



## Rare Association between Prostate Adenocarcinoma and Schistosomiasis: A Case Report

### Associação Rara entre Adenocarcinoma da Próstata e Shistosomíase: Um Relato de Caso

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#### Abstract

Human schistosomiasis, the second most devastating parasitic disease, is common in developing countries, but rare in Europe. Urogenital tract involvement is mainly due to *Schistosoma haematobium* infection. Schistosomiasis has long been associated with malignant neoplasia. Some authors have hypothesized a causal relationship between schistosomiasis and carcinoma of the bowel, kidney, bladder and prostate. To date only 17 cases of concomitant prostatic adenocarcinoma and gland schistosomiasis have been described. As an uncommon example of a potential complication of an untreated schistosomiasis, we report a case of an incidentally diagnosed urinary schistosomiasis after a radical prostatectomy for prostate adenocarcinoma in a 62-year-old African man living in a non-endemic area.

**Keywords:** Adenocarcinoma; Prostatic Neoplasms; *Schistosoma haematobium*; Schistosomiasis; Schistosomiasis haematobia.

#### Introduction

Human schistosomiasis, the second most devastating parasitic disease, is caused by trematode flukes of *Schistosoma*.<sup>1</sup> It is common in developing countries with poor sanitation, especially from Africa and Asia (eg. Egypt and China), but is rare in Europe. People get infected by mobile larval forms when contact with contaminated water during routine agricultural, domestic, occupational and recreational activities.<sup>2</sup> It penetrates the skin and release eggs that can be excreted in faeces or urine or become trapped in body tissues, like intestine, bladder or reproductive organs, causing a chronic granulomatous response and progressive damage of those tissues.<sup>1,3</sup> Urogenital tract involvement is mainly due to *Schistosoma haematobium*. Schistosomiasis has long been associated with malignant neoplasia.<sup>4</sup> Some authors have hypothesized a causal relationship between schistosomiasis and carcinoma of the bladder, bowel, kidney and prostate.<sup>5</sup> To date only 17 cases of prostatic adenocarcinoma and concomitant gland schistosomiasis have been described (*S. haematobium*

#### Resumo

A shistosomíase humana, a segunda doença parasitária mais devastadora, é comum nos países em desenvolvimento, mas é rara na Europa. O envolvimento do aparelho urogenital deve-se sobretudo a infecção por *Schistosoma haematobium*. A schistosomíase tem sido associada com neoplasias malignas, desde há algum tempo. Alguns autores têm colocado a hipótese de existir uma relação causal entre schistosomíase e cancro do intestino, rim, bexiga e próstata. Até à data, estão descritos apenas 17 casos de adenocarcinoma e schistosomíase da próstata concomitantes. Como um exemplo raro de uma potencial complicação de schistosomíase não tratada, relatamos um caso de schistosomíase urinária incidentalmente diagnosticada após prostatectomia radical por adenocarcinoma da próstata, num homem Africano de 62 anos, a residir numa área não endémica.

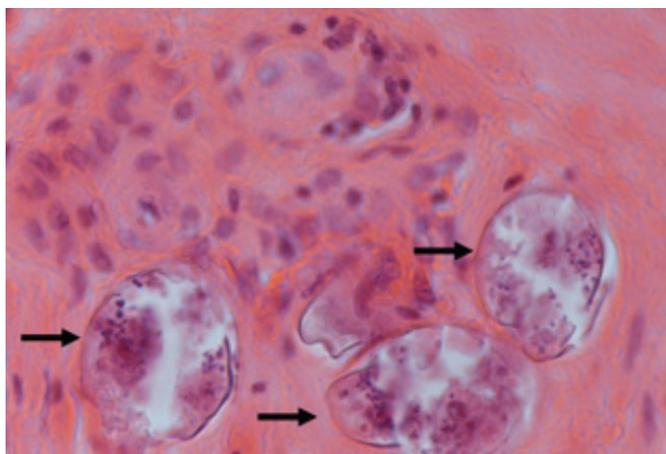
**Palavras-Chave:** Adenocarcinoma; Neoplasias da Próstata; *Schistosoma haematobium*; Shistosomíase; Shistosomíase haematobia.

identified in 11 cases, *S. mansoni* in five cases and not specified in one case).<sup>1</sup> As an uncommon potential complication of an untreated schistosomiasis, we present a case report of simultaneous prostatic adenocarcinoma and urinary schistosomiasis incidentally diagnosed after a radical prostatectomy in a 62-year-old African man living in a non-endemic area.

