Netherlands
The Journal of Medicine

CASE REPORT

Cough and alterations in semen after a tropical swim

F. van Delft[1], L. Visser[2], A. Polderman[3], L. van Lieshout[3*]

[1]Department of Internal Medicine, Academic Medical Centre, Amsterdam, the Netherlands, Departments of [2]Infectious Diseases and [3]Parasitology, Leiden University Medical Centre, Leiden, the Netherlands, [*]corresponding author: e-mail: LvanLieshout@lumc.nl

ABSTRACT

This case report describes a patient with cough and haematospermia shortly after visiting a *Schistosoma* endemic area. Numerous *S. haematobium* eggs were found in the ejaculate, while no eggs were seen in the urine.

KEYWORDS

Cough, genital, male, schistosomiasis, *Schistosoma haematobium*, semen

INTRODUCTION

Schistosomiasis is a parasitic disease caused by the blood dwelling trematode of the genus *Schistosoma*. People get infected in tropical areas through contact with fresh water containing the skin-penetrating infectious larvae.[1] In the area of Lake Malawi, where several popular tourist resorts are situated, *Schistosoma haematobium* is the predominant *Schistosoma* species.[2] In humans, the adult worm of this species is normally hosted in the perivesical venous plexus and eggs are excreted via urine. Haematuria is one of the main clinical signs of an established *S. haematobium* infection. However, a majority of affected individuals are initially free of symptoms,[1] with substantial risk of developing serious complications many years after infection. Due to relatively low worm burden, infections are easily missed in travellers, in particular if examination is limited to the detection of eggs in urine only. Determination of specific antibodies significantly increases the sensitivity of diagnosis.[3] Here, we describe an uncommon presentation of a *S. haematobium* infection in a traveller shortly after visiting Lake Malawi.

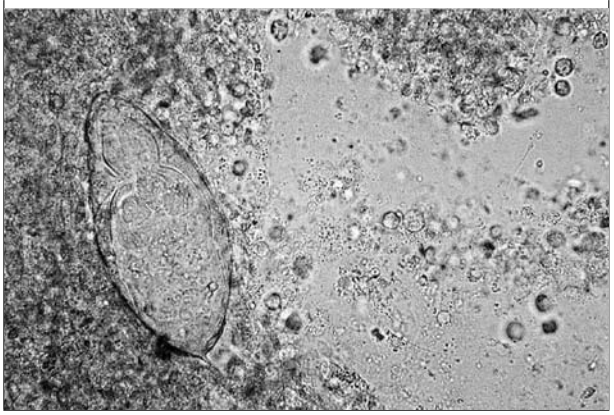
CASE REPORT

A 26-year-old Dutch medical student consulted his general practitioner with a five to six weeks' history of persistent dry cough accompanied by general malaise and periods of slight fever. Two months before the patient had travelled through Southern Africa where he visited several hospitals in Zambia and was in contact with fresh water at Cape Maclear, Malawi. Besides mild hay fever there was no medical history of relevance. On physical examination wheezing was heard over the lungs. Chest radiography showed enlarged hili, but no nodular lesions. Laboratory examination revealed eosinophilia (1.73 x 10^9/l). Allergic asthma was hypothesised and cetirizine was prescribed to suppress the cough with moderate effect.

Three weeks later, the patient noticed watery, rust-coloured semen and scrotal tenderness. Micturition was normal and no perineal trauma had occurred. His testes were of normal size and consistency. Rectal examination did not show signs of prostatitis. Because of the contact with fresh water in a *Schistosoma* endemic area, a parasitologist from Leiden University was consulted. Microscopic examination of ejaculate, collected after refraining from sexual activities for 36 hours, revealed about 1000 *S. haematobium* eggs in total (*figure 1*). Number and motility of spermatozoa were normal, but many leucocytes were seen, 60% were eosinophils. Low numbers of *S. haematobium* eggs were found in the stool, and none in urine. *Schistosoma*-specific antibody levels against adult worm and soluble egg antigen[3] were highly positive. Both serum and semen samples were negative for the schistosome circulating antigen CAA.[3]

The patient was treated with praziquantel 40 mg/kg bodyweight given in one dose. During intensive follow-up the macroscopic aspect of the semen returned to normal within 11 days and no more viable eggs were demonstrated from four weeks after treatment. Specific antibody levels

Figure 1. *Schistosoma haematobium egg in the semen of the patient described*



hardly changed in four months; eosinophilia decreased to 0.48 x 10^9/l. The initial cough persisted and was ascribed to bronchial hyperreactivity. Successful treatment with inhalation glucocorticosteroids was installed.

