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CASE REPORT

Radiodiagnostic Revelation of an Atypical Calcified Paraspinal Mass: A Novel Case Insight from Katihar Medical College

Dr. Ravi Sehrawat, Department of Radio-Diagnosis, Katihar Medical College, Katihar,

doc.ravisehrawat@gmail.com

Abstract

Clinical radiology rarely encounters atypical calcified paraspinal masses, which are difficult to identify because they exhibit characteristics of both benign and malignant illnesses. A 45-year-old man from eastern India sought medical attention after experiencing discomfort in the center of his back and stiffness that worsened over three months. He has no neurological issues. Routine blood testing revealed nothing untoward. The conventional X-ray, CT, and MRI scans all revealed a prominent, severely calcified mass in the paraspinal area that ranged from T7 to T9 vertebral levels and did not impact the spinal cord. The biopsy sample that was taken out and examined under a microscope revealed an atypical benign mesenchymal tumor called ossifying fibromyxoid tumor.(OFMT). This type of tumor is very rare in the paraspinal area. The case shows how important multimodal imaging is.

Keywords: Paraspinal mass, Calcification, Ossifying fibromyxoid tumor, CT spine, Katihar Medical College

INTRODUCTION

Paraspinal masses can be caused by a wide range of conditions that could affect the nerves, bones, soft tissue, or mesenchyme. Most paraspinal tumors tend to be less harmful and show up with vague and non-specific symptoms like pain in the area or some degree of neurological deficit. However, calcification

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is rare in these kinds of lesions and usually means that the diagnosis is limited to neurogenic tumors with some dystrophic calcification, calcified hematomas, paravertebral abscesses, or some unusual mesenchymal tumors [1]. Radiological imaging is very important for figuring out what paraspinal masses are. Plain X-rays of the back don't show a lot of differences between the soft tissues, but they can show some soft tissue calcification in some types of tumors.

While computed tomography (CT) provides fine details of the surrounding bone structures and the calcified areas of the mass, magnetic resonance imaging (MRI) is better at representing the neural and circulatory structures and soft tissue characteristics [2]. Calcification and a paraspinal soft tissue mass in an otherwise healthy adult without an active systemic disease should be evaluated with a more thorough differential diagnosis and as a potential sign of very rare disorders.

Enzinger et al. were the first to identify ossifying fibromyxoid tumor (OFMT), a rare mesenchymal neoplasm. Since its initial description in 1989, the tumor has typically manifested as a slowly expanding subcutaneous soft tissue mass in the extremities. This tumor's paraspinal localization is extremely rare, and radiologists have trouble recognizing it due to its non-specific features and infrequent manifestations [3]. Because the tumor has a peripheral ossification shell, doctors frequently confuse it for normal calcified growths [4]. The benign nature of the tumor gives the impression that it is harmless, but aggressive behaviors can arise from types that exhibit cellular abnormalities and higher mitotic activity, which is why prompt diagnosis and complete removal are essential [5]. The case report describes a rare ossifying fibromyxoid tumor in a middle-aged man's thoracic paraspinous region that was found by chance radiodiagnostic testing. Because of the tumor's unique position and calcified characteristics, a thorough analysis of imaging and histological data is necessary to make the correct diagnosis. When treating atypical paraspinal masses, this research emphasizes the significance of collaboration between radiologists, spine surgeons, and pathologists.

CASE PRESENTATION

2.1 Patient History and Presentation

A 45-year-old farmer from rural Bihar was seen by the orthopaedics department at Katihar Medical College after suffering from mid-back pain for three months. The patient had a dull, aching pain that increased in intensity over time and did not radiate past its source. The patient reported that he had no history of trauma or symptoms such as fever or weight loss, but he did experience stiffness in his thoracic spine that got worse in the morning. There were no indications of neurological deficiencies in the patient, such as weakness, loss of sensation, or problems with the bowels or bladder. This patient had no family history of tuberculosis or related illnesses, and they never smoked tobacco or drank alcohol.