#### Case Report

A 62-year-old African black man living in Angola until 3 years ago, when he moved to Portugal, was referred to a Urology Appointment because of urine dripping, poor stream, diurnal frequency and urgency for micturation, presented for at least one year. There was no history of dysuria, macroscopic hematuria, hematospermia, sexually transmitted infections, urologic trauma or previous surgery, fever, gastrointestinal alterations, recent weight loss or chronic fatigue. Physical examination was unremarkable. Rectal digital examination revealed an enlarged and firm prostate gland. Blood and urinalysis were normal and urine culture was sterile. Prostatic specific antigen was elevated (11.59 ng/mL). Renal and bladder ultrasonography were normal. Prostate ultrasonography showed a heterogeneous structure with many calcifications

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**Figure 1:** Histological section (hematoxylin and eosin stain, 400x amplification) of the surgical sample showing scattered eggs of *Schistosoma* (arrows) in prostate tissue.

weighing 52 g. On prostate biopsy, an adenocarcinoma Gleason 8 (4+4) was diagnosed. Abdominal and pelvic computerized tomography, pelvic magnetic resonance and bone scan did not show ganglionic, visceral or bone metastasis. Radical prostatectomy was performed. Histopathological examination of the surgical sample confirmed prostate adenocarcinoma Gleason 9 (4+5) with ganglionic metastasis (pT2cN1Mx). It also depicted fibrotic lesions and scattered *Schistosoma* eggs in prostate and seminal vesicles tissues (Fig. 1). He received treatment for schistosomiasis (a single dose of praziquantel 40 mg/kg) and he started adjuvant androgen deprivation treatment. To this date, the patient is well, referring mild incontinence with the need to use 1 pad/day with no other urinary symptoms. PSA value is < 0.01 ng/mL and reexamination of urine is negative for parasite eggs.

### Discussion

The World Health Organization estimates at least 240 million people worldwide who are infected with *Schistosoma spp.* with severe disease manifestations in about 20 million people and an incidence of 280 000 deaths yearly.<sup>3</sup> Human schistosomiasis, bilharziasis or snail fever is rarely reported in Europe and Portugal.<sup>6</sup> Population movements are introducing it to new areas.<sup>2</sup> In this case, the patient probably got infected in an endemic area remaining asymptomatic until one year before. Without treatment it can persist for years and cause damage in some tissues. Urogenital tract involvement is mainly due to *S. haematobium* that matures in vesical and prostatic venous plexuses and tend to deposit its eggs in the wall of the organs,<sup>2,6</sup> as we found on the surgical sample. The diagnosis is based on microscopic examination of stool, urine or tissues for parasite eggs. It can be of limited sensitivity and serologic testing for antischistosomal antibody can be useful, especially for symptomatic travelers, but not so for people living in

endemic areas, because antibodies persist after parasitological cure.<sup>7,3</sup> Eritrocituria, eosinophilia and hypochromic normocytic anemia (not verified in this case) can favor the diagnosis.<sup>6</sup> Praziquantel remains the drug of choice for treatment.<sup>8</sup> Resulting from an incidental finding, the presented case is among the few reports on concomitant prostate carcinoma and schistosomiasis. This association has long been reported, but the causal relationship remains unclear. Some hypothesis have been proposed: 1) glandular atrophy associated with focal fibrosis of the prostate may lead to precancerous hyperplasia; 2) the presence of nitrosamine carcinogens produced by nitrate-producing bacteria and the enzyme beta-glucuronidase tend to act as cofactors for inducing neoplasia.<sup>2,9</sup> Looking through the literature, there are only 17 reports on prostate cancer associated with schistosomiasis. In endemic areas, the poor access to appropriate health care as well as the interpretation of hematuria and hemospermia as a sign of sexual maturity could justify the underdiagnosis of this association.<sup>1</sup> Even because the probability of these two frequent conditions to rise individually should be greater than the one reported on these studies.<sup>1</sup> We wanted to share this case not just for its rarity, but also because may indicate prostate cancer as a potential uncommon complication of an untreated urinary schistosomiasis. As there is some controversy on this topic further investigation to clarify this possible causal relationship is advised. On the other hand, since chronic infection can lead to significant morbidity, we also wanted to alert the doctors who serve immigrant population from endemic areas that should become familiarized with schistosomiasis, since its diagnosis is mainly based on a meticulous clinical history and a high grade of suspicion. ●

### Ethical Disclosures

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Protection of Human and Animal Subjects: The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Confidentiality of Data: The authors declare that they have followed the protocols of their work center on the publication of patient data.

### Responsabilidades Éticas

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