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Delayed Diagnosis of Scrotal Cancer with Report of Primitive Cells of Difficult Characterization: A Case Report

Diagnóstico tardío de cáncer escrotal con reporte de células primitivas de difícil caracterización: Informe de un caso

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ABSTRACT

This case report presents a delayed diagnosis of scrotal cancer, a rare but aggressive neoplasm with complex histological features due to the presence of primitive cells of difficult characterization. The patient presented with progressive scrotal pain and swelling, leading to the identification of a scrotal mass through imaging studies and histopathological confirmation. Management included complete excision of the mass and lymphadenectomy, followed by adjuvant chemotherapy. Although the patient initially faced a guarded prognosis due to the delay in seeking medical attention, clinical improvement was observed during follow-up. This case highlights the importance of testicular and scrotal self-examination as a key tool for the early

detection of abnormalities, as well as the urgency of seeking timely medical care when suspicious symptoms arise.

Keywords: scrotal cancer, delayed diagnosis, primitive cells, testicular self-examination, case report

RESUMEN

Este caso clínico presenta un diagnóstico tardío de cáncer escrotal, una neoplasia poco frecuente pero agresiva con características histológicas complejas debido a la presencia de células primitivas de difícil caracterización. El paciente presentó dolor e inflamación escrotal progresivos, lo que llevó a la identificación de una masa escrotal mediante estudios de imagen y confirmación histopatológica. El tratamiento incluyó la escisión completa de la masa y linfadenectomía, seguida de quimioterapia adyuvante. Aunque inicialmente el paciente tuvo un pronóstico reservado debido a la demora en la consulta médica, se observó una mejoría clínica durante el seguimiento. Este caso resalta la importancia de la autoexploración testicular y escrotal como herramienta clave para la detección temprana de anomalías, así como la urgencia de buscar atención médica oportuna ante la aparición de síntomas sospechosos.

Palabras clave: cáncer escrotal, diagnóstico tardío, células primitivas, autoexploración testicular, caso clínico

INTRODUCTION

Scrotal cancer represents a low-prevalence clinical entity with aggressive characteristics, making it a challenge both for early detection and appropriate management (12). Historically, its occurrence has been associated with specific occupational factors, such as exposure to hydrocarbons; however, in many cases, including the present one, no clear risk factors are identified (11). This type of cancer has a high mortality rate when diagnosed at advanced stages, which often occurs due to the absence of early clinical signs and the tendency of patients to underestimate changes in the scrotal region (15).

The case described is particularly relevant due to the presence of primitive cells with difficult histopathological characterization, complicating both the initial diagnosis and precise tumor classification (8). This underscores the importance of advanced diagnostic tools and the involvement of oncology specialists. Despite progress in imaging diagnostics and immunohistochemical techniques, there remains a gap in the medical literature regarding the optimal management of such pathologies.

This report was made to the purpose of contributing to medical knowledge and raising awareness about a rare but possibly life-threatening disease by reporting clinical findings, therapeutic management, and outcomes.

Furthermore, this case highlights the diagnostic challenges in dealing with tumors with undifferentiated cellular morphology. Even in experienced hands, the diagnosis under such circumstances may demand large panels of immunohistochemical markers and molecular studies for achieving a final diagnosis. There is a paucity of such conditions in the literature, thus there are no standardized treatment guidelines and prognosis (2,5).

The heterogeneity in histologic appearance also raises important questions concerning the biologic behavior of primitive scrotal tumors. It remains to be determined whether they behave along the natural history of the other scrotal malignancies or constitute an unusual clinical and histo-pathological group. Elucidating this may bear important treatment and follow-up strategies (7).

Presentation of this rare atypical case reinforces the rationale for cooperative multicenter registries and prospective studies to clarify the natural history of rare genitourinary tumors. It is hoped that these will ultimately result in better classification systems and personalized treatment for individuals presenting with similarly complex phenotypes.

CLINICAL CASE

Presentation

A young man in his third decade of life presented to the medical consultation with a history of several months of progressive swelling in the scrotal region, accompanied by intermittent pain that had intensified in the weeks prior to his visit. He initially noticed, around mid-June 2024, a

painless hardening in the right hemiscrotum, which he disregarded due to the absence of other symptoms. However, by the end of that month, the swelling had increased, and the pain began to interfere with his daily activities, prompting him to seek medical attention.

His personal medical history revealed no prior illnesses or surgeries. He reported no family history of cancer, nor any occupational exposure to carcinogenic agents. The patient denied sexually transmitted infections or toxic habits such as smoking or alcohol abuse. Notably, he cited financial and logistical difficulties in accessing healthcare, which contributed to the delay in his consultation. At the time of presentation, the clinical context suggested a neoplasm with potentially aggressive behavior, given the rapid evolution of symptoms and functional impact.

The physical examination revealed a firm, non-reducible mass in the right hemiscrotum, with ill-defined borders and local signs of inflammation, including mild erythema and increased temperature. The lesion was tender to palpation, and there was no fluctuation or evidence of infection. No inguinal lymphadenopathy was detected, and the contralateral testicle and systemic examination were unremarkable. These findings led to an urgent referral for imaging and biopsy.

A testicular Doppler ultrasound performed on June 26 confirmed a vascularized intra-scrotal mass with cystic components. Four days later, a pelvic MRI revealed a neoplasm affecting the right scrotum with probable infiltration of adjacent bony structures. On July 4, the patient underwent an excisional biopsy, and histopathological analysis reported a poorly differentiated tumor composed of small to intermediate-sized cells, with lymphovascular invasion and necrosis—suggestive of a high-grade malignant neoplasm.

