

Galaxy Publication

Primary Squamous Cell Carcinoma of the Urinary Bladder: A Case Report and Comprehensive Literature Review

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Received: 22 August 2023; Revised: 20 October 2023; Accepted: 23 October 2023

ABSTRACT

Bladder cancer is a common malignancy of the urinary system, with transitional cell carcinoma (TCC) being the most common, accounting for the majority of cases (90-95%). This type of cancer typically affects people in their 60s and 70s, and men are affected significantly more often than women. Other types of bladder cancers, including epithelial and mesenchymal tumors, make up the remaining 5-10%. Squamous cell carcinoma (SCC) of the bladder is rare, contributing to only 1-3% of all bladder cancers. When only small amounts of squamous differentiation are present, the tumor is not categorized as SCC. SCC is often diagnosed at an advanced stage, leading to a poorer prognosis for patients. The main factor associated with the development of SCC is chronic irritation, often caused by conditions such as recurrent urinary infections, bladder stones, or schistosomiasis. In this report, we present a 70-year-old male patient who exhibited symptoms of blood in the urine, discomfort, and decreased urination frequency. A biopsy performed on the thickened bladder tissue confirmed the presence of well-differentiated SCC.

Keywords: Bladder cancer, Malignant urinary neoplasm, Squamous cell carcinoma, Urinary tract

How to Cite This Article: Iqbal B, Kumar H, Vishwanathan V, Zaheer M, Gore Ch. Primary Squamous Cell Carcinoma of the Urinary Bladder: A Case Report and Comprehensive Literature Review. Asian J Curr Res Clin Cancer. 2023;3(2):15-8. https://doi.org/10.51847/FcXT9SREu1

Introduction

Urinary bladder malignancies are commonly encountered in clinical settings, especially in older individuals, with men being affected at a much higher rate than women, typically three to four times more. Urothelial carcinoma accounts for the majority of bladder cancer cases, making up about 90-95% of all instances, while the remaining 5-10% are attributed to other types of epithelial and mesenchymal tumors [1-5]. Squamous cell carcinoma (SCC) is considered a rare subtype, contributing to only 1-3% of bladder malignancies. Interestingly, the occurrence of bladder cancer varies considerably across different countries, influenced by a combination of social, environmental, and lifestyle factors that act as carcinogens. Occupational exposure to chemicals, dyes, rubber, and materials used in industries such as textiles and leather, as well as prolonged bladder irritation due to conditions like infections, calculi, and schistosomiasis, have all been identified as significant risk factors. Typically, bladder tumors are diagnosed as urothelial or transitional cell carcinoma (TCC), but in some cases, areas of differentiation into other malignancies, such as SCC or adenocarcinoma, may be present. However, a diagnosis of SCC or adenocarcinoma is only made when these tumors exhibit a distinct histopathological pattern, distinguishing them from the more common urothelial carcinoma [6-8].

In this report, we present a 70-year-old male patient who exhibited symptoms of blood in the urine, discomfort, and reduced urination frequency.

Case report

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A 70-year-old male patient sought consultation at the Urology department, presenting with painless hematuria that had persisted for 15 days. The patient reported a history of frequent urinary tract infections and a recent reduction in urine frequency. He was a long-term smoker and had a history of hypertension, for which he was receiving medication. No significant family or occupational medical history was provided. Routine hematological tests were normal, but the urine analysis revealed the presence of red blood cells.

A CT scan of the pelvis, conducted without contrast, showed an abnormal thickening of the bladder's anterior wall, measuring 5.1x2.6 cm, which was considered suspicious for bladder cancer (Figure 1). The patient also had a history of significant vesicle stones or possibly multiple stones merging. Furthermore, there was severe hydronephrosis and hydroureter on the right side, attributed to a right ureteric stone. Following these findings, a transurethral biopsy was conducted at the site where the bladder wall thickening was observed.



Figure 1. Non-contrast CT scan of the pelvis showing eccentric thickening of the anterior wall of the bladder.

