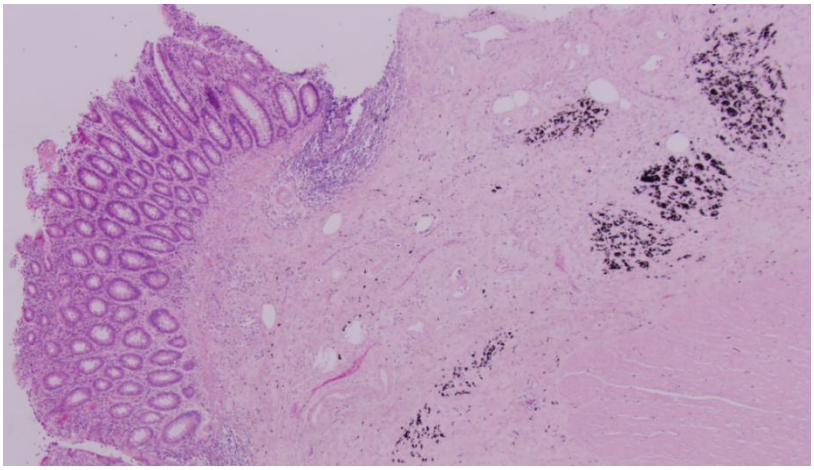
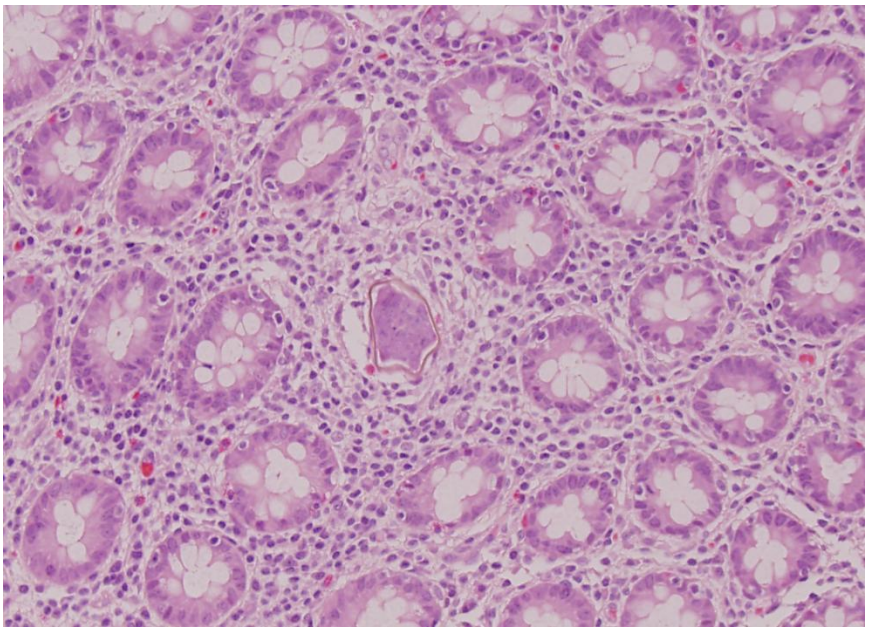
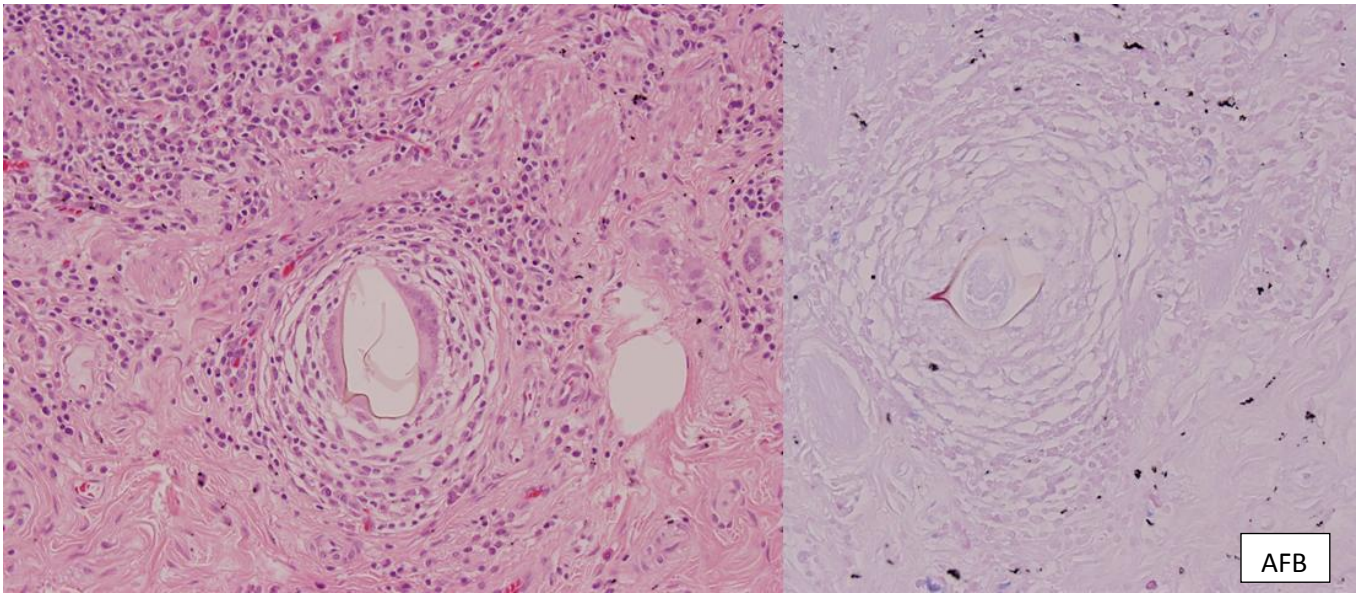
The patient is a 43 year-old women from Congo, Africa who presented with hematochezia and abdominal pain. A colonoscopy was performed and a 2 cm single polyp was identified in the recto-sigmoid colon. The polypectomy revealed invasive moderately-differentiated adenocarcinoma arising in a tubulovillous adenoma with high-grade dysplasia. Although the deep polypectomy margin was negative, lymphovascular space invasion was identified. Subsequent laparoscopic sigmoid colectomy was performed; grossly, a tattooed area was noted with associated previous polypectomy site changes. Microscopically no residual adenocarcinoma was identified; however, two of the sixteen lymph nodes were involved by metastatic carcinoma. In the lamina propria, submucosa, and serosa, prominent lymphoid aggregates with granulomatous inflammation and refractile material were identified. Representative sections from the resection are shown below.







