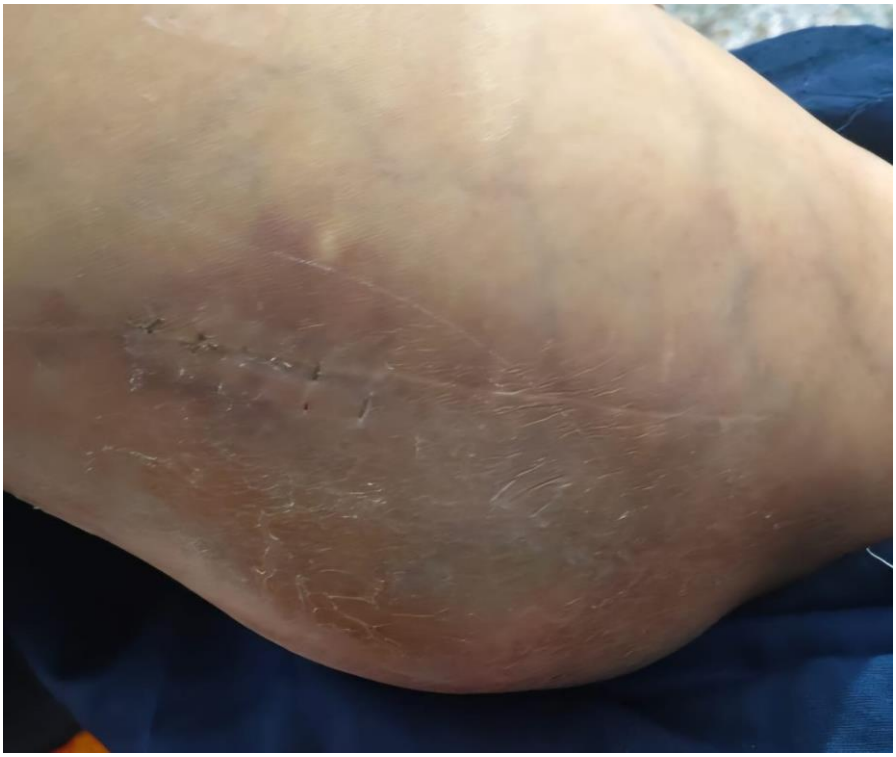
Sarcomas arise from the mesenchymal tissue and accounts for a rare group of malignant tumours. It is responsible for less than one percent of all adult cancers [1]. Spindle cell sarcoma is a broad term, and it can be broadly categorized into undifferentiated pleomorphic sarcoma, fibrosarcoma, and leiomyosarcoma. Spindle cell sarcoma makes up less than 10% of bone and soft tissue cancers thus, making it difficult to diagnose at first [2]. Also, these sarcomas developing in association with metallic orthopaedic prosthesis is not only rare and uncommon, but also a recognised complication. They are aggressive and metastatic in nature [3]. As per the literature review only a few cases are discussed till date. Here, we present a rare case of a 70-year-old female with spindle cell sarcoma at the site of a prosthetic implant, which was managed with palliative care.

CASE PRESENTATION

We report a case of 70-year-old female presenting to orthopaedic out-patient department with chief complaints of a mass on her right thigh, measuring 10*7 cm. The mass had been gradually increasing in size over 7 months, with increasing discoloration of skin overlying it.

The patient was malnourished and weighed 33 kg. On local examination, the mass was hard with no ulceration or discharge (figure 1). There was no local rise in temperature. The patient had difficulty in walking and symptoms of fatigue, decreased appetite, and weight loss.

