

RESEARCH ARTICLE

A DETAILED STUDY OF THE ROLE OF WHIPWORM INFECTION IN CAUSING ANAEMIA

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ABSTRACT

Objective: To study the role of whipworm infection in causing anaemia.

Methods: A study of 72 patients who had undergone colonoscopy for a period of 5 years from November 2009 to October 2014 was carried out in order to find out the presence of parasitic worms during colonoscopy in these patients.

Results: Out of these 72 patients, parasitic worm was found in the colon in only one patient. The parasitic worm found in this patient was identified as whipworm or trichuris trichiura by its characteristic whip like shape. It has a short posterior thick part resembling the short handle of the whip and a long, thin anterior part resembling the distal long, thin part of the whip. In our patient with whipworm infection anaemia was not present [(haemoglobin 14.4 g%).

Conclusion: Our patient was also found to have whipworm in the colon while doing colonoscopy. But anaemia was not present in our patient.

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INTRODUCTION

Whipworms are the most common nematodes or roundworms found in the large intestine of human beings while doing colonoscopy (2). There has been also reports of finding whipworm in the large intestine of human beings while doing colonoscopy in many parts of the world (1to14). Our patient was also found to have whipworm in the colon while doing colonoscopy. A detailed study of the role of whipworm infection in causing anaemia was carried out.

MATERIALS AND METHODS

This study was conducted in the department of general surgery, Aarupadai Veedu Medical College And Hospital, Puducherry. A study of 72 patients who had undergone colonoscopy for a period of 5 years from November 2009 to October 2014 was carried out in order to find out the presence of parasitic worms during colonoscopy in these patients. In each of these patients, presence of any parasitic worm was carefully looked for during the procedure of colonoscopy and the colonoscopic pictures of each patient were carefully studied and analysed. In patients found to have parasitic worms during colonoscopy, investigations were done to know about the presence or absence of anaemia. Anaemia is defined as haemoglobin <12g/dl or 12g% in women and haemoglobin <13g/dl or 13g% in men.

RESULTS

Out of these 72 patients, parasitic worm was found in only one patient. The parasitic worm found in this patient was identified as whipworm or trichuris trichiura by its characteristic whip like shape. This patient was an eighty year old male patient and one adult whipworm was found in the sigmoid colon of this patient while doing colonoscopy. His haemoglobin was 14.4g%. The patient was treated with a single dose of 400mg of albendazole.

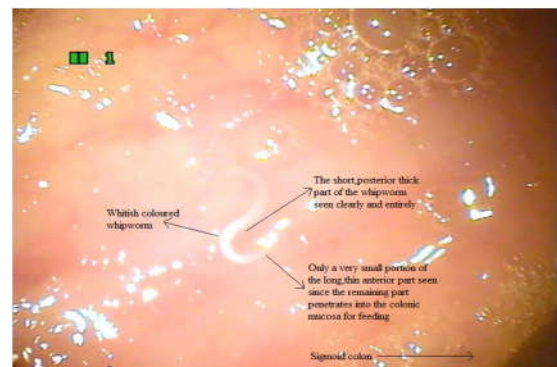


Fig 1 showing clearly and entirely only the short, posterior thick part of the whitish coloured whipworm and only a very small portion of the long, thin anterior part since the anterior part penetrates into the large intestinal wall for feeding purpose.

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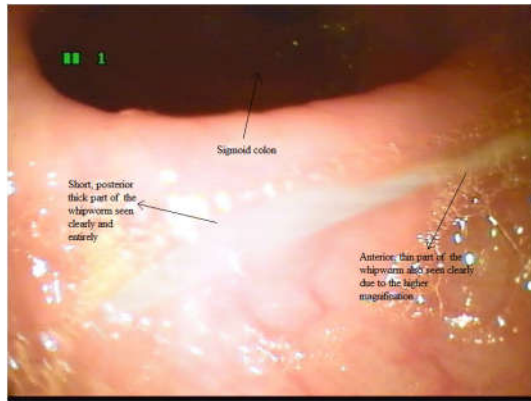


Fig 2 Magnified view showing clearly both the short, posterior thick part and also the anterior, thin part of the whipworm due to the higher magnification.

Absence of anaemia in our patient

In our patient anaemia was not present [(haemoglobin 14.4 g%). In another study also (5), all the three patients with whipworm in colonoscopy did not have anaemia (haemoglobin 13.7g %, 14.1g%, 13.9g%).

DISCUSSION

Parasitic worms occurring in the large intestine of human beings

Whipworms are the most common nematodes or roundworms found in the large intestine of human beings while doing colonoscopy (2). Our study has also shown the presence of whipworm in the large intestine or colon of a patient while doing colonoscopy. Only rarely intestinal helminths other than whipworm or trichuris trichiura were found in the large intestine of human beings while doing colonoscopy.

Size of whipworm and its life cycle

The male whipworm is 3 to 4.5cm and the female whipworm is 3.5 to 5cm in length (11). Adults can live for years and deposit thousands of eggs per day (8). Infective eggs are ingested from eating contaminated soil (8,13.). Upon ingestion the eggs hatch into larvae in the small intestine (8,11,13,14). The larvae eventually migrate to the large intestine and complete maturation to adult worms in 1 to 3 months (8,11,13,14).

Blood loss and anaemia in whipworm infection

Unlike hookworm (*Necator americanus* and *Ancylostoma duodenale*) which sucks blood from the small intestinal mucosa, whipworm [*trichuris trichiura*] does not suck blood and causes only minimal oozing of blood at the site of its attachment to the colonic mucosa. Whipworms do not feed on blood and feeds only on the tissue secretions of the large intestinal wall. Hence in trichuris infection, the daily blood loss is only 0.005 ml per worm per day which only accounts for about 10-15% from the blood loss due to *Necator americanus* and only 2-3% of that attributed to *Ancylostoma duodenale*. Also most people in endemic areas of *Trichuris trichiura* infections are colonized only by a small number of worms (usually less than 15) unlike large number of hookworms present commonly in hookworm infection. Hence severe anaemia is not common in whipworm infection, but is

common in hookworm infection. Our patient also did not have any anaemia (haemoglobin 14.4 g%).

Whitish colour of whipworm

Whipworms do not feed on blood and feeds only on the tissue secretions of the large intestinal wall. Whipworm is always whitish in colour (5) as it does not feed on blood (fig 1,2).

Only a very small portion of the long anterior part of whipworm seen during colonoscopy

We can see only the short posterior thick part entirely in the lumen of the large intestine (13,14) but only a very small portion of the long, thin anterior part while doing colonoscopy since most of the anterior part penetrates into the large intestinal wall in order to feed on the tissue secretions of the large intestinal wall (13,14). Hence in fig 1, we can see only the short posterior thick part of the whitish coloured whipworm entirely in the lumen of the sigmoid colon but only a very small portion of the long, thin anterior part since most of the anterior part penetrates into the large intestinal wall for feeding purpose. But in the highly magnified view in fig 2, we can see clearly both the short posterior thick part and also the anterior thin part clearly due to the higher magnification.

CONCLUSION

1. Whipworms are the most common nematodes or roundworms found in the large intestine of human beings while doing colonoscopy.
2. Whipworms do not suck blood and causes only minimal oozing of blood at the site of its attachment to the colonic mucosa.
3. Whipworms do not feed on blood and feeds only on the tissue secretions of the large intestinal wall.
4. Hence in whipworm [*trichuris trichiura*] infection, the daily blood loss is only 0.005 ml per worm per day.
5. Hence anaemia is not common in whipworm infection.

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