Case study

VULVA SCHISTOSOMIASIS PRESENTING AS CHRONIC MALIGNANT ULCER IN AN HIV PATIENT: A CASE REPORT AND A REVIEW OF THE LITERATURE.

Abstract

Schistosomiasis is a freshwater parasitic disease caused by infection with the trematode of the genus Schistosoma. The common species of Schistosoma that affect humans are the Schistosoma haematobium, S. japonicum, and S. mansoni. The clinical manifestations of Schistosoma are determined by causal factors, which include the type of Schistosoma, period of infection, host-specific factors that influence the activity to the worm eggs, and access to treatment. A 51-year-old woman who is a known HIV type 1 positive patient for the past 18years and is on antiretroviral therapy presents to the clinic with a year history of vulva itching. On examination of the vulva is a clean base ulcer that measures 5x3cm with raised edges. Investigation shows normal Full blood count and blood urea nitrogen. Her viral load has decreased from 45,460 in 2018 to 201 viral copies in 2020. The pathologist received a skin wedge biopsy measuring 3.5x2x1.5 cm of greyish white with dark brown areas. Sections of the tissue showed an ulcerated skin with a heavily mixed inflammatory infiltrate mainly of lymphocytes, plasma cells, and eosinophils. A diagnosis of Vulva Schistosomiasis was made. The patient was treated with Praziquantel and the ulcer is healing. It is therefore recommended that there should be adequate distribution of praziquantel in schistosoma endemic areas to help reduce and prevents schistosomiasis. Again, there should be regular provision of praziquentel living with HIV (preventive chemotherapy) who stays in shistosoma endemic areas.

Keywords: vulva Schistosomiasis, HIV, female genital, infection

Introduction

Schistosomiasis is a freshwater parasitic disease caused by infection with the trematode of the genus Schistosoma. The common species of Schistosoma that affect humans are the Schistosoma haematobium, S. japonicum, and S. mansoni. The developmental cycle of Schistosoma starts with the eggs of Schistosoma being hatched into miracidia and entering into a primary host (snail) where sporocytes develop. A cercaria is formed and swims out of the snail into water. The cercaria can also penetrate the skin. After entering into the body, it loses its tail and becomes a schistosomula which moves in circulation and migrates into the portal blood in the liver and matures into adults and loges into venous plexuses. (Sornmani et al., 1973)

The infection of Schistosoma affects humans of all ages and gender and it is known as a neglected tropical disease by the WHO (Crellen et al., 2016). The clinical manifestations of Schistosoma are determined by causal factors which include the type of Schistosoma, period of infection, host-specific factors that influence the activity to the worm eggs, and access to treatment (Chadeka et al., 2017). A study by(Abruzzi et al., 2016), showed that individuals with Schistosoma infection have an increased risk in the severity of other fungi, protozoal and bacterial infection when required. This is because people with this parasitic infection tend to become immunocompromised thereby paving way for other infections. (McManus et al., 2020)

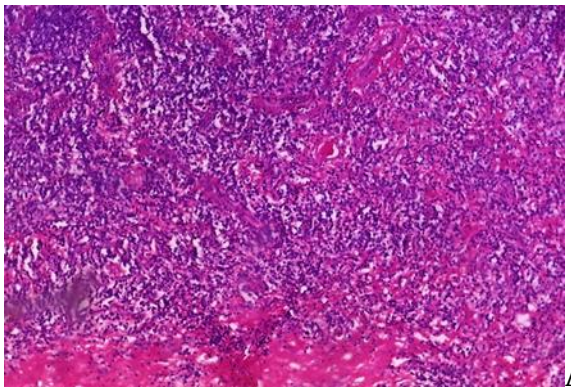
Schistosoma can be classified as acute and chronic presentation. The cercariae cause the initial infection and this leads to early and acute symptoms such as dermatitis, headache, fever which one can easily recover from (McManus et al., 2018). The adult schistosomes mature in their host and commence the deposition of eggs. The eggs and adult worms can

lead to the formation of granulomata in various organs which the egg surrounds. Another chronic presentation is related to the formation of immunopathological lesions.(Kittur et al., 2017). The eggs by schistosome are deposited in the urinary tracts and various amounts found in the body can cause clinical and pathological disease in critical organs like the lungs, heart, spinal cord, and brain. It can also affect both the male and female genitals. (Christinet et al., 2016)

CASE REPORT

A 51-year-old woman who is a known HIV type 1 positive patient for the past 18years and is on antiretroviral therapy presents to the clinic with a year history of vulva itching. The recurrent itching became associated with ulceration eight (8) months ago. The ulcer has increased in size over the period and is associated with watery non-offensive discharge. On examination of the vulva is a clean base ulcer that measures 5x3cm with raised edges. Investigation shows normal Full blood count and blood urea nitrogen. Her viral load has decreased from 45,460 in 2018 to 201 viral copies in 2020. The CD4 has steadily increased from 242 to 260. An initial diagnosis of vulva carcinoma was made and a biopsy was done for histopathology analysis.

