Journal of the Egyptian Society of Parasitology, Vol. 54, No. 3, December 2024
J. Egypt. Soc. Parasitol. (JESP), 54(3), 2024: 425– 427
Online: 2090-2549

OBSCURE OVERT GASTROINTESTINAL BLEED IN ILEOSTOMY CAUSED BY A HOOKWORM INFECTION IN ADULT: A CASE REPORT FROM INDIA

By
VIJAY KUMAR SHARMA*, RAVINDRA BUDHWANI, ABHIJIT CHANDRA, MUKTESHWAR DASARI, JULIE SHAH, and ARUN MANOHARAN
Department of Surgical Gastroenterology, King George Medical University, Lucknow, Postal Code 226003, India (Correspondence: vijaykumarsharma.15.12@gmail.com)

Abstract

A male farmer presented with one year history of per ileostomy bleed due to *Ancylostoma duodenale* infection was surgically treated followed by medical treatment with Albendazole. A single Albendazole dose was given to all his family members

Key words: Hookworm, Gastrointestinal bleeding, Surgical intervention, Albendazole.

Introduction

Hookworms are a part of soil-transmitted helminthes (STH). The most common ones are *Ancylostoma duodenale,* and *Necator americanus* as well as *Ancylostoma caninum* of dog or *A. braziliense* of cat cause zoonotic cutaneous larva migrans (Heukelbach and Feldmeier, 2008). These parasites are particularly prevalent in tropical and subtropical areas, especially low-income countries and are common in children. Hookworm infections are usually asymptomatic but, can lead to chronic anaemia, obscure occult gastrointestinal bleeding, chronic diarrhoea, and malnourishment and are usually treated by anthelmintic drug. Obscure overt gastrointestinal bleed is rare presentation. Hookworm infection is a cause of GI bleed which is usually obscure and occult (Liu *et al,* 2011), but overt bleeding can occur in massive infection. Each worm usually causes 0.3ml blood loss daily (Roche *et al,* 1966) and even after parasite detachment, mucosal sites penetration may continue bleeding due to anticoagulant substance produced by the worm (Gan *et al,* 2009) and most of the blood loss occurs due to this reason. A rare case of an adult patient who underwent two exploratory laparotomies 1.5 years and 1 year back and now has per ileostomy obscure overt gastrointestinal bleeding.

Case report: A 53 year male farmer presented to Surgical Gastroenterology OPD at a Tertiary Care University Hospital in India with a history of per ileostomy bleeding for 1 year. Around 1.5 years back patient underwent exploratory laparotomy with resection of around 50cm gangrenous small bowel (with unknown aetiology) with double barrel ileostomy at peripheral city of the state. Patient developed occasional melanotic stool from stoma in the postoperative period, 1 unit of packed red blood cells (PRBC) was transfused and bleed resolved on its own. Six months after the first surgery, patient underwent another exploratory laparotomy, detailed records not available. Now patient had persistent melanotic stool per stoma and a history of total of 6 units of PRBC transfusion at the time of presentation and was hemodynamically stable. In the available investigations lowest hemoglobin was 2gm% and blood group was O positive. When he presented to us his hemoglobin was 3.7gm% and albumin 2.6mg/dl, we transfused 3 units of PRBC and did UGI endoscopy and stomascopy till 150cm proximally. Upper GI endoscopy seen till the third part of duodenum was normal and stomascopy showed small bowel filled with melanotic stool mixed with blood. Triple phase CT abdomen was given persistent GI bleed which showed calcifications around small bowel wall. Medical therapy started for ulcers and also added anti-haemorrhagic agents, but being intractable to treatment and later hemodynamic instability we decided for emergency exploratory laparotomy with the plan of intraoperative enteroscopy. During the surgery peritoneal cavity was normal, small bowel loops were filled with melatonin content; distal limb of stoma was 20cm proximal to

ileocecal junction. An enterotomy 100cm was made proximal to the stoma to gain full length small bowel scope and a scope was inserted which showed multiple clumps of hookworms with fresh blood diffusely oozing from the visualized bowel (Figs. 1 & 2), and the ileostomy was retained and closed the enterotomy site. In the postoperative period albendazole 400mg/ day started along with iron folic acid supplementation. The dead hookworms were also extruding out in the stoma bag after albendazole treatment. No melanotic stoma output after 4th postoperative day and Hb was stabilized. Relatives were explained about hand-hygiene and stomal content handling and single dose alben dazole was given to all family members. Patient developed complete wound dehiscence in post-operative period so a Bogota bag was applied and later wound contracted and secondary suturing was done. Patient was discharged on 5th postoperative day with the advice of hand-hygiene, foot care in the fields and information was given to the head of the patient village.

Discussion

Hookworms are an important cause of GI bleeding in developing Asian Countries (Steinmann *et al,* 2008). In soil, their eggs hatch, and larvae develop in a few days. It waits in soil/grass until it comes into contact with human skin. After skin penetration, the larvae migrate through the bloodstream to the right side of the heart and then to pulmonary vasculature. They penetrate the alveoli and migrate through the bronchial tree to the pharynx and then swallowed to the intestinal tract.

