

## Clinical-imaging correlation of squamous cell carcinoma associated with schistosomiasis: about a case

Correlación clínica-imagenológica del carcinoma de células escamosas asociado a esquistosomiasis: a propósito de un caso

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### ABSTRACT

A case of a 31-year-old patient with a bladder tumor associated to schistosomiasis, treated at the Central Hospital of Nampula, Mozambique, was studied. After having carried out the study, the surgical treatment was performed, which consisted of partial cystectomy with left ureteral re-implantation at the end of December 2021. Pathological anatomy describes the presence of squamous cell carcinoma of the bladder, with areas of abscedation and necrosis, in addition to the presence of eggs and larvae of *Schistosoma hematobium*; there are also areas of cystitis. Surgical session edges free of tumor. He was referred to the oncology service taking the M-VAC treatment regimen every 21 days for three months, showing good progress. He continues to be followed up every 6 months in the urology clinic where ultrasonography, PA Chest X-ray and progressive cystoscopy are repeated. Until now,



the patient is free of tumor recurrence, there is no presence of cystitis, and the calcifications of the bladder mucosa have decreased considerably.

**Key words:** schistosomiasis, bilharzia, M-VAC treatment.

## RESUMEN

Se estudió el caso de un paciente de 31 años con tumor vesical asociado a esquistosomiasis tratado en el Hospital Central de Nampula, Mozambique. Luego de realizado el estudio se realizó el tratamiento quirúrgico que consistió en cistectomía parcial con reimplante ureteral izquierdo a finales de diciembre de 2021. La anatomía patológica describió la presencia de carcinoma escamocelular de vejiga, con áreas de abscedación y necrosis, además de presencia de huevos y larvas de *Schistosoma hematobium*; también existen áreas de cistitis. Sesión quirúrgica bordes libres de tumor. Fue remitido al servicio de oncología tomando esquema de tratamiento M-VAC cada 21 días durante tres meses, presentando buena evolución. Continúa en seguimiento cada 6 meses en la consulta de urología donde se repite ecografía, radiografía de tórax PA y cistoscopia evolutiva. Hasta el momento, el paciente se encuentra libre de recidiva tumoral, no hay presencia de cistitis y las calcificaciones de la mucosa vesical han disminuido considerablemente.

**Palabras clave:** esquistosomiasis, bilharzia, tratamiento M-VAC.

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## INTRODUCTION

Schistosomiasis is a parasitic disease historically known as bilharzia, caused by a trematode of the genus *Schistosoma*. It is the only trematode that invades the skin; all others only infect the body orally. There are around 221 million infected people worldwide.<sup>(1)</sup>

It is the second most important parasitic disease in the world in terms of public health impact. Schistosomiasis is an acute and chronic parasitic disease caused by blood flukes (trematode worms) of the genus *Schistosoma*. Estimates show that at least 251.4 million people required preventive treatment in 2021.<sup>(2)</sup>



*Schistosoma haematobium* causes urogenital schistosomiasis (UGS). Its name derives from hematuria or bloody urine. It is a recognized carcinogen and the second leading cause of squamous cell carcinoma of the bladder worldwide. Squamous cell carcinoma accounts for 1 to 2% of bladder tumors. In general, almost all of them are muscle invasive, and under the optical microscope, cells very similar to the flat epithelium of the skin are observed; however, in countries where schistosomiasis is endemic, squamous cell carcinoma is the most common histological type, exceeding 70%.<sup>(3,4)</sup>

There are six human-infecting species in the genus *Schistosoma*, but UGS is caused only by *Schistosoma haematobium*, and other species induce intestinal schistosomiasis (IS). UGS by *S. haematobium* and IS by *S. mansoni* are mixed endemic in most poor communities of Sub-Saharan Africa. Both diseases are transmitted to the human body by contacting contaminated water during daily life.<sup>(5)</sup> The natural course of the infection depends on the age at which the first exposure occurs, its intensity, the immunity/response developed by the individual, and its genetic susceptibility.

The pathogenesis of acute schistosomiasis is related to the deposition of eggs, the release of antigens during the maturation of adult worms and eggs, as well as an exaggerated inflammatory response of the host. It can inhabit a human organism for a period of 20 to 30 years, with an average survival ranging from 5 to 10 years.<sup>(6)</sup> During this period, it is cyclically laying eggs, of which some are eliminated in the urine and others adhere to the bladder mucosa causing calcifications, and instability of detrusor motility, which explains the systems present in this disease. A concentration of 260,000 to 710,000 eggs per cm<sup>2</sup> of bladder area will correspond to bladder calcifications, which may be the radiological translation of retractable bladders called "porcelain bladders." The deposit of eggs in the bladder mucosa causes local lesions with hyperemia and gives rise to granulomatous reactions that progress to fibrosis, causing chronic cystitis. Initially, the mucosa forms yellowish subepithelial nodules that are concentrated at the level of the bladder trigone, giving rise to hyperplasia, fibrosis and muscle hypertrophy, which evolve into polypoid lesions.<sup>(7,8)</sup>

