

**Case Report****Open Access****Hookworm presenting as acute febrile illness and surgical abdomen**\*<sup>1,2</sup>Efunshile, A. M., <sup>1,2</sup>Ojide, C. K., <sup>1</sup>Nwangwu, C. C., <sup>2</sup>Emelobe, G., and <sup>3</sup>Akpa, C.<sup>1</sup>Department of Medical Microbiology, Ebonyi State University, Abakaliki, Nigeria<sup>2</sup>Federal Teaching Hospital, Abakaliki, Nigeria<sup>3</sup>Department of Haematology, Federal Teaching Hospital, Abakaliki, Nigeria\*Correspondence to: [drefunshile@yahoo.com](mailto:drefunshile@yahoo.com)**Abstract:**

Hookworm is estimated to infect about 500 million people worldwide. It is usually associated with diarrhoea, abdominal pain and iron deficiency anaemia, but diagnosis can be missed because it sometimes presents unusually or mimics other diseases. We present in this report the case of an 18-year-old asthmatic medical student who was referred to a general surgeon on account of abdominal pain of 8 days duration. His problem started initially with fever, chills and rigor which was managed as malaria but no improvement. The diagnosis shifted from enteric fever to peptic ulcer disease, and his worsening condition was later reviewed as acute abdomen. Abdominal X-ray and ultrasound were normal. Stool microscopy showed numerous ova of hookworm. He was then treated with albendazole leading to full recovery on subsequent follow up. Hookworm disease can mimic a lot of other clinical conditions. A careful review of literature is a reminder that the clinical presentation of hookworm can be diverse and misleading. The current report emphasizes the fact that hookworm should always be considered a possible differential in endemic regions when clinicians are confronted with acute non-malaria febrile illnesses or cases of acute surgical abdomen.

**Keywords:** acute abdomen, fever, hookworm.

Received March 25, 2020; Revised April 27, 2020; Accepted April 28, 2020

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**Ankylostomes se présentant comme une maladie fébrile aiguë et un abdomen chirurgical**\*<sup>1,2</sup>Efunshile, A. M., <sup>1,2</sup>Ojide, C. K., <sup>1</sup>Nwangwu, C. C., <sup>2</sup>Emelobe, G., et <sup>3</sup>Akpa, C.<sup>1</sup>Département de microbiologie médicale, Université d'État Ebonyi, Abakaliki, Nigéria<sup>2</sup>Hôpital universitaire fédéral, Abakaliki, Nigéria<sup>3</sup>Département d'hématologie, Hôpital fédéral d'enseignement, Abakaliki, Nigéria\*Correspondance à: [drefunshile@yahoo.com](mailto:drefunshile@yahoo.com)**Abstrait:**

On estime que l'ankylostome infecte environ 500 millions de personnes dans le monde. Il est généralement associé à la diarrhée, à des douleurs abdominales et à une anémie ferriprive, mais le diagnostic peut être manqué car il présente parfois des anomalies ou imite d'autres maladies. Nous présentons dans ce rapport le cas d'un étudiant en médecine asthmatique de 18 ans qui a été référé à un chirurgien général en raison de douleurs abdominales d'une durée de 8 jours. Son problème a commencé initialement par de la fièvre, des frissons et une rigueur qui ont été gérés comme le paludisme mais sans amélioration. Le diagnostic est passé de la fièvre entérique à l'ulcère gastro-duodénal et son aggravation de la condition a ensuite été examinée en tant qu'abdomen aigu. La radiographie abdominale et l'échographie étaient normales. La microscopie des selles a montré de nombreux ovules d'ankylostome. Il a ensuite été traité avec de l'albendazole, ce qui a permis un rétablissement complet lors du suivi ultérieur. L'ankylostomiase peut imiter de nombreuses autres conditions cliniques. Un examen attentif de la littérature rappelle que la présentation clinique de l'ankylostome peut être diverse et trompeuse. Le présent rapport souligne le fait que

l'ankylostome doit toujours être considéré comme un différentiel possible dans les régions endémiques lorsque les cliniciens sont confrontés à des maladies fébriles aiguës non paludiques ou à des cas d'abdomen chirurgical aigu.

**Mots-clés:** abdomen aigu, fièvre, ankylostome

## Introduction:

Hookworm is one of the soil transmitted helminths (STHs) which collectively constitutes a major neglected tropical disease (NTD). About 5.1 billion people are at risk of hookworm infection while an estimate of 500 million is infected worldwide (1). *Necator americanus* and *Ancylostoma duodenale* are the usual human species with global distribution and are mostly associated with low socio-economic status. Unlike the epidemiology of other STHs in which prevalence and intensity reduce with age, adults suffer higher intensity of hookworm infection when compared with young children (2,3). Therefore, mass drug administration (MDA) programs in school aged children seems to have less impact on the prevalence of hookworm, partly because adults are usually exempted (1,4).