The Ministry of Health and Family Welfare (MOHFW) in India has introduced the world's largest school-based deworming program, targeting ~240 million children aged 1 to 19 years twice yearly (biannual) during the National Deworming Days (NDD) conducted in February and August since 2015. But still GI bleed is common in children due to hookworms. Although Western guidelines didn't mention hookworm as an important cause of obscure GI bleed(OGIB) but several reports from India continue to mention hookworm as a cause for gastrointestinal blood loss (Sharma *et al,* 2000). Ghoshal *et al.* (2015) showed 13% patients of OGIB had hookworm infection on capsule endoscopy and 7.3% patients of OGIB had hookworm infection without other concomitant bleeding disease (Wei *et al,* 2017). There is a dramatic response to albendazole and recurrence on follow up is rare. Hookworms can be present along with other causes of gastrointestinal blood loss in endemic areas. The authors avoided laparotomy in this case if diagnosis was made preoperatively by modalities like capsule endoscopy and single/ double-balloon enteroscopy but, availability, financial constraints are the issues in low middle-income nation and hemodynamic instability with rare blood group of O positive made the surgery only option in this case.

Ancylostomiasis causes blood loss in Egyptian farmers (Farid *et al,* 1966). El Shazly *et al.* (2006) reported *A. duodenale* (0.1%) among schoolchildren in rural areas**.** Barakat *et al*. (2012) reported that ancylostomiasis-induced melena may occur in ages from infants to elderly, and that feeding occurs after quick mucosal piercing, with blood loss was aggravated by a repeated feeding, which stopped rapidly by anthelmintic therapy.

Conclusion

In tropical countries hookworms are one of the important cause of chronic anomia, overt gastrointestinal bleed even in current era. Hand-hygiene, stopping open defecation and deworming programmes are the preventive strategies for hookworm infection. Hookworm should also be kept in differential diagnosis while treating chronic anomia patients and obscure overt gastrointestinal blood loss in endemic areas in adults.

Declaration of patient consent: On the behalf of authors, Sharma certified that they have obtained appropriate patient consent. The patient has given his consent for images and other clinical information to be published in the journal. He understood that the na-

mes and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

References

Barakat, M, Ibrahim, N, Nasr, A, 2012: In vivo endoscopic ancylostomiasis-induced gastrointestinal bleeding imaging: clinical and biological profiles. Am. J. Trop. Med. Hyg. 87, 4:701-5.

El Shazly, AM, Awad, SE, Sultan, D, Sadek, GS, Morsy, TA, 2006: Intestinal parasites in Dakahlia Governorate, with different techniques in diagnosing protozoa. J. Egypt. Soc. Parasitol. 36:1023-34

Farid, Z, Bassily, S, Schulert, AR, Nichols, J H, Guindy, S. 1966: Blood loss in Egyptian farmers infected with *Ancylostoma duodenale*. Trans. R. Soc. Trop. Med. Hyg. 60, 4:486-9

Gan, W, Deng, L, Yang, C, *et al,* 2009: An anticoagulant peptide from the human hookworm, *Ancylostoma duodenale* that inhibits coagulation factors Xa and XIa. FEBS Lett. 583:1976–80.

Ghoshal, UC, Venkitaramanan, A, Verma, A, *et al,* 2015: Hookworm infection is not an uncommon cause of obscure occult and overt gastrointestinal bleeding in an endemic area: A study using capsule endoscopy. Indian J. Gastroenterol. 34:463-7.

Heukelbach, J, Feldmeier, H, 2008: Epidemiological and clinical characteristics of hookworm-related cutaneous larva migrans. Lancet Infect. Dis. 8, 5:302-9

Liu, K, Kaffes, AJ, 2011: Review article: Diagnosis and investigation of obscure gastrointestinal bleeding. Aliment. Pharmacol. Ther. 34:416-23.

Roche, M, Layrisse, M, 1966: The nature and causes of "hookworm anemia". Am. J. Trop. Med. Hyg. 15:1029-102.

Sharma, BC, Bhasin, DK, Bhatti, HS, *et al,* 2000: Gastrointestinal bleeding due to worm infestation, with negative upper gastrointestinal endoscopy findings: impact of enteroscopy. Endoscopy 32:314-6

Steinmann, P, Du, ZW, Wang, LB, Wang, X Z, Jiang, JY, *et al*, 2008: Extensive multiparasitism in a village of Yunnan province, People's Republic of China, showed by a suite of diagnostic methods. Am. J. Trop. Med. Hyg. 78:760-9.

Wei, KY, Yan, Q, Tang, B, Yang, SM, Zhang, PB, *et al,* 2017: Hookworm infection: A neglected cause of overt obscure gastrointestinal bleeding. Korean J. Parasitol. 55, 4:391-8.

Explanation of figures

Fig. 1: Arrow showed clumps of hookworms with oozing of blood

Fig. 2: Arrow showed blood in hookworm intestine