The pathologist received a skin wedge biopsy measuring 3.5x2x1.5 cm of greyish white with dark brown areas. Sections of the tissue showed an ulcerated skin with a heavily mixed inflammatory infiltrate mainly of lymphocytes, plasma cells, and eosinophils. Interspersed among the inflammatory infiltrate is naked granuloma of Schistosoma ova with terminal spines (***Figure 1A and 1B***). A diagnosis of Vulva Schistosomiasis was made. The patient was treated with Praziquantel and the ulcer is healing well.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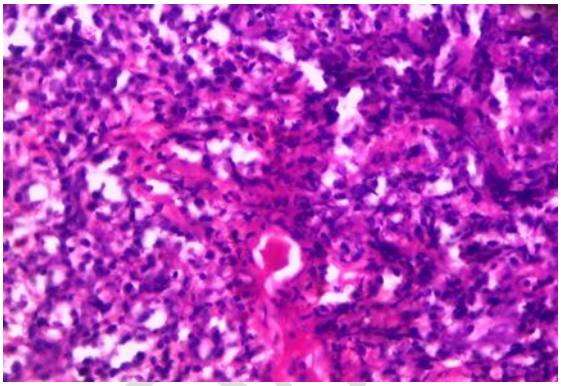
B

Fig 1A: A photomicrograph of Schistosoma ova within the mixed inflammatory infiltrate as seen in **A** x10 magnification

Fig 1B: A photomicrograph of Schistosoma ova within the mixed inflammatory infiltrate as seen in **B** x40 magnification

Discussion

S. haematobium lives in the pelvic venous plexus of the bladder of humans and eggs are sometimes shed in urine (Pinto et al., 2019). These eggs have a terminal spine that penetrates surfaces it attaches itself to and also causes haematuria when it travels down the wall of the urinary bladder. *S. haematobium* also causes inflammation of the genital and can contribute to the propagation of HIV(Ribeiro et al., 2019; Yegorov et al., 2019). A study by (Fraysse-Consigny et al., 2002), showed that *S haematobium* is the most identified organism in most female genital Schistosoma and causes a lesion in the labia majora(Fraysse-Consigny et al.,

2002). The prevalence of FGS caused by *S. haematobium* ranges between 30-75% with approximately 9-13 million women affected in African.

Vulva Schistosoma is a rare manifestation of the disease and is commonly associated as the source of granulomatous inflammation of the female genitalia. The case of vulva Schistosoma has been fairly recorded on girls below the age of fifteen years (15) but our patient is a 51-year-old female.

Eisen et al., 2002 in their study also showed that most female genital schistosomiasis is characterized by papules and nodules in the labia majora. Contrary to Eisen et al, our patient presented with ulceration. In most endemic areas post-mortem studies of the reproductive tract of females with *S. haematobium* showed ova of haematobium found in the vulva of 7-17% of cases (Kjetland et al., 2005). The histological finding from (Vieira et al., 2016) showed that there are numerous Ziehl Nelson negative Schistosoma ova with terminal spines which was characteristic of S. *haematobium* as stated by Eisen et al., 2002, which contain multiple miracidia surrounded by a granulomatous inflammatory infiltrate of plasma cells or eosinophils(da Paz et al., 2019). There is also the infiltration of lymphocytes, numerous epithelioid cells, foreign body giant cells, and peripheral proliferation of fibroblast(Hendry et al., 2017). Our case had naked granuloma because of the reduction in CD4 count.

Clinical manifestation of vulvar schistosomiasis includes swelling, painful ulceration, papules nodules, pruritus, larger clitoris with an eroded granular surface, and papillomatous lesions that are similar to condylomata. (Massoll, 2011). Our patient presented with itching ulcerated vulva with a clear fluid discharge. Vulvar schistosomiasis can manifest as a result of the passage of the ova with terminal spines from the bladder and attaching itself to the walls of the vulva and causing lesions which are polypoid and papillomatous around the vaginal or vulva wall. This lesion can behave as neoplastic in the female genital tract (Doorbar, 2006).

