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Embryonal Rhabdomyosarcoma of the Bladder in Adults: A Case Report and Comprehensive Literature Review

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Abstract

This article discusses a rare case of embryonal rhabdomyosarcoma (RMS) in a 32-year-old adult with a history of chronic smoking. The patient presented symptoms of dysuria and frequent urination, leading to the discovery of a low-grade RMS in the bladder. After surgery, the patient underwent adjuvant chemotherapy following a specific treatment plan. The article highlights the rarity of bladder RMS in adults, its diagnosis, and the recommended adjuvant chemotherapy as a treatment approach for localized cases.

Subject Areas

Oncology

Keywords

Bladder Cancer, Rhabdomyosarcoma, Adult, Case Report, Literature Review, Embryonal Subtype

1. Introduction

Rhabdomyosarcomas (RMS) are mesenchymal tumors originating from striated muscle fibers. They are the most common soft tissue sarcomas in children, accounting for 5% of childhood cancers [1]. RMS in adults are exceedingly rare, with only a few sporadic cases reported in the literature [2].

Here, we present a case of Embryonal RMS of the bladder in an adult. Through this case study and a literature review, we aim to discuss the epidemio-

logical, diagnostic, and therapeutic aspects of these rare tumors.

2. Observation

Patient aged 32 years old, presented with dysuria associated with frequent urination without hematuria that had been ongoing for 9 months. The patient had a history of chronic smoking, which he quit more than 6 months ago. Otherwise, he had no notable medical history and no occupational exposure to aromatic amines or pelvic irradiation. He was in good general health, with no hypogastric mass or inguinal lymphadenopathy observed. Digital rectal examination was unremarkable. Urine cytobacteriological examination was sterile, hemoglobin levels were at 12.3 g/dl, and serum creatinine was 7.5 mg/L. Due to weight loss and a general decline in health, the patient sought consultation with urologists at CHU HASSAN II de FES for further management.

The patient underwent total cystoprostatectomy with stoma creation. Histopathological examination revealed a fusocellular proliferation consistent with an embryonal botryoid-type rhabdomyosarcoma measuring 2.5 cm in its largest axis, infiltrating the muscle. There were no vascular emboli or perineural involvements noted. The ureteral and urethral margins were clear, and there was no invasion of the seminal vesicles or prostate. The tumor was classified as pT2Nx.

Consequently, the diagnosis of low-grade embryonal RMS of the bladder was established. As part of the staging, a thoraco-abdomino-pelvic computed tomography did not reveal any distant secondary locations. We convened a multidisciplinary consultation meeting (MCM), which recommended adjuvant chemotherapy. The patient was put on a VA Vincristine protocol at 1.5 mg/m^2, max 2 mg weekly (S1 to S8 with a 4-week pause), then resumed vincristine at S12 S20 S24 S32 S36 S44+ ACTINO 0.045 mg, max 2.5 mg every 3 weeks = 15 cycles = total of 45 weeks. The patient is still under clinical and radiological follow-up two years after the completion of adjuvant chemotherapy.

3. Discussion

Bladder sarcomas are rare, accounting for less than 2% of all urogenital malignant tumors. Among sarcomas, leiomyosarcomas (50%) and rhabdomyosarcomas (20%) dominate, while other histological types such as osteosarcomas or neurosarcomas are rarer [3]. In our patient, the histopathological examination coupled with immunohistochemistry led to the diagnosis of low-grade embryonal rhabdomyosarcoma of the bladder.

Although rare, rhabdomyosarcomas, especially the embryonal subtype, are mostly described in children and adolescents [4] [5]. Indeed, rhabdomyosarcomas represent 5% of childhood cancers, with the bladder being the most frequent location. These tumors are more commonly reported in males, with a male-to-female ratio of 2 [6].

There are no specific clinical signs for bladder rhabdomyosarcoma. In child-

ren, early clinical signs seem to include urinary retention, while in adults; hematuria is often the initial symptom [7]. Later manifestations may include dysuria, constipation, or pelvic pain, as observed in our patient.

Similar to our case, bladder rhabdomyosarcomas mostly localize to the vesical floor and trigone, unlike leiomyosarcomas, which tend to develop at the dome [8].

Due to the limited number of reported adult cases of rhabdomyosarcoma in the literature, there is no consensus on its management [9]. Therapeutic options include total or partial cystectomy, transurethral resection of the bladder, chemotherapy, and radiotherapy. In our patient, the localized stage of the RMS led us to opt for adjuvant chemotherapy following total cystoprostatectomy.

Adjuvant radiotherapy after surgery has shown excellent outcomes in cases of embryonal rhabdomyosarcoma of the bladder in children [5]. Partial cystectomy may be considered in young individuals desiring fertility preservation, particularly when the tumor is small (less than 3 cm) and located at the dome, although ensuring clear surgical margins is crucial [8]. Regardless of the tumor stage at diagnosis and the treatment modality, rhabdomyosarcomas have a poor prognosis, with a survival ranging from 3 to 19 months after treatment initiation [10].

4. Conclusions

In summary, this case study highlights the rarity of embryonal rhabdomyosarcoma (RMS) in the adult bladder. RMS in the bladder is predominantly observed in children, making its occurrence in adults extremely uncommon. Treatment approaches for adult bladder RMS lack standardization due to limited reported cases. In this instance, adjuvant chemotherapy followed surgery due to localized tumor characteristics. The prognosis for RMS remains challenging, with reported survival rates ranging from a few to several months post-treatment initiation.

This study underscores the need for collaborative research to establish more effective therapeutic strategies and improve outcomes for this rare malignancy in adults.

Conflicts of Interest

The authors declare no conflicts of interest.

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