What is the infectious agent? Please provide the specific species.

Answer and Discussion:

Schistosoma mansoni

Schistosomiasis, also known as Bilharziasis, is a helminthic (trematode) infection primarily found in developing countries in Africa, Middle East, Asia, and South America. Worldwide more than 700 million people are at risk of infection, and more than 200 million are infected. Of all cases, roughly 85% are in Africa, where prevalence rates can exceed 50% in local populations. Ten different species have been reported to cause infection in humans though the vast majority are caused by three species: *Schistosoma mansoni* (endemic in Africa, Middle East, and South America), *S. haematobium* (endemic in in Africa and Middle East), and *S. japonicum* (endemic in Asia). Urogenital and intestinal manifestations are most common, though hepatic and pulmonary involvement also occur; eggs can be found in less common sites such as skin, eyes, and even the CNS. Clinically schistosomiasis can present with an acute onset of fever, chills, headache, myalgia, abdominal pain, diarrhea, and occasionally bloody stools. Hepatosplenomegaly and lymphadenopathy are common and eosinophilia is usually present. In chronic infection symptoms may be mild or absent; however, peripheral eosinophilia is generally present. The infection usually resolves following treatment with praziquantel.

Histologically the three main species of schistosomiasis can be differentiated. *S. mansoni* male worms have many prominent tuberculations on their tegument, the eggs are elongated (100um), and have a prominent sharply pointed lateral spine, positive in acid fast bacillus (AFB) stain (figure 1). *S. haematobium* male worms have fewer and less prominent tuberculations on their tegument, the eggs are elongated (100um), and have a small, delicate, terminal spine rounded at the tip. *S. japonicum* male worms have no tuberculations on their tegument, the eggs are ovoid (<100um), and have a tiny, lateral spine that is usually unidentifiable in tissue section. None of the schistosomes female worm has tuberculations on their tegument.

In our case we identified eggs most consistent with *S. mansoni*. In figure 1, an egg is clearly identified with a prominent lateral spine which is positive by an acid fast stain. In contrast, the *S. haematobium* egg shell would be negative by an acid fast stain. This case also demonstrates prominent granulomas surrounding the schistosoma eggs. Such a granulomatous reaction is common (regardless of species) and results from Th2 and Th1 mediated response.

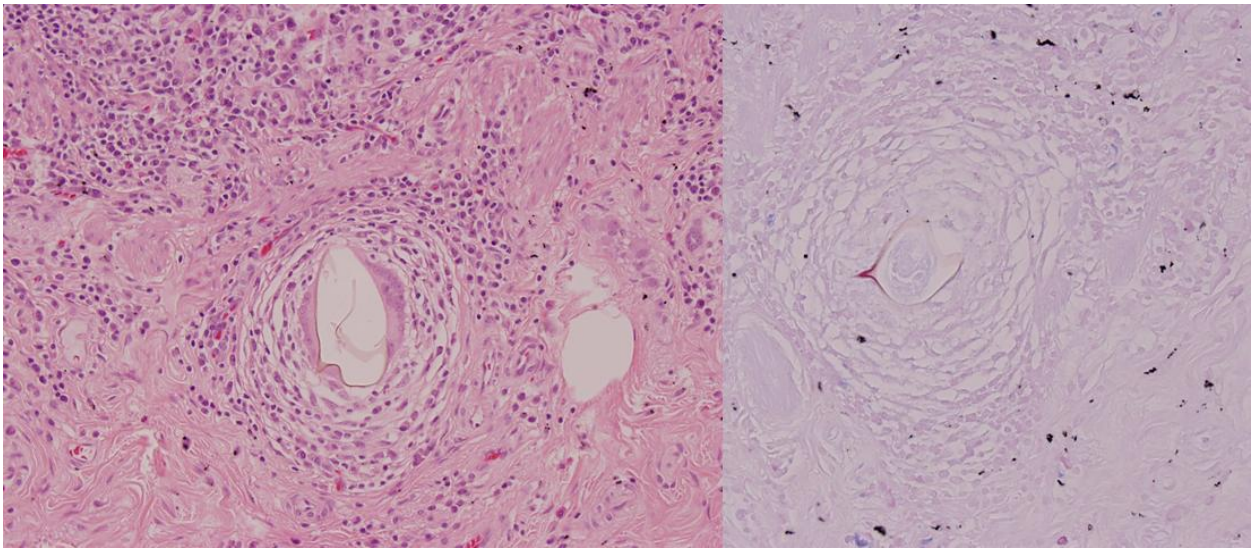


Figure 1. On the left image S. mansoni egg is identified in the middle with the characteristic prominent lateral spine which is positive for AFB stain (left image).

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