

Parasitic Zoo of *Fasciolopsis buski*, *Gastrodiscoides hominis*, *Giardia intestinalis* and *Entamoeba histolytica*

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Abstract

Polyparasitism of protozoa (*Entamoeba histolytica* and *Giardia intestinalis*) and trematodes (*Fasciola buski* and *Gastrodiscoides hominis*) has never been reported. A young lady presented to us with bilateral pitting pedal edema of 2 months duration and laboratory evaluation showed microcytic anemia, low total protein and albumin. Endoscopy and colonoscopy revealed multiple motile worms which were retrieved for species identification. Stool examination revealed polyparasites - Fasciola, Gastrodiscoides, Giardia and Entamoeba. She improved with praziquantel, albendazole and metronidazole. Factors favouring the high endemicity are poor hygiene, consumption of undercooked food, the climatic compatibility for the parasites, swine population and usage of fecal manures for farming. A simple use of anti-helminthic or antiprotozoals in areas of high endemicity can prevent poor outcome among these patients.

Keywords: Fasciolopsis; Gastrodiscoides; Giardiasis; Entamoeba; Polyparasitosis

Introduction

Intestinal parasitic infections are a major public health problem in developing countries. This is a report of simultaneous infestation with trematodes- *Fasciolopsis buski*, the largest fluke parasitizing humans; *Gastrodiscoides hominis*, an intestinal fluke infecting people and their livestock, and protozoa- *Entamoeba histolytica* and *Giardia intestinalis*, which cause malabsorption and have high prevalence in the developing countries. Chief source of human infection include ingestion of contaminants from untreated sewage, a phenomenon particularly common in many developing countries.

Case Report

A 20 year old lady from Bihar, India presented with bilateral pitting pedal edema since 2 months and mild abdominal discomfort with nausea since 1 week. She denied any history of vomiting, loose stool or irregular bowel habits and had no other systemic symptoms. There were no similar complaints in family members. She consumed a predominantly vegetarian diet, which included fish about twice a month and had no history of eating any aquatic plants. Physical examination was unremarkable except for pedal edema. Brownish hyperpigmentation were noted on the extensor aspect of legs (Figure 1).



Figure 1: Hyperpigmented rashes over both legs.

Laboratory evaluation revealed microcytic anemia (hemoglobin of 10.8 g%), low total protein (4.2 g%) and albumin (1.8 g%). No peripheral blood eosinophilia was noted. Cardiac, thyroid and renal functions were normal. Abdominal ultrasound revealed mild ascites. Viral markers were negative. Lower limb doppler revealed normal arterial and venous system with diffuse soft tissue edema. During her stay in the ward, after mild post-prandial abdominal discomfort she vomited out a worm. She gave no history of passing worms in stool. Upper GI endoscopy revealed multiple motile worms ranging from 1-5 cm in length and 0.5-2 cm in width (Figure 2). Few adult worms were retrieved and sent for species identification. Colonoscopy also revealed infestation in terminal ileum and in the right colon (Figure 3).

The larger sized (5-6 cm×1-2 cm) parasites were provisionally identified as *Fasciolopsis buski*, based on the gross morphology and confirmed by permanent mounting (Figures 4 and 5). Few of the samples were also confirmed to be of *Gastrodiscoides hominis* (Figures 7 and 8) by the Department of Veterinary Parasitology, Veterinary College, Bangalore. The Center for Disease Control and Prevention, USA, confirmed the findings. Stool examination showed bile stained as well as non-bile stained operculated eggs (Figures 6 and 9), ova along with numerous trophozoites and cysts of *Giardia intestinalis* and *Entamoeba histolytica*. The family members were screened and did not harbor the infection.