The new Roadmap for Neglected Tropical Diseases 2021–2030, approved by the World Health Assembly, establishes as global objectives the elimination of schistosomiasis as a public health problem in all countries where the disease is endemic.<sup>(9)</sup>

Praziquantel (Biltricide<sup>®</sup>, 600 mg tablets) is the antiparasitic of choice for the different species of *Schistosoma*. It is effective, safe and low cost. Although reinfection may occur after treatment, the risk of severe disease decreases and is even reversed when treatment is started and repeated in childhood.<sup>(10)</sup>

It acts by modifying the permeability of the membranes, causing muscle paralysis and alterations in the integument of mature forms of the worm. A treatment with urine at a dose of 40 mg/kg per day, administered orally, in 2 separate doses for three days was used.



## CASE PRESENTATION

A 31-year-old mestizo male patient came to the urology clinic complaining of dysuria of two-year duration as well as lower abdominal pain, cloudy and bloody urine, which lasted one to two days and then disappeared.

Physical exam:

Mucous membranes: Moist and normal colored.

Respiratory system: Normal.

Cardiovascular system: Normal.

Digestive system and abdomen: Normal, no tumor mass is palpable.

Urinary AG: Normal.

TR. Grade 1 prostate of fibro muscular consistency.

Neurology system: Normal.

Heme chemistry in normal values.

Renal and prostatic ultrasound: Both kidneys within normal parameters, preserved parenchyma with slight to moderate pyeloureteral dilation of the left kidney. In the bladder, thickening of the wall and area of the left hemitrigono of more or less 6cm in length with a thickness of 4cm. Prostate of normal echostructure with a volume of 35cm<sup>3</sup>.

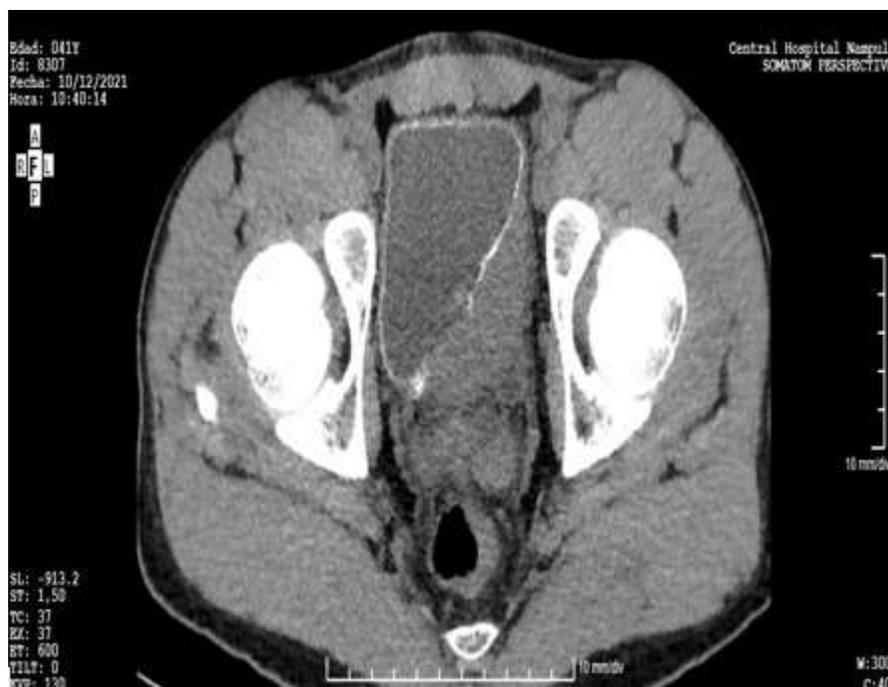
Cystoscopy: Yellowish discoloration of the bladder mucosa is observed, with small lesions in the form of whitish granules that resemble sand, located towards the dome and under the bottom of the bladder, signs of biliarzic cystitis; ulcerated lesion, with whitish slough in the left perimeatal area and part of the left bladder wall, characteristic of an infiltrative tumor. (Fig. 1)





**Fig. 1.** Cystoscopy showing the tumor lesion on the lateral wall, with areas of tumor necrosis towards the lower left corner.

