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Gender of the whipworm (male or female whipworm) found in the colon during colonoscopy in our study compared with other studies

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Abstract

Objective: To study about the gender of whipworms found in the colon while doing colonoscopy in our study and compare it with other studies.

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 inorder to find out the presence of parasitic worms during colonoscopy in these patients. In patients found to have whipworms in the colon, gender of whipworms were noted. Gender of whipworms found in the colon during colonoscopy in our study is compared with other studies.

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. Our study and also some other studies have shown female whipworm in the colon while doing colonoscopy. In our patient, the tail or the posterior end of the whipworm is straight and bluntly round without any coil or corkscrew shape and hence can be identified as the female whipworm. However other studies have shown male whipworms in the colon while doing colonoscopy. In these studies whipworm was identified as male whipworm since its tail or the posterior end is highly curved and coiled like a corkscrew.

Conclusion: Thus, while doing colonoscopy we can easily distinguish between male and female whipworm by looking at the tail or posterior end of the whipworm. The tail or the posterior end of the female whipworm is straight and bluntly round without any coil or corkscrew shape. The tail or the posterior end of the male whipworm is highly curved and coiled like a corkscrew.

Keywords: Gender of whipworms in the colon, trichuris trichiura, colonoscopy

1. Introduction

Whipworms are the most common nematodes or roundworms found in the large intestine of human beings while doing colonoscopy. There has been also reports of finding whipworm in the large intestine of human beings while doing colonoscopy in many parts of the world [1 to 15]. In almost all the studies, whipworm or trichuris trichiura was almost the only intestinal helminth or roundworm found in the large intestine of human beings while doing colonoscopy [1, 3 to 14]. Our patient was also found to have whipworm in the colon while doing colonoscopy. Gender of whipworms found in the colon during colonoscopy in our study is compared with other studies.

2. 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 inorder to find out the presence of parasitic worms during colonoscopy in these patients. In patients found to have whipworms in the colon, gender of whipworms were noted. Gender of whipworms found in the colon during colonoscopy in our study is compared with other studies.

3. 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. This patient was an eighty year old male patient and one adult female whipworm was found in the sigmoid colon of this patient while doing colonoscopy. The patient was treated with a single dose of 400mg of albendazole.

Our study and also some other studies have shown female whipworm in the colon while doing colonoscopy. In our patient, the tail or the posterior end of the whipworm is straight and bluntly round without any coil or corkscrew shape and hence can be identified as the female whipworm.

However other studies have shown male whipworms in the colon while doing colonoscopy. In these studies whipworm was identified as male whipworm since its tail or the posterior end is highly curved and coiled like a corkscrew. In the study conducted by Yoshida M *et al*. [3], single whipworm was found in the colon patient while doing colonoscopy but this whipworm was identified as male whipworm since its tail or the posterior end is highly curved and coiled like a corkscrew.

4. Discussion.

4.1 Female whipworm found in the colon during colonoscopy in our study and in other studies

a) Our study has shown a single adult female whipworm in the colon while doing colonoscopy. In our patient, the single whipworm found in the colon was identified as female whipworm since the tail or the thicker posterior end of the whipworm is straight and bluntly round without any coil or corkscrew shape (fig 3).
b) In the study conducted by Khuroo MS *et al.* [4] in Srinagar, Kashmir, India, colonoscopy revealed actively motile Trichuris trichiura worms in the colon in one patient. Biopsy of the colon revealed worm segments with a thick outer cuticle. The posterior segment of the worm contained gravid uterus with numerous characteristic Trichuris trichiura eggs confirming that the worm is a female whipworm.
c) In the study conducted by Kyung-Sun Ok_*et al.* [5] in Korea, colonoscopy revealed a single small, white, worm within the ileocecal valve (trichuris trichiura) in a 55 year old male patient. The free end of the parasite within the lumen was not coiled. The microscopic evaluation of the retrieved parasite was consistent with Trichuris trichiura, and identified as a female worm with a non-coiled thicker posterior portion. The tail or the thicker posterior end of the female whipworm is straight and bluntly round without any coil or corkscrew shape.
d) In the same study [5], colonoscopy revealed a single whipworm or trichuris trichiura in the cecum in a 49 year old male patient. One end of the parasite was embedded in relatively normal mucosa. The parasite was carefully retrieved by forceps. Microscopically, the parasite was consistent with a Trichuris trichiura female adult worm with a prominent uterus. Numerous barrel-shaped eggs with mucoid plugs at both ends were detected in the uterus.
e) In the study conducted by Wang DD *et al.* [6] in Shenyang, China colonoscopic examination demonstrated the presence of more than 10 whipworms or trichuris trichiura on the mucosa of the cecum, colon, and rectum in a 48 year old male patient. The worms were threaded and fixed to the mucosa at their anterior end. One of the worms was grasped with biopsy forceps and gently removed endoscopically from the mucosa of the lower colon and was identified as a female worm on the basis of the typical eggs of Trichuris trichiura revealed in a worm section by microscopic examination.
f) In the study conducted by Tuan Sharif SE *et al.* [7] in Malaysia, colonoscopy revealed few thread-like nematodes embedding the ileocecal valve (trichuris trichiura) in a 46 year old male patient. Histopathological examination of the biopsied tissue from the ileocecal valve showed an adult female nematode. Multiple ova were observed within its body, and these ova appeared to have terminal plugs. These findings were consistent with an adult female Trichuris trichiura.
g) In the study conducted by Lee S. H *et al.* [12] in Korea, colonoscopy revealed several whitish parasites observed in the cecum and the ascending colon (whipworms or trichuris trichiura) which were removed by a biopsy forceps in a patient with abdominal pain. Biopsy of one worm showed trichuris trichiura female body that includes eggs.
h) Thus, while doing colonoscopy we can easily identify the female whipworm by looking at the tail or posterior end of the whipworm.
i) The tail or the thicker posterior end of the female whipworm is found to be straight and bluntly round without any coil or corkscrew shape while doing colonoscopy. Microscopically the tail or the thicker posterior end of the female whipworm contains gravid uterus with numerous characteristic Trichuris trichiura eggs. Numerous barrel-shaped eggs with mucoid plugs at both ends were detected in the uterus by microscopic examination.