DISCUSSION

This is the first report describing an extremely high number of *Schistosoma* eggs (1000) in the ejaculate of a traveller with a Katayama syndrome and haematospermia. On average, an adult worm pair produces a few hundred eggs per day. More than half of these eggs do to not reach the environment, but get trapped in the host tissues.[1] Our finding therefore suggests that this ectopic localisation is not limited to a few eggs, or to a single worm pair that has lost its way. Rather, it seems that a cluster of several worm pairs had settled in the seminal vasculature. In our case no eggs were found in urine and only a few in faeces, implying that no worms had reached the commonly inhabited perivesical venous plexus yet.

Schistosoma infections affecting the male genital tract have been described before, both in travellers and endemic patients.[4-8] One of the first cases was reported in 1949 when Claude Barlow infected himself with larvae of *S. haematobium* and observed the development of haematospermia and the appearance of *Schistosoma* eggs in his own semen.[9] Only a small number of case reports describe lesions of the male genital tract caused by the *Schistosoma* infection, some simulating malignancy or sexually transmitted disease.[10,11] Male infertility from such lesions seems rare, but has never been well defined.[12] Still, the presence of *Schistosoma* eggs in semen does cause inflammation and release of inflammatory cytokines. As a result, infected men constitute an additional risk factor for the transmission of HIV, which is a great burden in endemic areas.[7]

Being a medical student, our patient suggested schistosomiasis to his general practitioner, which led to the diagnosis. The microscopic observation of eggs in semen was supported by detection of high levels of *Schistosoma*-specific antibodies in this patient who had never visited an endemic area before. Persistently high antibody levels, despite clinical and parasitological improvement following praziquantel treatment, as seen in this patient, are a common finding in schistosomiasis.[3] *Schistosoma*-specific antigens such as CAA are a better indicator of actual worm burden and therefore a complementary tool in the assessment of cure. However, antigen levels are often undetectably low in travellers harbouring a recent and relatively mild infection.[3]

Cough is one of the symptoms commonly seen in *Schistosoma*-infected non-immune persons presenting with acute schistosomiasis (Katayama fever). It is most likely mediated by an immunological response, not by the schistosomal migration through the lungs.[13] Persistent bronchial hyperreactivity in our patient is probably a result of eosinophilic inflammation in the airway mucosa through hypereosinophilia, although histamine bronchial responsiveness was not tested.[14] A chest X-ray one year after treatment did not show any abnormalities and there were no signs of asthma.