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2.2 Physical Examination

A general physical examination showed that the patient was in good health and showed no symptoms of a systemic illness. A local examination of the thoracic spine revealed no palpable mass or obvious deformity, but mild tenderness over the T7–T9 vertebral levels. The results of the neurological examination were within normal ranges. Motor power and sensory examination of the lower limbs were unremarkable, and reflexes were intact. No indications of spinal cord compression were found.

2.3 Initial Laboratory Investigations

A baseline lab workup was carried out.

• CBC (complete blood count): Within normal ranges
• The slightly elevated erythrocyte sedimentation rate (ESR) is 22 mm/hr.
• Normal C-reactive protein (CRP)
• Normal levels of serum calcium, phosphate, and alkaline phosphatase
• Liver and renal function tests: within typical bounds
• Skin Test for Tuberculin: Negative
• Normal serum protein electrophoresis (to rule out plasmacytoma).

The differential was reduced to benign or low-grade neoplastic aetiologies due to the lack of infection or inflammatory markers.

2.4 Imaging Studies

• X-Ray Thoracic Spine (AP and Lateral Views): In the paraspinal area next to the T8 vertebral body, a distinct, oval, radiopaque mass with thick peripheral calcification was observed. There was no evidence of disc space narrowing or vertebral destruction.

• Thoracic Contrast-Enhanced Computed Tomography (CECT): found a calcified paraspinal mass measuring 4.2 x 3.5 cm on the right side of the T7–T9 vertebral level. With an internal soft tissue matrix and a thin, ossified rim, the lesion looked well-marginated. There was no indication of intraspinal extension or boneerosion.

• Magnetic Resonance Imaging (MRI) Spine: On T1-weighted images, the mass was isointense; on T2-weighted images, it was heterogeneously hyperintense, with calcification-related peripheral hypointensity. There was no evidence of cord oedema or spinal canal compromise.

The imaging features were suggestive of a benign calcified soft tissue tumor. The differential diagnosis included calcified schwannoma, myositis ossificans, and ossifying fibromyxoid tumor.

2.5 Biopsy and Histopathology

Because there was not enough sample, an ultrasound-guided core needle biopsy was inconclusive. Thus, under general anaesthesia, the patient had a posterolateral thoracotomy procedure to remove the mass completely. The mass was firm, encapsulated, and did not stick to the pleura or nearby ribs.

Gross Inspection: A 4 × 3.8 × 3.2 cm mass with a gritty cut surface and a thin fibrous capsule.

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Results of Microscopy: Sections revealed a well-defined lesion made up of tiny, round to oval cells grouped in cords and nests inside a fibromyxoid stroma. There was a lot of peripheral ossification. There was no pleomorphism or necrosis, and the mitotic activity was low (<1 per 10 HPF).

Immunohistochemistry:

- S100: Positive
- Vimentin: Positive
- Cytokeratin: Negative
- Desmin: Negative

These findings confirmed the diagnosis of ossifying fibromyxoid tumor (OFMT), benign variant.

2.6 Management and Follow-Up

Following a smooth recovery, the patient was discharged from the hospital on the fifth postoperative day. It was recommended that he undergo physiotherapy to strengthen his back. Adjuvant therapy was deemed unnecessary due to the full resection and benign histology. The patient was observed for three to six months following surgery. He was able to resume his usual activities when his back discomfort totally disappeared. Follow-up imaging revealed no recurrence.

DISCUSSION

Because of their wide differential diagnosis, which includes benign, infectious, and malignant causes, paraspinal masses with calcification pose a diagnostic challenge. For certain conditions, such as neurogenic tumors with dystrophic calcification, paraspinal abscesses, soft tissue sarcomas, myositis ossificans, or benign ossifying lesions like ossifying fibromyxoid tumors (OFMTs), the radiological finding of calcification within a soft tissue mass frequently causes concern [6]. First reported by Enzinger et al. in 1989 [3], osseous fibromyxoid tumor (OFMT) is a rare, slow-growing mesenchymal neoplasm of unknown histogenesis. Although it has been documented in a number of anatomical locations, such as the trunk, head, and neck, and infrequently, the paraspinal region, the tumor usually affects the extremities of middle-aged adults [7[]. Although genetic abnormalities involving PHF1 gene rearrangements have been linked in recent studies [8], the pathophysiology of OFMT is still not well understood.