Risk factors for hookworm infection include walking bare footed, absence of household latrine and low socio-economic status. Initial skin penetration by the larva results in "ground itch" (2) while subsequent pulmonary migration results in pneumonitis accompanied by cough, sore throat and fever. Epigastric pain may result from the arrival of the larva in the intestine and subsequent development into adult (5). Light infection may be asymptomatic, but clinical features of heavy infection include abdominal pain, diarrhea, reduced appetite, weight loss, fatigue and anaemia. Hookworm rarely causes acute illness or death but rather associated with chronic diseases such as poor growth and impaired cognitive development. Heavy infection may result in hypoproteinemia as a result of plasma protein ingestion by adult worms, whereby patients may present with edema or anasarca (6).

Unusual clinical presentations have been reported to cause missed diagnosis and misdiagnosis of hookworm infections. This helminth was once found to be responsible for chronic fever of 3 months duration in a 17-year-old Indian male (7). There was also a report of clandestine presentation as total hyphema with secondary glaucoma after an adult hookworm infected the anterior eye chamber of a 70-year-old man in India (8). *Ancylostoma caninum* was also found to be associated with unexplained abdominal pain in Australia, while dog ownership was found to be a risk factor (9). Case reports from the United Kingdom previously

showed that occultic hookworm infection was associated with acute watery diarrhoea in returned traveler without demonstrable ova and parasites in stool (10).

The diagnosis is traditionally by microscopy for ova in stool. Albendazole and mebendazole are the first line drugs of choice. Hookworm is controlled by mass drug administration (MDA) supported by health education, improved sanitation and hygiene.

## Case presentation:

This was a case of an 18-year-old medical student who was referred to a general surgeon for evaluation on account of abdominal pain of 8 days duration. His problem started initially with fever associated with rigor, chills and passage of loose stool for which malaria was suspected. He was treated with artemisinin-based combination therapy but to no avail. Enteric fever was later suspected, and he was commenced on empirical antibiotics pending laboratory investigations. The abdominal pain became more severe and aggravated by eating. Clinical diagnosis of acute abdomen, with suspicion of acute appendicitis was then concluded. Analgesics, metronidazole, and amoxicillin-clavulanate were administered.

Full blood count and peripheral blood film results were normal. Abdominal X-Ray and ultrasound findings were also unremarkable. His stool was semi-solid, not dark in color and no trace of blood. The abdominal pain eventually shifted to the epigastric region which again shifted the clinical impression to peptic ulcer disease. Review of his past medical history only showed that he was asthmatic and on salbutamol inhaler for the past 10 years. On presentation, he was emotionally disturbed, otherwise healthy-looking young man, well nourished, not dehydrated and not pale. The abdomen was flat moves with respiration; tenderness was noted at the epigastric, left and right iliac regions but there was no organomegaly.

Stool immunochromatographic antigen test for *Helicobacter pylori* was negative while stool occult blood was positive. The latter finding prompted the decision for stool microscopy which showed heavy concentration of ova of hookworm. The patient was then treated with albendazole 400mg daily for 3 days. The fever and abdominal pain resolved on the second day

of albendazole administration and leading to full recovery on subsequent follow up.

### Discussion:

The presence of fever in this case may be due to migration of L3 larval stage through the patient's lungs. This migration might also have been associated with pneumonitis, but the presence of cough was likely masked by the fact that the patient was asthmatic, which further enhance the misdiagnosis. The severity of the abdominal pain coupled with the absence of malnutrition, anaemia and eosinophilia that is characteristically seen in helminthic infection, probably biased the opinion of the surgeon away from hookworm as a possible diagnosis. This was similar to another report of hookworm case in the USA which presented as acute surgical abdomen, only to be confirmed as hookworm infection after emergency exploratory laparotomy was carried out (11).

### Conclusion:

In conclusion, a careful review of literature is a reminder of the fact that the clinical presentation of hookworm could be very diverse and misleading. Diagnosis can be further complicated because it can mimic a lot of other disease conditions, hence clinicians need to stay updated about these possibilities. The current report emphasizes the fact that hookworm should always be considered a possible differential in endemic regions when clinicians are confronted with acute non-malaria febrile illnesses or cases of acute surgical abdomen.

### Conflict of interest:

No conflict of interest is declared.

### Ethical consideration:

Informed consent was duly obtained from the patient

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