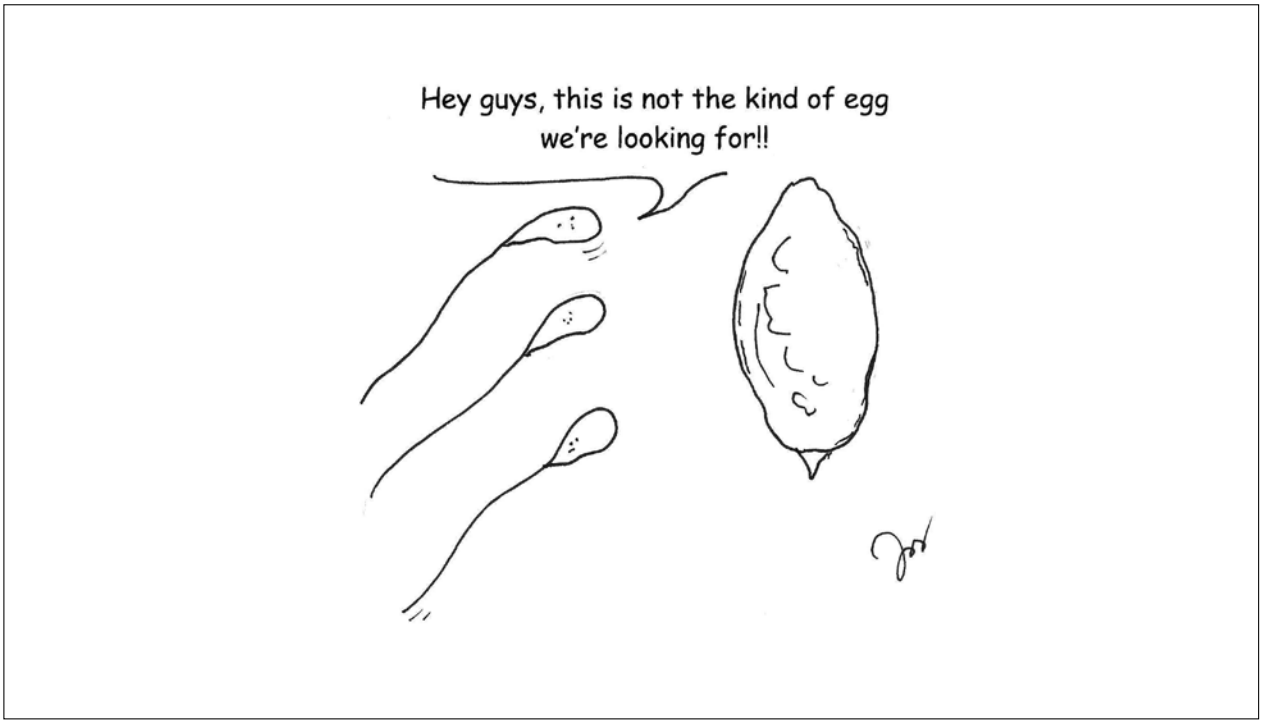
CONCLUSION

Schistosoma infections should be considered in any traveller showing seminal abnormalities who visited an endemic area during the previous year. In our patient, settlement of *Schistosoma* adult worms in the seminal vasculature seems more likely than migration of *Schistosoma* eggs. The semen returned to normal within weeks, demonstrating the efficacy of praziquantel in this compartment.

REFERENCES

1. Gryseels B, Polman K, Clerinx J, Kestens L. Human schistosomiasis. Lancet 2006;368:1106-18.
2. Cetron MS, Chitsulo L, Sullivan JJ, et al. Schistosomiasis in Lake Malawi. Lancet 1996;348:1274-8.
3. Van Lieshout L, Polderman AM, Deelder AM. Immunodiagnosis of schistosomiasis by determination of the circulating antigens CAA and CCA, in particular in individuals with recent or light infections. Acta Trop 2000;77:69-80.
4. Corachan M, Valls ME, Gascon J, Almeda J, Vilana R. Hematospermia: a new etiology of clinical interest. Am J Trop Med Hyg 1994;50:580-4.
5. McKenna G, Schousboe M, Paltridge G. Subjective change in ejaculate as symptom of infection with Schistosoma haematobium in travellers. Br Med J 1997;315:1000-1.
6. Leutscher P, Ramarokoto CE, Reimert CM, Feldmeier H, Esterre P, Vennervald BJ. Community-based study of genital schistosomiasis in men from Madagascar. Lancet 2000;355:117-8.

7. Leutscher PD, Pedersen M, Raharisolo C, et al. Increased prevalence of leukocytes and elevated cytokine levels in semen from Schistosoma haematobium-infected individuals. J Infect Dis 2005;191:1639-47.
8. Schwartz E, Pick N, Shazberg G, Potasman I. Hematospermia due to schistosome infection in travelers: Diagnostic and treatment challenges. Clin Infect Dis 2002;35:1420-4.
9. Barlow BA, Meleney HE. A voluntary infection with Schistosoma haematobium. Am J Trop Med Hyg 1949;29:79-87.
10. Dauda MM, Rafindadi AH. Testicular schistosomiasis simulating malignancy. Trop Doct 2006;36:182-3.
11. Durand F, Brion JP, Terrier N, Pinel C, Pelloux H. Funiculitis due to Schistosoma haematobium: uncommon diagnosis using parasitology analyses of semen. Am J Trop Med Hyg 2004;70:46-7.
12. Girgis SM, Wassef NF. Bilharziasis and azoospermia. Arch Androl 1980;5:369-72.
13. Schwartz E, Rozenman J, Perelman M. Pulmonary manifestations of early schistosome infection among nonimmune travelers. Am J Med 2000;15:718-22.
14. Chung KF, Hew M, Score J, et al. Cough and hypereosinophilia due to FIP1L1-PDGFRA fusion gene with tyrosine kinase activity. Eur Respir J 2006;27:230-32.



Van Delft, et al. Cough and alterations in semen.