The current instance highlights several important clinical and diagnostic aspects. There were no neurological abnormalities, although the patient did have vague, nonspecific regional back pain. Routine radiography revealed a calcified mass, necessitating further imaging. CT and MRI were very useful in determining the extent, calcific characteristics, and exclusion of intraspinal extension. Imaging in OFMT typically shows a well-marginated soft tissue mass with a peripheral shell of ossification. This mass may mimic other benign disorders like myositis ossificans

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or calcified neurogenic tumors [9]. In our case, the diagnosis was narrowed by histopathologic confirmation and the absence of trauma, infection, or neurological involvement.

Histologically, OFMT is defined by homogeneous round to oval cells with variable levels of ossification embedded in a fibromyxoid matrix. With S100 and vimentin positivity in the majority of cases, immunohistochemical staining is encouraging [10]. OFMTs can be divided into typical, atypical, and malignant subtypes based on cellularity and mitotic activity; the malignant subtype exhibits increased mitoses, nuclear atypia, and aggressive clinical behavior [11]. Thankfully, our patient's lesion showed characteristics that were in line with the benign variant, including a high mitotic index and no atypia. A calcified paraspinal mass requires a thorough differential diagnosis. Although they typically show association with nerve roots and may cause foraminal widening, Schwannomas and neurofibromas can also show calcification [12]. Another mimicker that usually follows trauma and displays zonal ossification patterns is Myositis ossificans [13].

Infections like tuberculous abscesses can calcify in c hronic phases, especially in endemic locales, even th ough they are usually associated with systemic symp toms and increased inflammatory markers [14].
For localized OFMT, surgical excision remains the m ain therapy option.
While typical lesions have a low recurrence incidenc e following complete excision, atypical and malignan t variations of lesions should be regularly watched d ue to the higher risks of local recurrence and distant metastasis [15]. In our instance, the patient resumed full activity after complete excision was accomplished without recurrence at six months. This case contributes to the small body of research on paraspinal OFMT and highlights how crucial it is to take uncommon entities into account when making a differential diagnosis of calcified paraspinal masses. Proper surgical planning, favorable patient outcomes, and accurate diagnosis are made possible by timely radiological evaluation and histopathology.

CONCLUSION

The significance of determining uncommon causes of paraspinal calcified masses, such as ossifying fibromyxoid tumors, which infrequently arise in the thoracic paraspinal region, is demonstrated by this case report. In addition to the patient's localized back pain, which necessitated multimodal imaging and histopathological evaluation, a well-defined calcified soft tissue lesion identified by radiodiagnostic techniques presented a diagnostic challenge. Other severe conditions, such as neurogenic tumors and tuberculous abscesses, were ruled out due to the lesion's distinct borders and absence of systemic or neurological symptoms. Determining the composition of the lesion and its spatial relationship with surrounding anatomy required the use of CT and MRI scans. The benign OFMT variant was discovered through immunohistochemical testing after the mass was surgically removed.

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Since there was no indication of a recurrence during the brief follow-up period, the patient's condition was completely cured thanks to an early diagnosis and complete surgical removal of the tumor. For calcified paraspinal masses found in unusual places, such as the thoracic region, radiologists and clinicians must consider OFMT as a potential diagnosis. An interdisciplinary approach that incorporates radiodiagnosis, surgical intervention, and histopathological evaluation is necessary for the effective treatment of rare tumors. When working in eastern India, medical personnel must maintain a thorough differential diagnosis to avoid misdiagnosing and delaying treatment for TB-related spinal pathologies. Early detection of unusual presentations improves clinical outcomes and the quality of life for patients.

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