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CASE REPORT

Unveiling rhabdomyosarcoma: A rare cause of ischialgia

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Rhabdomyosarcoma (RMS) represents a rare subset of mesodermal malignancies characterized by skeletal muscle differentiation, exhibiting a notably low incidence among adults and demonstrating inferior prognosis compared to pediatric counterparts. The 5- and 10-year overall survival rates were determined to be 30% and 18%, respectively, with a median age of onset at 46.5 years and median overall survival duration of 2.3 years. Current challenges in RMS research encompass optimizing local control, managing systemic disease, refining risk stratification methods, and elucidating disease progression patterns. While aggressive therapeutic interventions remain imperative, novel and individualized treatment modalities are imperative to enhance long-term outcomes. This research reported an elderly female patient presenting persistent lower back pain, persisting over several months, despite seeking medical consultation from multiple sources. Subsequent diagnostic investigations confirmed the diagnosis of rhabdomyosarcoma, denoting the relatively rare etiology of said initial symptoms. Hence, it is imperative to reconsider many differential diagnoses in the case of ischialgia.

Keywords: rhabdomyosarcoma, lower back pain, ischialgia, malignancy

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Introduction

Rhabdomyosarcoma, a primitive mesenchymal malignant neoplasm, displays differentiation towards striated muscle tissue. It presents across diverse anatomical sites, with the extremities predominating in adults, followed by the trunk, genitourinary tract, head, and neck [1].

Limited clinical and biological information is available regarding adult-onset rhabdomyosarcoma (RMS), and dedicated clinical trials targeting this population are lacking. While therapeutic approaches outlined for pediatric RMS in studies such as the Intergroup Rhabdomyosarcoma Study Group-V (IRS-V) and European Pediatric Soft Tissue Sarcoma Study Group (EpSSG) have significantly improved prognosis, achieving five-year overall survival rates of approximately 70% for nonmetastatic cases, similar advancements have not been observed in adults. Retrospective analyses consistently report inferior outcomes in adult patients, with five-year overall survival rates ranging from 21% to 53%. Factors contributing to these poorer outcomes in adults include a heightened incidence of adverse prognostic factors such as unfavorable primary sites and increased rates of regional and distant metastasis [2].

Due to the infrequency of rhabdomyosarcoma (RMS) in adults, much of the available data stem from retrospective case series, and treatment approaches are often extrapolated from pediatric RMS. Despite the application of multimodal therapy, research consistently indicates unfavorable outcomes in adult RMS, with age exceeding 10 years being recognized as a poor prognostic indicator. Adverse prognostic characteristics in adults, such as unfavorable primary site and histologic diagnosis, contribute to variations in outcomes between pediatric and adult populations [3]. Here, we present the case of a geriatric female patient exhibiting persistent lower back pain, pelvic mass, substantial weight loss, and flaccid paraparesis.

Case

A 66-year-old female presented with a chief complaint of persistent left hip pain over the past year—initial treatment with painkiller injections provided only temporary relief, with subsequent exacerbation of pain disrupting her sleep. Despite negative findings on vertebral X-rays, her symptoms progressed, leading to swelling and difficulty walking. Subsequent MRI revealed characteristics consistent with malignancy. Upon admission to our clinic, she reported a 10 kg weight loss and painless masses on her left hip. Biopsy confirmed malignancy, prompting initiation of chemotherapy, which has resulted in significant symptom relief. The patient has no history of hypertension, diabetes, cardiac abnormalities, stroke, smoking, alcohol consumption, or prior medication use.

Routine blood examination revealed a low hemoglobin level of 9.6 g/dL, a low leukocyte counts of $4.3x10^3/\mu L$ with an elevated neutrophil count of 81.6%, and a low platelet count of $99x10^3/\mu L$. Ultrasonography demonstrated a superficial mass on the left pericoxae with hypervascularity and a malignant morphology measuring 9 cm x 10 cm x 15 cm (Figure 1). Spine and lumbar MRI revealed a soft tissue mass infiltrating the left hip joint, left coxae bone, and left psoas muscle with poorly defined margins indicative of malignancy (Figure 2). Pathological examination demonstrated diffuse arrangement of tumors within fatty tissue. Tumor cells exhibited monotonous morphology, medium to large in size, with scant cytoplasm, round to oval nuclei, hyperchromatic appearance, and frequent mitotic activity.

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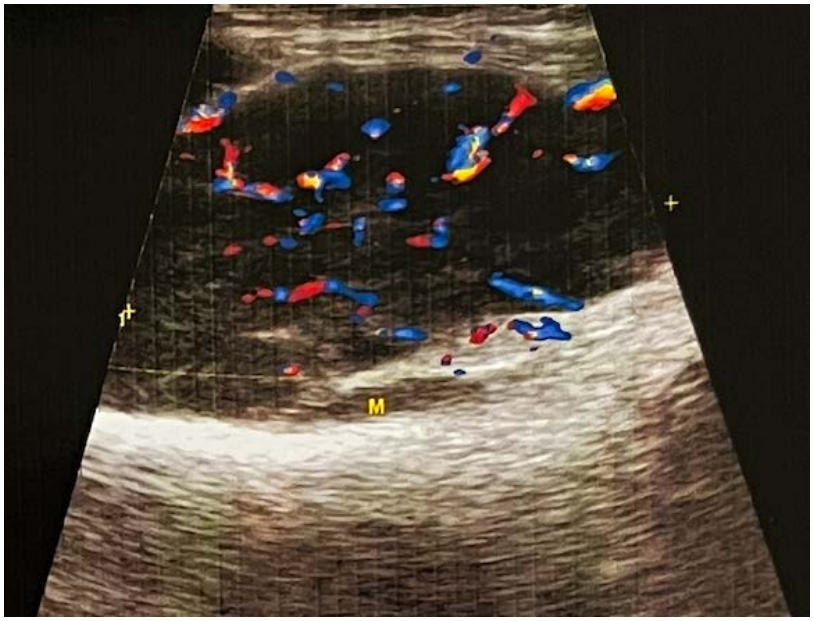