4.2 Male whipworms found in the colon during colonoscopy in other studies

a) In the study conducted by Yoshida M *et al.* [3] in Japan, single whipworm was found in the colon in a 65-year-old Japanese female patient while doing colonoscopy but this whipworm was identified as male whipworm since its tail or the posterior end is highly curved and coiled like a corkscrew.
b) In the study conducted by Kyung-Sun Ok_*et al.* [5] in Korea, colonoscopy revealed a single small, white, worm attached to the cecum (trichuris trichiura) in a 56 year old male patient. One end of the worm was embedded in the hyperemic edematous mucosa and the other end was coiled and movable within the lumen. Microscopic sectional evaluation of the retrieved parasite was consistent with Trichuris trichiura (a male worm including a testis). The tail or the thicker posterior end of the male whipworm is highly curved and coiled like a corkscrew.
c) In the same study [5], colonoscopy revealed a single small, white, worm on the proximal ascending colon (trichuris trichiura) in a 46 year old male patient. One end of the parasite was embedded in relatively normal colonic mucosa and the other end was coiled and movable. The parasite was removed by forceps. Microscopic examination of the retrieved parasite was consistent with Trichuris trichiura, which was identified as a male worm. It had a thread-like head portion and a coiled thicker portion. The tail or the thicker posterior end of the male whipworm is highly curved and coiled.
d) Thus, while doing colonoscopy we can easily identify the male whipworm by looking at the tail or posterior end of the whipworm.
e) The tail or the thicker posterior end of the male whipworm is highly curved and coiled like a corkscrew.

4.3 Whitish colour of whipworm

The male whipworm is 3to 4.5cm and the female whipworm is 3.5 to 5cm in length [11] Whipworms do not feed on blood and feeds only on the tissue secretions of the large intestinal wall. Whipworm is always whitish in colour as it does not feed on blood (fig 1, 2).

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

We can see only the short posterior thick part of whipworm 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 inorder 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.