The patient was treated with praziquantel (25 mg/kg) single dose, metronidazole (400 mg q8 h for 5 days) and albendazole (400 mg/day for 3 days). In view of hyper-infestation, she was given anti-helminthic under polyethylene glycol preparation to purge the dead worms to

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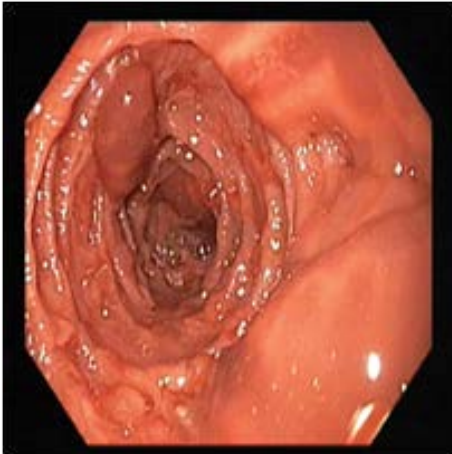


Figure 2: Endoscopic image of second part of duodenum (D2) showing adult flukes.

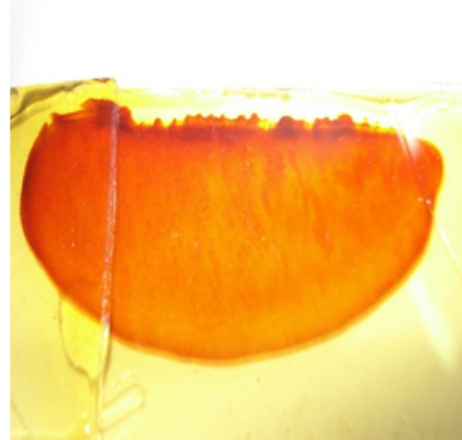


Figure 5: *Fasciolopsis buski* in gross morphology, permanent mounting and bile stained oval operculated egg of *Fasciolopsis buski*.



Figure 3: Colonoscopic image of cecum with fluke infestation.

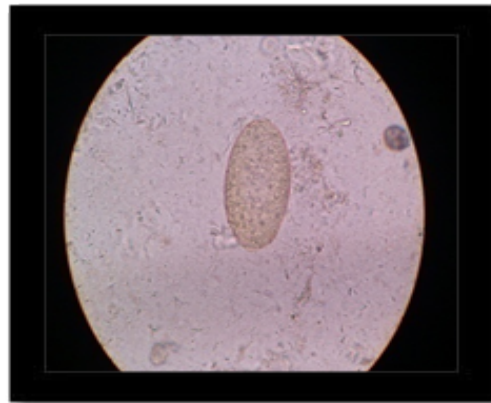


Figure 6: *Fasciolopsis buski* in gross morphology, permanent mounting and bile stained oval operculated egg of *Fasciolopsis buski*.

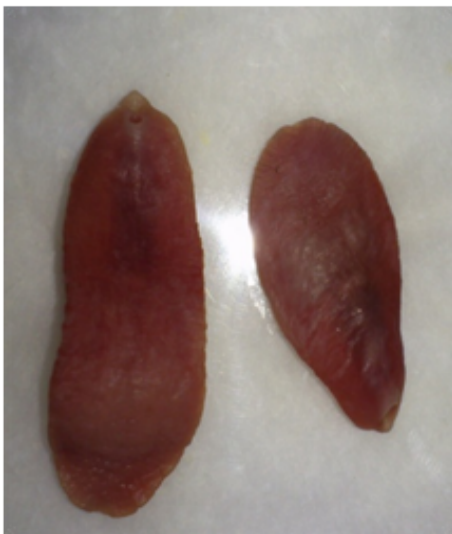


Figure 4: *Fasciolopsis buski* in gross morphology, permanent mounting and bile stained oval operculated egg of *Fasciolopsis buski*.



Figure 7: *Gastrodiscoides hominis* in gross morphology, permanent mounting and rhomboid non bile stained operculated egg of *Gastrodiscoides hominis*.

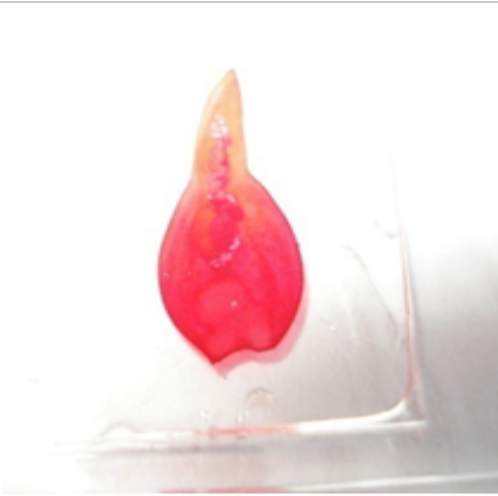


Figure 8: *Gastrodiscoides hominis* in gross morphology, permanent mounting and rhomboid non bile stained operculated egg of *Gastrodiscoides hominis*.