However, lesion size varies in the clitoris and the vulva (Poggensee & Feldmeier, 2001). Genital schistosomiasis begins with an irritation of the skin by the entry of cercaria, edema, and hyperemia. There is however the formation of nodules beneath the skin with papillomatous lesions that is somehow like condylomata. (Huerre & Marinšek, 2018). Our patient had a similar symptom preceding the ulceration. Vulva schistosomiasis is very rare, a study in *S. haematobium* endemic areas shows that up to 23% of women may present with a lower reproductive tract infection with the presence of Schistosoma ova in urine (Pillay et al., 2020). Women who are at risk are those found in Schistosoma endemic areas.

It has been estimated that 85% of the population in Africa is often infected with schistosomiasis making Africa an endemic area. It has also been globally estimated that annually, 200 million death is recorded as a result of Schistosoma infection (Naghavi et al., 2017). Laboratory findings for patients with vulva Schistosoma present with increase serum IgE, ELISA test for Schistosoma shows positive. Though some microscopic analysis shows the presence of ova, hematuria, and flukes in urine and stool, a study by (Lobo et al., 2020) In not in agreement since there was the absence of ova, cyst, and parasite in stool and urine.

S. haematobium is mostly treated with one dose of oral praziquantel as given to our patient. The adult worm is destroyed by causing severe spasms and paralysis of the worm muscle thereby killing the worms(Da Silva, 2017). However, since most people are asymptomatic, continuous screening can be done in other to identify the presence of ova and destroy them before it causes any damage to the body.

It is therefore recommended that there should be adequate distribution of praziquantel in schistosoma endemic areas to help reduce and prevents schistosomiasis. Again, there should be regular provision of praziquentel living with HIV (preventive chemotherapy) who stays in shistosoma endemic areas

Ethical Consideration.

The institution does not require ethical clearance for case reports however, patients consent was sought for the publication of the case

References.

Abruzzi, A., Fried, B., & Alikhan, S. B. (2016). Coinfection of schistosoma species with hepatitis b or hepatitis c viruses. In *Advances in parasitology* (Vol. 91, pp. 111–231). Elsevier.

Chadeka, E. A., Nagi, S., Sunahara, T., Cheruiyot, N. B., Bahati, F., Ozeki, Y., Inoue, M., Osada-Oka, M., Okabe, M., & Hirayama, Y. (2017). Spatial distribution and risk factors of Schistosoma haematobium and hookworm infections among schoolchildren in Kwale, Kenya. *PLoS Neglected Tropical Diseases*, *11*(9), e0005872.

Christinet, V., Lazdins-Helds, J. K., Stothard, J. R., & Reinhard-Rupp, J. (2016). Female genital schistosomiasis (FGS): From case reports to a call for concerted action against this neglected gynaecological disease. *International Journal for Parasitology*, *46*(7), 395–404.

Crellen, T., Walker, M., Lamberton, P. H., Kabatereine, N. B., Tukahebwa, E. M., Cotton, J. A., & Webster, J. P. (2016). Reduced efficacy of praziquantel against Schistosoma mansoni is associated with multiple rounds of mass drug administration. *Clinical Infectious Diseases*, *63*(9), 1151–1159.

da Paz, V. R. F., Figueiredo-Vanzan, D., & dos Santos Pyrrho, A. (2019). Interaction and involvement of cellular adhesion molecules in the pathogenesis of Schistosomiasis mansoni. *Immunology Letters*, *206*, 11–18.

Da Silva, V. B. R. (2017). *Synthesis and biological evaluation of novel imidazolinic, thiazolinic derivatives and aminosugars* [PhD Thesis].

Doorbar, J. (2006). Molecular biology of human papillomavirus infection and cervical cancer. *Clinical Science*, *110*(5), 525–541.

Eisen, D. B., Lack, E. E., Boisvert, M., & Nigra, T. P. (2002). Giant tumor of the back. *Archives of Dermatology*, *138*(9), 1245–1250.

Fraysse-Consigny, S., Chosidow, O., Becherel, P.-A., Datry, A., & Frances, C. (2002). Vulvar lesion in a 45-year-old woman. *Archives of Dermatology*, *138*(9), 1245–1250.

