Echinostomiasis in a child with severe anemia

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Abstract

A child had presented with complaints of dark green-colored loose stools, nonbilious vomiting, and fever for a day. Blood investigations revealed low hemoglobin levels. Abdominal ultrasonography showed features suggestive of worms. Wet mount examination of stool showed eggs of *Echinostoma* species and *Trichuris trichiura* and fertilized and unfertilized eggs of *Ascaris lumbricoides*. High incidences of intestinal parasitic infections in children can lead to anemia, consequently disturbing the development of these children. Such intestinal parasitic infections seem to be associated directly due to the unclean living settings linked with lack of awareness regarding the communicable disease and diversity of influences that need to be further elucidated. In humans, *Echinostoma* species have seldom been detected perhaps for the reason of its complexity in diagnosis by fecal examination as the eggs generated per worm are relatively less in contrast to other helminthic parasites.

Keywords: Echinostome, hookworm, pediatric, parasites, whipworm

INTRODUCTION

In developing countries, the prevalence of intestinal parasitic infections usually varies according to region and age. Socioeconomic and sociocultural practices and geographic factors mainly add to the problem. The frequency of intestinal parasitic infections is higher in younger people, particularly children. Inadequate research into infectious diseases and parasitic infestations, near nonexistent awareness given to the crisis in developing countries, and paucity of follow-up medical therapies are leading toward an alarming rise in the rates of parasitic infestation.[1]

Intestinal parasites are ubiquitous, in India, especially among children and the foremost effects of which are chronic diarrhea, malnutrition, and anemia.[2]
Clinical findings
On examination, anemia was noted. There were no signs of dehydration. On abdominal examination, tenderness at the right hypochondrium was present. Liver was palpable 1 cm below the costal margin, and liver span was 12 cm. Spleen was not palpable. Symptoms are due to inflammation, ulceration, and microabscesses that can develop where the flukes attach to the intestine. However, we could not find study related to liver injury or hepatomegaly related to *Echinostoma* infection. The remaining examination was unremarkable.

Diagnostic assessment
Blood investigations revealed a hemoglobin level of 10.2 g/dl. C-reactive protein level was elevated at 33.90 mg/L. Total leukocyte count was 3700, and the differential leukocyte count were as follows: neutrophil (46.3%), lymphocyte (50.6%), monocyte (2.4%), eosinophil (0.1%), and basophil (0.6%). Abdominal ultrasonography revealed features suggestive of worms. Wet mount examination of stool showed occasional white blood cells, eggs of *Echinostoma* species (measuring 118-mm long by 65 mm wide) along with eggs of *Trichuris trichiura*, and fertilized and unfertilized eggs of *Ascaris lumbricoides* along with passage of round worm in stool [Figures 1-3]. Two stool samples were tested before and after the treatment.

Therapeutic intervention
Treatment included single dose of tablet albendazole (400 mg), followed by intravenous pyrantel pamoate (10mg/kg/day) for 5 days, as well as single dose of tablet mebendazole (100 mg) per week for 4 weeks, 5 ml of syrup mintonia (Zinc: 20 mg/5 ml) and syrup 5ml tonoferon (iron: 250 mg, folic acid: IP 500 microgram, and Vitamin B12 IP: 5 microgram) per day for a month. There are no randomized trials evaluating treatment of echinostomiasis. Albendazole (400 mg orally on an empty stomach twice daily for 3 days) is recommended. Mebendazole is added as the combination therapy increases efficacy against trichuriasis.

The child responded well with the above measures. The patient was discharged after being asymptomatic for 3 days during hospital stay.

Follow-up and outcomes
Since parasitic infections are incredibly contagious, deworming of entire family was advised. After a month, follow-up was done with the patient’s parents regarding the health of the child. The child had been compliant with his treatment regimen and recuperating well with no fresh complaints of parasitic infection. On follow-up, repeat wet mount of stool examination showed no presences of parasitic eggs.

DISCUSSION
The prevalence of parasitic infections contrasts across various regions in the world due to variance in disease nature and environmental, climatic, and socioeconomic
conditions existing in those regions. Studies have shown that there is a higher occurrence of intestinal parasitic infection among younger people, predominantly in children.\[9\]

*Echinostoma*, a food-borne intestinal trematode typically infecting mammals and birds, is most frequently observed in Southeast Asian countries.\[6\] *Echinostoma* species have seldom been detected perhaps for the reason of its complexity in diagnosis by fecal examination as the eggs generated per worm are relatively less in contrast to other helminthic parasites. Hence, microscopists should be trained since its fundamentally vital to detect the presence of eggs of *Echinostoma* species.\[7\]

Inadequate hygiene conditions and actions for public health education in addition with low socioeconomic status are issues responsible for increasing prevalence of parasitic diseases and anemia in this population.\[2\]

To prevent iron-deficiency anemia, three strategies can be implemented, namely introduction of iron supplements, a staple food fortification with iron, and the control of infections caused by hookworm and other helminths.\[8\]

**CONCLUSION**

*Echinostoma* species are being infrequently detected perhaps for the reason of its intricacy in diagnosis by fecal examination. Therefore, microscopists should be primed about this condition since its imperative to detect the presence of eggs of *Echinostoma* species. The eventual objective is to transform human behavior, since ingestion of raw of inadequately cooked aquatic products, such as freshwater fish, is a hazardous factor for acquisition of a food-borne trematode infection.\[9\]

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**Conflicts of interest**
There are no conflicts of interest.

**REFERENCES**

1. Zemene T, Shiferaw MB. Prevalence of intestinal parasitic infections in children under the age of 5 years attending the Debre Birhan referral hospital, North Shoa, Ethiopia. BMC Res Notes. 2018;11:58.
2. Khanna V, Tilak K, Khanna R, Mukhopadhyay C. Anaemia and parasitism: Do they go hand in hand? Int J Pharm Bio Sci 2015;6:B1106-10.
3. Sripa B, Kaewkes S, Intapan PM, Maleewong W, Brindley PJ. Food-borne trematodiases in Southeast Asia epidemiology, pathology, clinical manifestation and control. Adv Parasitol 2010;72:305-50.
4. Pungpark S, Bunag D, Harinasuta T. Albendazole in the treatment of opisthorchiasis and concomitant intestinal helminthic infections. Southeast Asian J Trop Med Public Health 1984;15:44-50.
5. Mareeswaran N, Savitha AK, Gopalakrishnan S. Prevalence of intestinal parasites among urban and rural population in Kancheepuram district of Tamil Nadu. Int J Community Med Public Health 2018;5:2585-9.
6. Sohn WM, Chai JY, Yong TS, Eom KS, Yoon CH, Sinuon M, et al. *Echinostoma revolutum* infection in children, Pursat Province, Cambodia. Emerg Infect Dis 2011;17:117-9.
7. Khanna V, Tilak K, Mukim Yl. An unusual case of echinostomiasis in a retropositive patient: A case report. Hum Parasit Dis 2016;68:43-5.
8. Tsuyuoka R, Bailey JW, Nery Guimarães AM, Gurgel RQ, Cuevas LE. Anemia and intestinal parasitic infections in primary school students in Aracaju, Sergipe, Brazil. Cad Saude Publica 1999;15:413-21.