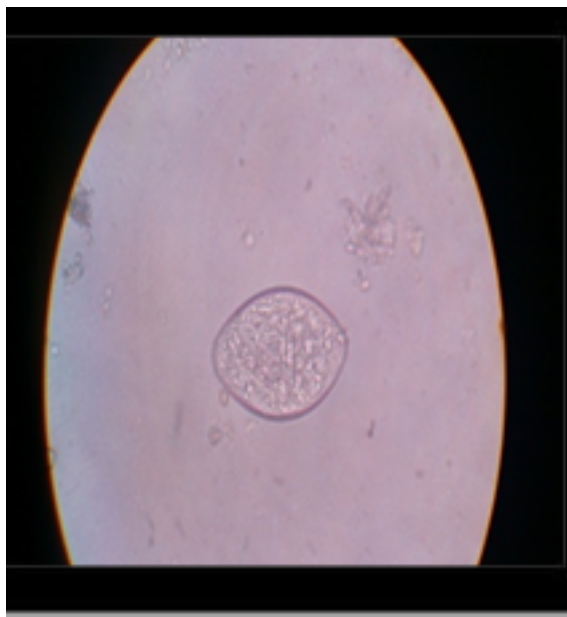


Figure 9: *Gastrodiscoides hominis* in gross morphology, permanent mounting and rhomboid non bile stained operculated egg of *Gastrodiscoides hominis*.

prevent intestinal obstruction. Her stool contained many dead worms for the next three days and she improved symptomatically, with lab values showing rise in serum albumin and was hence discharged. The patient was not available for further follow up.

Discussion

Fasciolopsis buski is the largest intestinal fluke that parasitizes humans and pigs with prevalence in India upto 60% [1]. Aquatic plants with metacercariae on their surface (from snails) is the major mode of human infection [2], with drainage of pig excreta in farms being an important factor for maintaining high endemicity [3]. Infestation is usually asymptomatic, while heavy infection causes diarrhoea, vomiting, malabsorption, intestinal obstruction, perforation and eosinophilic leucocytosis [4,5].

Gastrodiscoides hominis is a common parasite in humans and pigs in certain parts of India. The planorbid freshwater snails, *Helicorbis coenosus* shed the cercariae, cercariae encyst to metacercaria on aquatic plants, or in tadpoles, frogs, and clayfish [3] and ingested metacercaria excyst to flukes, reside in the cecum and colon leading to mucoid diarrhea.

Gastrodiscoides hominis and *Fasciolopsis buski* use the same molluscan intermediate host species. In Bareilly, India, 27% of a total of 233 slaughter-pigs were infected with *Gastrodiscoides hominis* and in 50% of these cases the infection was concomitant with *Fasciolopsis buski* [6]. The same reason could also explain similar results obtained in human surveys i.e., prevalences of 41% by *Gastrodiscoides hominis* and of 59.7% by *Fasciolopsis buski* in the same population of 221 human subjects analyzed [7]. Severe Fasciola and *Gastrodiscoides* infestation is due to repeated consumption of the metacercaria larva from aquatic plants. Praziquantel is the drug of choice for both trematodiasis.

Prevention of intestinal trematode infections requires preventing fecal contamination of water where fish and aquatic plants breed. Education regarding the risks associated with ingestion of raw or insufficiently cooked molluscs and fish is also important. Freezing, smoking, and pickling of fish do not destroy metacercariae [8].

Giardia intestinalis and *Entamoeba histolytica* were concomitant protozoan parasites due to similar feco-oral contamination. Infestation with multiple parasites is common in endemic areas. Poor hygiene, lack of education and awareness, use of human feces as manure are important factors in maintaining endemicity. A high index of suspicion is required to detect parasitic infestations when patient presents with features of malnutrition and protein losing enteropathy, especially from endemic areas.

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