Hendry, S., Salgado, R., Gevaert, T., Russell, P. A., John, T., Thapa, B., Christie, M., Van De Vijver, K., Estrada, M. V., & Gonzalez-Ericsson, P. I. (2017). Assessing tumor infiltrating lymphocytes in solid tumors: A practical review for pathologists and proposal for a standardized method from the International Immuno-Oncology Biomarkers Working Group: Part 2: TILs in melanoma, gastrointestinal tract carcinomas, non-small cell lung carcinoma and mesothelioma, endometrial and ovarian carcinomas, squamous cell carcinoma of the head and neck, genitourinary carcinomas, and primary brain tumors. *Advances in Anatomic Pathology*, *24*(6), 311.

Huerre, M., & Marinšek, Ž. P. (2018). Infectious and Non-infectious Tumor-Like Lesions. In *Small Volume Biopsy in Pediatric Tumors* (pp. 59–135). Springer.

Kittur, N., Binder, S., Campbell Jr, C. H., King, C. H., Kinung'hi, S., Olsen, A., Magnussen, P., & Colley, D. G. (2017). Defining persistent hotspots: Areas that fail to decrease meaningfully in prevalence after multiple years of mass drug administration with praziquantel for control of schistosomiasis. *The American Journal of Tropical Medicine and Hygiene*, *97*(6), 1810–1817.

Kjetland, E. F., Ndhlovu, P. D., Mduluza, T., Gomo, E., Gwanzura, L., Mason, P. R., Kurewa, E. N., Midzi, N., Friis, H., & Gundersen, S. G. (2005). Simple clinical

manifestations of genital Schistosoma haematobium infection in rural Zimbabwean women. *The American Journal of Tropical Medicine and Hygiene*, *72*(3), 311–319.

Lobo, F. D., Bhatt, A. S., Rao, P., & Prabhu, G. G. (2020). Urinary Schistosomiasis Detected by Chance in India: A Case Report. *Journal of Krishna Institute of Medical Sciences (JKIMSU)*, *9*(1).

Massoll, E. J. W. N. A. (2011). 1 Benign Diseases of the Vulva. *Blaustein's Pathology of the Female Genital Tract*.

McManus, D. P., Bergquist, R., Cai, P., Ranasinghe, S., Tebeje, B. M., & You, H. (2020). Schistosomiasis—From immunopathology to vaccines. *Seminars in Immunopathology*, 1–17.

McManus, D. P., Dunne, D. W., Sacko, M., Utzinger, J., Vennervald, B. J., & Zhou, X.-N. (2018). Schistosomiasis (Primer). *Nature Reviews: Disease Primers*.

Naghavi, M., Abajobir, A. A., Abbafati, C., Abbas, K. M., Abd-Allah, F., Abera, S. F., Aboyans, V., Adetokunboh, O., Afshin, A., & Agrawal, A. (2017). Global, regional, and national age-sex specific mortality for 264 causes of death, 1980–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*, *390*(10100), 1151–1210.

Pillay, P., Downs, J. A., Changalucha, J. M., Brienen, E. A. T., Ramarokoto, C. E., Leutscher, P. D. C., Vennervald, B. J., Taylor, M., Kjetland, E. F., & Van Lieshout, L. (2020). Detection of Schistosoma DNA in genital specimens and urine: A comparison between five female African study populations originating from S. haematobium and/or S. mansoni endemic areas. *Acta Tropica*, *204*, 105363.

Pinto, S. Z., Friedman, R., & Van Den Berg, E. J. (2019). A case of paediatric bladder bilharzioma in Johannesburg, South Africa. *Clinical Case Reports*, *7*(10), 1890–1894.

Poggensee, G., & Feldmeier, H. (2001). Female genital schistosomiasis: Facts and hypotheses. *Acta Tropica*, *79*(3), 193–210.

Ribeiro, A. R., Luiz, C., Fernandes, R., & Botelho, M. C. (2019). Schistosomiasis and Infertility: What Do We Know? *Trends in Parasitology*.

Sornmani, S., Kitikoon, V., Schneider, C. R., Harinasuta, C., & Pathammavong, O. (1973). Mekong schistosomiasis: 1. Life cycle of Schistosoma japonicum, Mekong strain in the laboratory. *Southeast Asian Journal of Tropical Medicine and Public Health*, *4*(2), 218–225.

Vieira, S., Belo, S., & Hänscheid, T. (2016). Ziehl-neelsen in schistosomiasis. *American Journal of Tropical Medicine and Hygiene*, *94*(4), 699–700.

Yegorov, S., Joag, V., Galiwango, R. M., Good, S. V., Okech, B., & Kaul, R. (2019). Impact of Endemic Infections on HIV Susceptibility in Sub-Saharan Africa. *Tropical Diseases, Travel Medicine and Vaccines*, *5*(1), 22.