The biopsy specimen consisted of several grayish-white tissue fragments. Upon microscopic examination, the tissue revealed a malignant tumor made up of cells that varied in shape and size, organized in clusters and strands. The tumor cells exhibited large, irregular nuclei with noticeable nucleoli and abundant eosinophilic cytoplasm. Numerous keratin pearls were present, along with occasional mitotic figures. This histological pattern was consistent across all tissue samples collected (Figure 2).



a)

b)

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Figure 2. a) photograph showing multiple tissue fragments gray, and white, b) photomicrograph showing malignant tumor composed of moderately pleomorphic cells arranged in nests and cords (H & E × 20), c) tumor cells with vesicular nuclei and prominent nucleoli along with abundant eosinophilic cytoplasm (H & E × 40), and d) photomicrograph showing scattered atypical mitotic figures (H & E × 40).

The diagnosis of well-differentiated primary squamous cell carcinoma (SCC) of the urinary bladder was established. After evaluation, it was determined that the patient was not a candidate for radical cystectomy. Consequently, the treatment plan involved transurethral resection of the bladder tumor (TURBT) followed by concurrent radiotherapy.

Results and Discussion

Bladder stones are more frequently observed in older individuals, with males being affected at a significantly higher rate than females, typically three to four times more often. Symptoms commonly associated with this condition include frequent urinary tract infections, difficulty in urination, and hematuria [1, 9].

Squamous cell carcinoma (SCC) of the bladder is a rare form of cancer, comprising only 1-3% of all bladder malignancies. This cancer type predominantly affects older males. The major cause of bladder cancer is prolonged inflammation, which may be caused by factors such as chronic urinary tract infections, bladder stones, or schistosomiasis. Over time, this persistent irritation leads to metaplasia of the bladder urothelium, which can then progress to dysplasia and, eventually, SCC [1, 9, 10].

Squamous cell carcinoma (SCC) of the bladder is an extremely uncommon form of cancer. Potential causes for non-bilharzial SCC have been suggested, including factors like bladder stones, prolonged use of urinary catheters, chronic urinary tract infections, and foreign bodies [7]. In the case of our patient, a history of repeated urinary tract infections was noted, but no other clear etiological factors were found. Hematuria is the primary sign of bladder SCC, often occurring without pain, while other rarer symptoms include urinary blockage and signs of bladder irritation [7]. Our patient presented with hematuria, along with painful urination and reduced frequency.

SCC is classified based on its histological grade—well, moderately, or poorly differentiated [7]. A thorough tissue sample is needed to differentiate between SCC and transitional cell carcinoma (TCC) with squamous differentiation [7, 9]. The patient underwent transurethral resection of the bladder tumor, with the entire tissue examined to rule out the presence of any TCC, confirming the diagnosis of primary SCC. No signs of metastatic disease were detected upon a full systemic evaluation.

Bladder SCCs are generally aggressive, high-grade tumors, frequently involving the muscle layers, and often carry a poor prognosis [1, 8, 9]. Our patient's tumor was similarly high-grade with muscle invasion. Due to the rarity of bladder SCC, the best treatment approach and outcomes remain uncertain. Many patients present at later stages, and not all are suitable candidates for aggressive treatment. Radical cystectomy with urinary diversion remains the gold standard for treatment, with better 5-year survival rates compared to other therapies like partial cystectomy, chemotherapy, or radiotherapy. However, recurrence rates remain high [11]. The use of neoadjuvant or adjuvant treatments, such as radiotherapy or systemic therapy, may help reduce recurrence and improve survival rates [11]. Sadly, after receiving initial radiation, our patient could not manage the side effects and ultimately passed away.

Conclusion

Squamous cell carcinoma (SCC) of the bladder is a highly uncommon form of cancer, accounting for just 1-3% of cases. Chronic inflammation is a significant risk factor contributing to its development. Various histological subtypes of SCC have been documented, each with unique clinical outcomes and treatment responses. Given that SCC differs from transitional cell carcinoma (TCC) in both prognosis and therapeutic approaches, early detection of this rare cancer is essential for optimizing patient care and treatment strategies.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

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