Subsequent staging with CT scans on August 24 identified tumor extension to the penis and scrotum, as well as metastases to bones and inguinal lymph nodes. Based on these findings, adjuvant chemotherapy with the VAC protocol—Vincristine, Actinomycin D, and Cyclophosphamide—was initiated on September 19 as first-line treatment. The first cycle was well tolerated, and the patient was placed under scheduled oncological follow-up.

Diagnostic Evaluation

The diagnostic process began with a Doppler ultrasound, which revealed a highly vascularized solid mass in the scrotum. Subsequently, pelvic MRI identified features consistent with a malignant tumor with aggressive behavior and secondary infiltrative lesions. The biopsy confirmed the poorly differentiated nature of the tumor, with primitive histological characteristics. Common tumor markers such as AFP, CK, and CD30 were negative, complicating precise tumor classification.

Therapeutic Intervention

Initial management included radical surgery for complete resection of the scrotal mass and bilateral inguinal lymphadenectomy. Subsequently, the patient underwent adjuvant chemotherapy following the VAC protocol (Vincristine, Actinomycin D, and Cyclophosphamide). This regimen

was administered over several cycles, with dose adjustments based on the patient's tolerance. No severe adverse effects were documented during treatment, and the patient was closely monitored.

Follow-Up and Outcomes

At six months of follow-up, imaging studies showed no evidence of local recurrence or distant metastases. The patient reported significant improvement in pain and functionality. Treatment adherence was complete and confirmed through periodic consultations and regular laboratory testing. The patient expressed satisfaction with the results and committed to his long-term follow-up plan.

DISCUSSION

Epidemiology and Diagnostic Challenges

Scrotal cancer is a rare clinical entity, with a significantly lower incidence compared to other genitourinary neoplasms (10). Its presentation is often insidious, and early symptoms, such as palpable masses or mild swelling, are frequently ignored or underestimated by patients (4). This delay in seeking medical care is particularly dangerous in aggressive tumors, which can progress rapidly and metastasize. In the present case, the patient waited several weeks after symptom onset before consulting, highlighting the need for greater public awareness regarding scrotal changes and the importance of self-examination.

The diagnostic process was further complicated by the presence of primitive cells with high mitotic activity and poorly differentiated histological patterns (6). These features impeded the precise classification of the tumor and complicated therapeutic planning. The negativity of common tumor markers such as AFP, CK, and CD30 further obscured diagnosis. In this context, advanced diagnostic tools, including immunohistochemistry and magnetic resonance imaging, were crucial for clinical decision-making (6).

Given the histopathological overlap with other undifferentiated and high-grade pediatric tumors, the use of the VAC chemotherapy protocol, comprising Vincristine, Actinomycin D, and Cyclophosphamide, was adopted. This regimen is well-established in the treatment of pediatric sarcomas and embryonal tumors, such as rhabdomyosarcoma, and is supported by long-term data on its efficacy and tolerability in aggressive neoplasms with primitive differentiation. Although it is not standard for adult scrotal tumors, its use was justified by the absence of a definitive histological diagnosis, the tumor's biological behavior, and the therapeutic success documented in similar histological contexts. In this case, although experience with scrotal neoplasms is limited, the VAC protocol (Vincristine, Actinomycin D, Cyclophosphamide) was selected based on its favorable short-term tolerability. In adolescents with rhabdomyosarcoma receiving similar cumulative VAC doses, studies have shown significantly fewer hematologic adverse effects, supporting its use even in rare, adult-onset presentations (16).

Therapeutic Approach and Outcomes

Due to the tumor's aggressive behavior and uncertain classification, a multimodal treatment strategy was employed. The patient underwent radical surgery for complete tumor resection along with bilateral inguinal lymphadenectomy. This was followed by adjuvant chemotherapy using a regimen based on cisplatin, etoposide, and bleomycin, agents commonly employed in the treatment of primitive germ cell tumors (3). Although specific data on scrotal neoplasms are limited, the approach was justified by the clinical scenario and comparable experiences reported in the literature (3).

The patient tolerated the VAC protocol well, with no severe adverse effects, and showed no signs of relapse during the initial six-month follow-up. This outcome reinforces the potential effectiveness of a multimodal therapeutic approach in similar rare cases. Nonetheless, the late-stage diagnosis necessitated a more complex and aggressive treatment plan, underscoring the benefits of early detection in avoiding such burdensome interventions (13).

Case Relevance and Future Implications

This case represents a valuable addition to the limited literature on scrotal neoplasms with primitive histological features. Due to the overlap with other undifferentiated tumors and the difficulties in classification, it emphasizes the urgent need to establish centralized databases and cooperative multicenter studies. Such efforts could lead to the development of consensus diagnostic criteria and enable comparative research to refine therapeutic strategies. The inclusion of molecular profiling may also provide new opportunities for personalized therapies, particularly by identifying actionable mutations or predictive biomarkers for specific treatment responses (1,13).

Furthermore, this report supports the integration of interdisciplinary care involving specialists in oncology, radiology, and pathology, combined with comprehensive patient support (6). Multidisciplinary management facilitates more accurate diagnosis and enhances treatment planning and long-term follow-up, ultimately improving outcomes.

The most critical lesson from this case is that timely diagnosis and treatment are essential to modify the clinical course of rare, aggressive malignancies such as scrotal cancer. It also reinforces the importance of implementing community-based preventive strategies, especially promoting scrotal and testicular self-examination and encouraging early medical consultation. Healthcare systems must prioritize public education campaigns and ensure equitable access to specialized services, particularly for underserved populations, to reduce disparities in the diagnosis and management of these rare urogenital tumors.

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