Fig. 1. The left pericoxae mass shows features of rhabdomyosarcoma

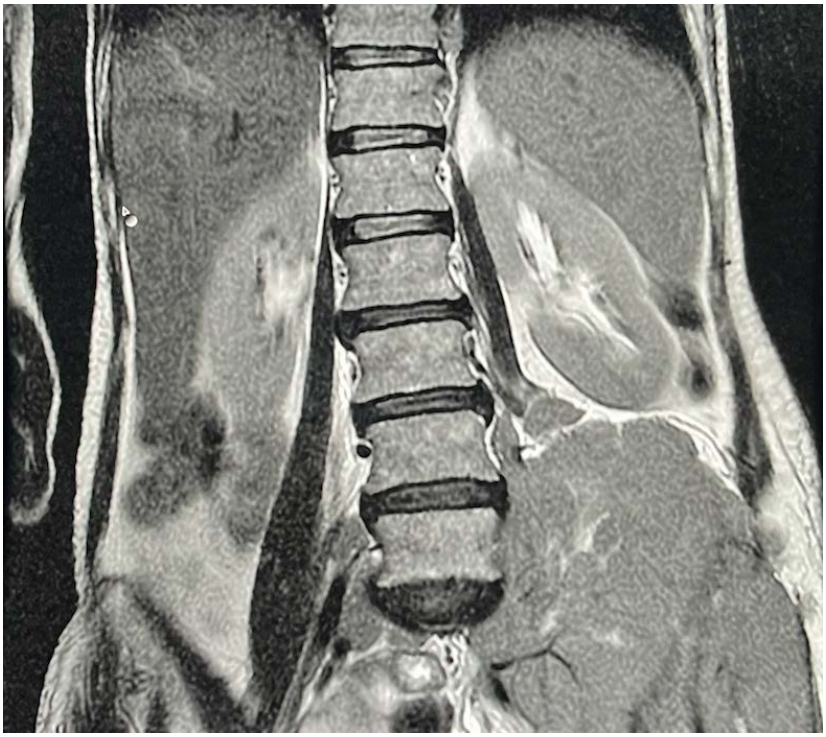

Fig. 2. Soft tissue mass infiltrating left hip joint, coxae bone, and psoas muscle with unclear margins, suggesting malignancy

Discussions

We report an intriguing case concerning Rhabdomyosarcoma in a geriatric patient. Upon thorough examination, we ascertain that the ischialgia experienced by the patient is associated with Rhabdomyosarcoma occurring in the pelvis. Rhabdomyosarcoma is a malignant primitive mesenchymal tumor with skeletal muscle differentiation, and is the most common sarcoma in children, where >50% of soft tissue sarcomas occur in children compared to <5% in adults [4].

The World Health Organization classifies RMS into 4 subtypes: embryonal, alveolar, pleomorphic, and spindle/sclerosing. In pediatric patients, embryonal subtype is common, whereas adults with an average age of 51 years generally experience pleomorphic subtype. Alveolar subtype of RMS can occur across all age groups [5]. Despite its potential occurrence across all age groups, rhabdomyosarcoma is notably infrequent within the geriatric demographic [6]. Rhabdomyosarcoma can manifest in various mesenchymal tissues throughout the body, albeit with a predilection for the head and neck, genitourinary organs, retroperitoneum, and extremities [7].

Locations affected by rhabdomyosarcoma typically present symptoms such as swelling, pain, and palpable masses. Similarly, in this case, the patient complains of progressive pelvic pain leading to difficulty in walking, accompanied

by a palpable mass in the left pelvis. Ancillary investigations are crucial for determining the diagnosis of the patient's condition, albeit challenging due to the rarity of the case and the potential for misclassification. Diagnosis of rhabdomyosarcoma necessitates direct analysis of tumor tissue through either incisional or excisional biopsy sampling or fine-needle biopsy, followed by histological and molecular pathological analysis [8].

Over the past decade, significant advancements in patient outcomes have been observed due to multimodal therapeutic approaches. The primary chemotherapy regimens utilized in rhabdomyosarcoma treatment comprise the VAC regimen, incorporating vincristine, actinomycin D, and cyclophosphamide, and the IVA regimen, including ifosfamide, vincristine, and actinomycin D. The management of rhabdomyosarcoma patients is continuously evolving as new evidence-based findings emerge from clinical trials. The overall survival rate for metastatic rhabdomyosarcoma patients remains low, typically not exceeding 25% [9]. Further reports denoting data regarding molecular findings and the potential clinical importance of genetic testing would be recommended in the case of rhabdomyosarcoma.

Conclusion

We present a case of pelvic rhabdomyosarcoma in a geriatric individual. Rhabdomyosarcoma (RMS) constitutes a rare and diverse category of mesodermal malignancies characterized by skeletal muscle differentiation. Given the unfavorable prognosis associated with this condition, it is imperative to enhance research, explore innovative trial methodologies to advance therapeutic developments effectively.

Authors' contribution

RTP (Data Curation, Methodology, Validation, Supervision)
KOW (Conceptualization, Writing – original draft, Resources, Funding acquisition)
NPU (Writing – review & editing, Methodology, Funding acquisition, Validation)
PJDB (Writing – original draft, Funding acquisition, Investigation, Resources)

Conflict of interest

None to declare.

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