Figure 1: Mass over right thigh



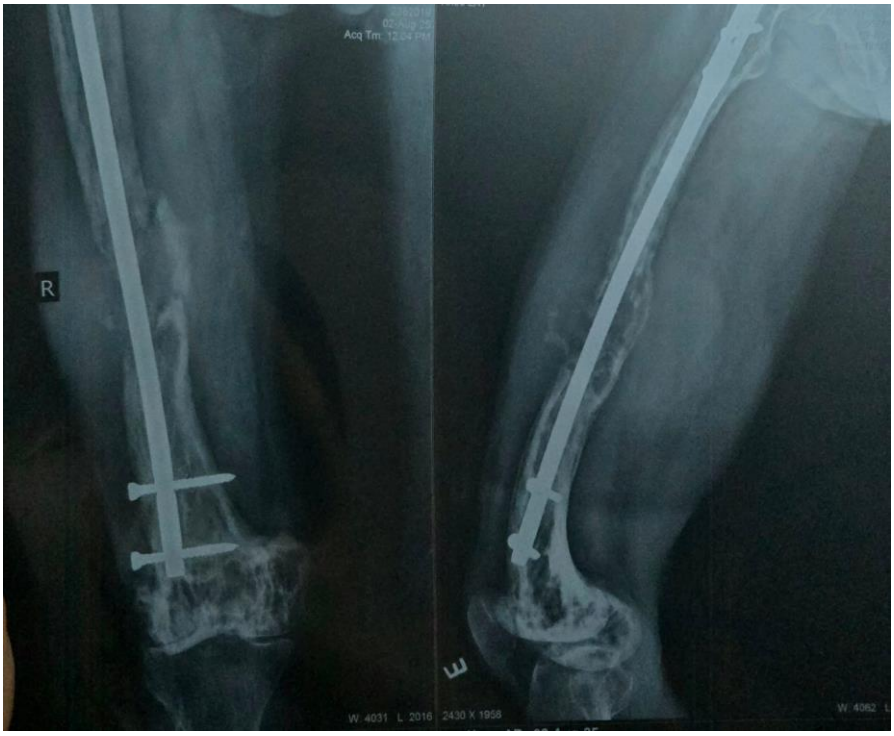
Timeline of events

The patient had a history of right femur shaft fracture 2.5 years ago for which she underwent femoral nailing operation. The operation was uneventful. For the last 7 months, the patient noticed a nonpainful mass growing gradually and irregularly over the operated limb. The patient underwent X-ray of the right femur in anteroposterior (AP) and lateral views shown in figure 2. The X-ray showed bone destruction, lytic lesions, and cortical breakage. The laboratory findings were as follows:

Table 1: Laboratory findings

Laboratory Test	Findings	Normal Range
Haemoglobin	7g/dl	11-14g/dl
Total leucocyte count	16400	4000-12000
Serum sodium	136	137-145
Serum potassium	4.1	3.5-5.1
Serum blood urea nitrogen	14.68	7-17mg/dl
Serum creatinine	0.55	0.52-1.02mg/dl

Figure 2: X-ray of the right femur in anteroposterior (AP) and lateral views



For further confirmation of diagnosis, a positron emission tomography - computed tomography (figure 3, 4) was advised, which revealed FDG avid lytic destructive skeletal lesion with large lobulated heterogeneously enhancing soft tissue mass component (10.5*7.5*9.3 cm, SUV max - 12.1) was noted involving the mid-shaft region of the right femur with internal areas of necrosis. The mass was seen to infiltrate the anterior and posterolateral compartment muscles of mid-thigh. Low grade FDG avid few sub centimetric bilateral iliac lymph nodes (R>L) were also noted.

Figure 3: positron emission tomography - computed tomography

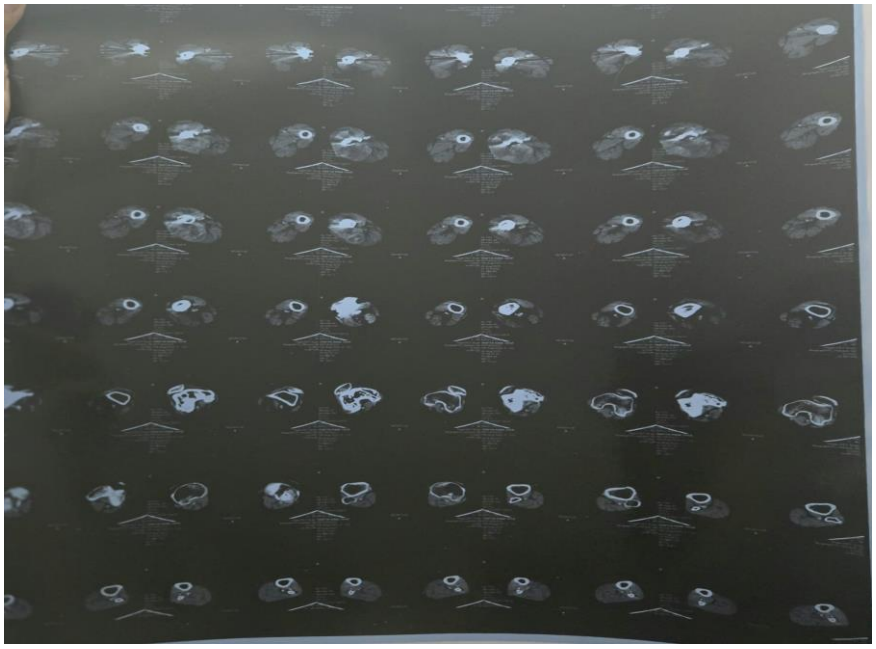
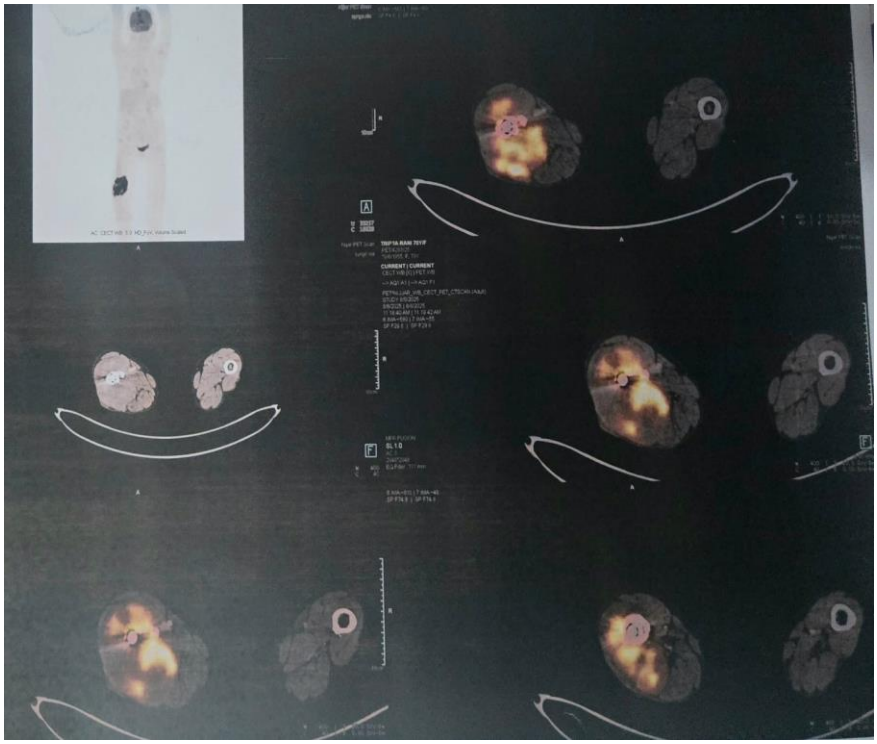


