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Case Report

Vertebral Telangiectatic Osteosarcoma with Retroperitoneal Extension: A Rare Tumor in an Unusual Location in an Adolescent Girl

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Abstract

Telangiectatic osteosarcoma is a rare variant of osteosarcoma, most commonly diagnosed in long bones. Its occurrence in the lumbar spine with retroperitoneal extension is extremely rare and poses a significant diagnostic challenge. We present the case of a 14-year-old girl with a left lumbar mass, whose imaging revealed a large lesion centered on L3. Histological confirmation established the diagnosis of TOS. This case highlights the importance of a thorough clinical and diagnostic approach for these atypical presentations to optimize therapeutic management.

Keywords: *Telangiectatic Osteosarcoma; Spinal Tumor; L3 Vertebral Body*

Introduction

Osteosarcoma is the most common malignant bone tumor in children and adolescents, with an incidence peaking during puberty [1]. The telangiectatic subtype (TOS) is rare, making up 2 - 12% of osteosarcomas [2] and is characterized histologically by blood-filled cystic spaces and few osteoid deposits, complicating diagnosis [3].

Radiologically, TOS often mimics an aneurysmal bone cyst, making differentiation challenging. While TOS usually affects long bones, spinal involvement-especially in the lumbar region-is exceptionally rare, accounting for less than 5% of cases [3]. A telangiectatic osteosarcoma centered on the L3 vertebra with retroperitoneal extension, as seen in a 14-year-old patient, represents a very rare and complex clinical scenario with diagnostic and therapeutic difficulties due to its unusual location and presentation.

Case Report

A 14-year-old girl with no significant medical history presented with a progressively enlarging left lumbar mass. An abdominopelvic CT scan (Figure 1) revealed a large left retroperitoneal mass centered on the L3 vertebral body, extending to the contralateral side. The mass displaced the abdominal organs anteriorly and exerted a significant mass effect on adjacent vascular structures. The patient underwent a surgical procedure aimed at reducing the tumor size.

The histopathological examination of the surgical specimen revealed blood-filled cystic cavities separated by septa thickened by a dense cellular proliferation composed of moderately atypical cells exhibiting numerous mitotic figures, along with an osteoid matrix, consistent with telangiectatic osteosarcoma (TOS).

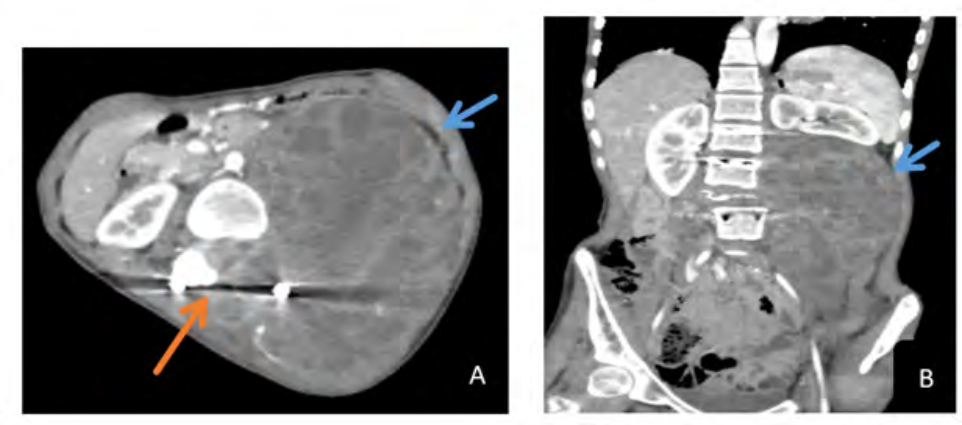

Figure 1: *Abdominopelvic CT scan in axial (A) and coronal (B) sections revealed a large tumoral mass (blue arrow) centered on the L3 vertebral body, which is completely lysed, with extension into the spinal cana (orange arrow), retroperitoneum, and paravertebral soft tissues, displacing adjacent organs.*

The histopathological examination of the surgical specimen revealed blood-filled cystic cavities separated by septa thickened by a dense cellular proliferation composed of moderately atypical cells exhibiting numerous mitotic figures, along with an osteoid matrix, consistent with telangiectatic osteosarcoma (TOS).

Discussion

Telangiectatic osteosarcoma (TOS) is a rare and aggressive subtype of osteosarcoma, accounting for approximately 2% to 12% of cases depending on the series. It shows a marked predilection for the long bones of the limbs, particularly the distal femur, proximal tibia, and proximal humerus. Spinal involvement is exceptionally rare, representing less than 5% of all osteosarcomas, and lumbar localization is even less frequent. Studies report that spinal TOS accounts for only about 0.08% of all documented primary osteosarcomas [4].

This rarity makes diagnosis particularly challenging, especially as TOS can radiologically mimic an aneurysmal bone cyst due to its expansile nature, the presence of multiple fluid-fluid levels, and internal septations seen on MRI. These imaging features may lead to diagnostic errors, especially in adolescents, where benign lesions are more common [3].

Histologically, TOS is characterized by blood-filled cystic cavities separated by septa containing atypical malignant cells producing fine, lace-like osteoid. This unique architecture can be confused with an aneurysmal bone cyst or even a giant cell tumor, particularly when the biopsy is superficial or poorly targeted [2].

Axial localization, particularly involving the L3 vertebral body as in our case, poses even greater management challenges when associated with retroperitoneal extension. Involvement of adjacent soft tissues complicates surgical resection and increases the risk of neurological or vascular complications. In the rare reported cases of spinal TOS, a multidisciplinary approach is essential, including neoadjuvant chemotherapy, en bloc resection (partial or total spondylectomy), and sometimes adjuvant radiotherapy [5].

The prognosis of vertebral osteosarcomas remains poor compared to those of the extremities. Reported 5-year survival rates are below 20%, with a median overall survival of approximately 15 to 18 months, depending on local extension and response to chemotherapy [6]. Although some studies suggest that TOS is sensitive to chemotherapy, data remain limited in spinal cases, where surgical margins are often difficult to achieve.

Our case, involving a TOS centered on the L3 vertebral body with retroperitoneal extension in a 14-year-old girl, highlights the importance of considering this entity even in atypical locations. The misleading clinical presentation (nonspecific low back pain, deep-seated mass), radiological pitfalls, and limitations of biopsy demand a high index of suspicion and early referral to a specialized bone tumor center.

Conclusion

Telangiectatic osteosarcoma centered on the L3 vertebral body with retroperitoneal extension in children is an extremely rare and challenging entity to diagnose. Its nonspecific clinical presentation, combined with radiological images that may mimic benign lesions, requires particular vigilance. Diagnosis relies on a close correlation between imaging, histopathology, and clinical context. Multidisciplinary management, including chemotherapy and surgery, is essential to optimize prognosis. This case highlights the importance of considering this pathology even in atypical locations to avoid harmful diagnostic delays.

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