Computed tomography (CT scan): 3mm sections describing left pelvic and ureteral dilation. Tumor-like lesion measuring 7x4cm in the left hemitrigonal area with calcifications in almost the entire bladder wall and right ureterobladder area, characteristic of bladder schistosomiasis. (Fig. 2)

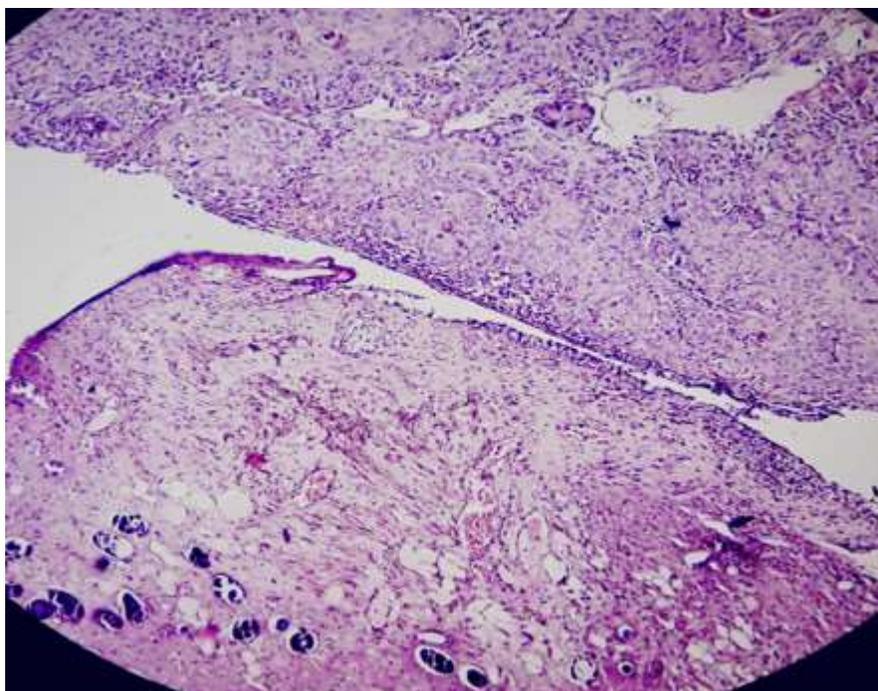


**Fig. 2.** Simple tomography performed in a preoperative study where the lesion is observed in the hemitrigone and left bladder wall.

Development: With prior consent from the patient, a partial cystectomy with left ureteral reimplantation was performed, which progressed satisfactorily.

Pathological A.: Fragment composed of squamous cell carcinoma of the bladder, with areas of abscedation and necrosis; in addition to the presence of eggs and larvae of *Schistosoma hematobium*, there are also areas of cystitis. Surgical session edges free of tumor. (Fig. 3)





**Fig. 3.** Panoramic shows above a well-differentiated SCC. Hematoxylin/Eosin 40x.

The patient underwent oncological treatment with M-VAC cycles every 21 days for three months, showing good progress.

Post-chemotherapy cystoscopies: 3 months, 6 months only signs of bihilarzic cystitis, 9 months and a year: normal.

Evolutionary CT scan: Slight pyelo-ureteral dilation of the IR with preserved parenchyma. Reduction in the area of bladder calcification, no tumor mass or lymphadenopathy. (Fig. 4)





**Fig. 4.** CT scan performed around the second year after surgery.

## DISCUSSION

The SCC of the bladder is a rare histopathological variant. These tumors show very aggressive clinical behavior as compared to conventional urothelial carcinoma. Pure Squamous Cell Carcinoma of the bladder generally represents 2% to 7% of all urothelial cancers with considerable geographic variability in prevalence worldwide.<sup>(1-4,11)</sup>

On etiological factor the SCC is divided into two subtypes: a) SCC associated with bilharzia infection (schistosomiasis), (B-SCC); b) SCC not associated with bilharziasis, (NB-SCC). Schistosomiasis is considered the major predisposing factor for B-SCC. It is most common among those people aged 40 to 50 years. Risk factors include schistosomiasis and urinary tract infections, irritative symptoms such as dysuria and chronic cystitis, and hematuria is the predominant symptom in most cases, a sign of advanced disease.<sup>(11)</sup>

The recommended treatment is radical cystectomy, which generally has a better prognosis than NB-SCC. Prevention is achieved by targeting the fluke through hygiene measures, drug use, and epidemiological control of the snail.

The 'gold standard' treatment for SCC is radical cystectomy, but other management strategies as use of radiotherapy and chemotherapy in the neo-adjuvant or adjuvant setting have been employed with varying successes. Role of neo-adjuvant



chemotherapy in pure SCC is uncertain. It is resistant to chemotherapy and guidelines recommend radical cystectomy without neoadjuvant chemotherapy. Dotson et al.<sup>(12)</sup> study on analysis of a national tumor registry suggests a lack of overall survival benefit for neoadjuvant chemotherapy with localized, muscle invasive SCC of the bladder.

The decision of a partial cystectomy was discussed in the multidisciplinary consultation (Urology, Oncology, Anesthesiology, Internal Medicine, Imaging, Pathological Anatomy and Psychology) at the request of a patient and his family who refused to perform radical surgery with referral, taking into account the location of the lesion in the studies performed and respecting the patient's decision in the psychological and social context in which the authors found themselves.

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### **Conflicts of interest**

The authors declare no conflict of interest.

### **HOW TO CITED THIS ARTICLE**

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