Figure 4: FDG avid lytic destructive skeletal lesion



Biopsy of the shaft of right femur lesion and bone was taken which gave an impression of spindle cell lesion with moderate nuclear pleomorphism, mitosis- 20-25/10hpf with focal sclerosis, calcification and osteoclastic giant cells. IHC Z707 was also advised but the patient refused due to lack of resources.

In our patient, the tumour developed in the bone and adjacent soft tissues at the site of a previously placed femoral nail, suggesting a temporal and anatomical association with the orthopaedic implant. Although implant-associated sarcomas have been rarely described, a direct causal relationship cannot be established from a single case. The relatively short interval of 2.5 years between implant placement and tumour detection, together with the extensive local spread at presentation, reflects an aggressive disease course; however, any link between tumour behaviour and the presence of the implant remains speculative.

Although the spindle cell sarcoma has treatment options as surgery, chemotherapy, and radiation therapy but keeping in mind the physical condition of the patient, age, and femoral nail at the site, the option of palliative care was chosen upon discussion among family members and the patient.

DISCUSSION

To diagnose a patient suspected with soft-tissue sarcoma the evaluation is focused on history, radiological findings, and biopsy. It is important to differentiate this condition from rhabdomyosarcoma, dermatofibroma, synovial sarcoma, and dermatofibrosarcoma [4]. All diagnosed patients should undergo computed tomography to keep a check on metastasis of sarcoma and should follow-up on time [5].

Spindle cell sarcomas occur in individuals of all ages and in both males and females [6]. The study by Feng et al. demonstrated that the median age affected is 57 years, but the patient of our case study started presenting the symptoms at the age of 70 years (older) [7]. In our case the patient is suspected to have some association with implant associated sarcoma, the same is described by Keel SB et al. who reviewed 12 cases of sarcomas arising at the site of orthopaedic

hardware or prosthetic joint [3]. The time interval between placement of femoral nail and occurrence of sarcoma in our patient is 2.5 years and the time interval for the cases taken by Keel SB et al. [3] was 2.5 to 33 years. A similar case of sarcoma at the implant site was reported by Benabbouha A et al., where the patient had intramedullary nailing of the tibia and developed a pleomorphic sarcoma after 18 years at the implant site [8]. A recent comprehensive review by Keane-Tahmaseb et al. highlighted that implant-associated malignancies, although rare, have been reported across multiple surgical specialties, with sarcomas being the most frequently described tumours in association with orthopaedic implants [9]. Although mechanisms such as chronic inflammation and wear debris have been proposed, a direct causal link remains uncertain.

Spindle cell sarcoma has a notable recurrence rate [10]. The management is based on the tumour behaviour, patient factors, risk and benefits of various treatments. In some circumstances there may be a need to amputate the affected limb or area [11]. Patients with advanced soft tissue sarcoma often face considerable symptom burden and limited survival. Gough et al. reported that pain, fatigue, and progressive functional decline are common in advanced disease, emphasizing the value of early palliative care in addressing these needs. In older and medically frail individuals, where curative treatment options may be limited, focusing on comfort and quality of life through palliative care is both appropriate and compassionate, as demonstrated in our patient [12].

CONCLUSION

This case underscores the aggressive nature of spindle cell sarcoma and the diagnostic and therapeutic challenges it poses in elderly patients. Awareness of its potential occurrence at sites of prior orthopaedic procedures is important. When curative treatment is not feasible, timely palliative care plays a crucial role in improving patient comfort and quality of life.

Declaration by Authors

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