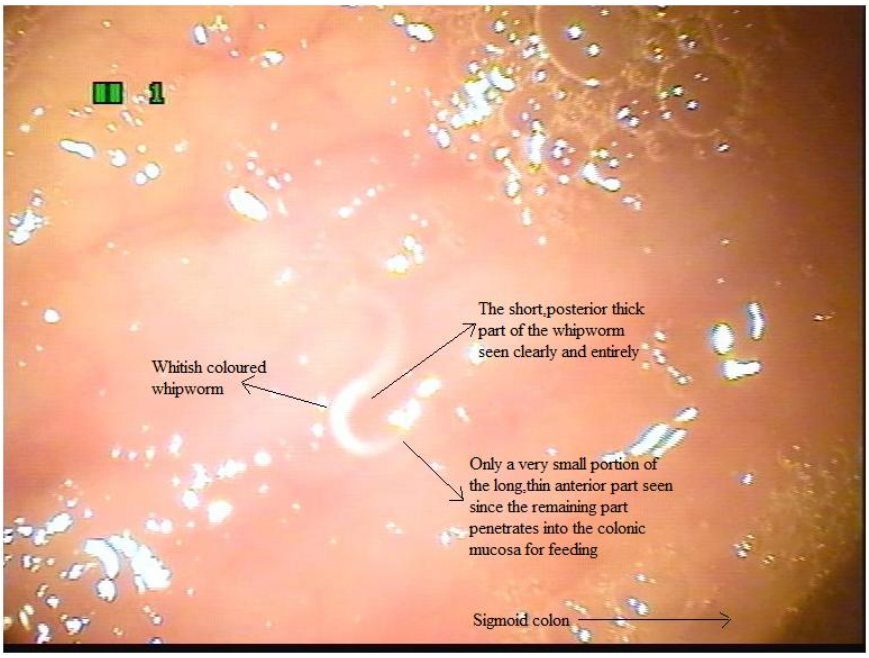

Fig 1: Showing clearly and entirely only the short, posterior thick part of the whitish coloured whipworm and only a very small portion of the long, thin anterior part since the anterior part penetrates into the large intestinal wall for feeding purpose.

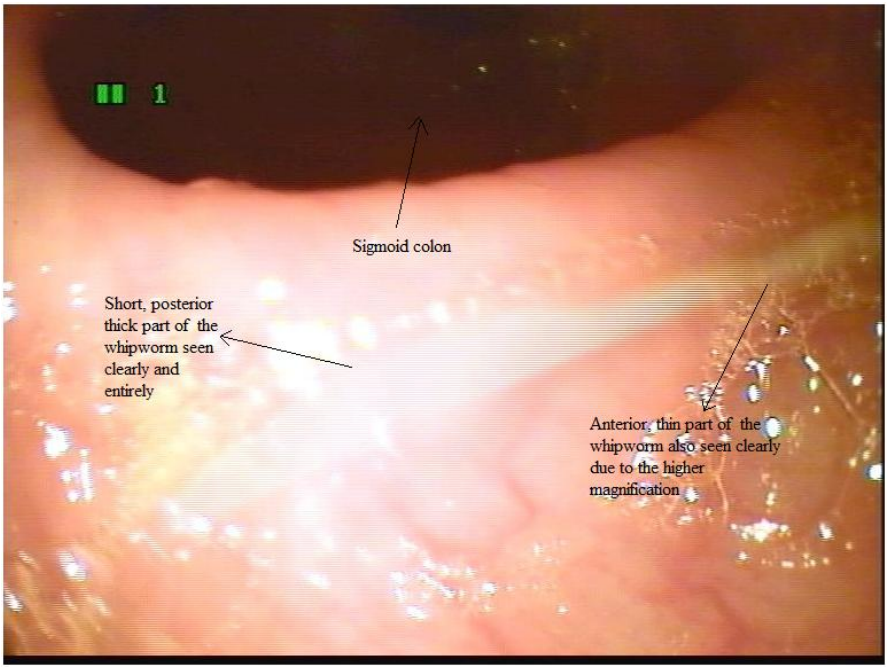

Fig 2: Magnified view showing clearly both the short, posterior thick part and also the anterior, thin part of the whipworm due to the higher magnification.

4.5 Female whipworm found in the colon during colonoscopy in our study

a) In fig 3, we can see clearly the straight and bluntly round posterior thick part or tail of the female whipworm without any coil or corkscrew shape.
b) Thus, while doing colonoscopy we can easily distinguish between male and female whipworm by looking at the tail or posterior end of the whipworm.
c) The tail or the thicker posterior end of the female whipworm is straight and bluntly round without any coil or corkscrew shape.

d) The tail or the thicker posterior end of the male whipworm is highly curved and coiled like a corkscrew.

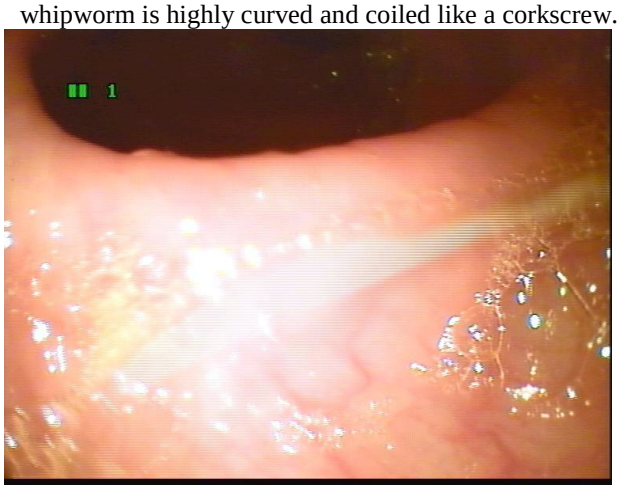

Fig 3: Magnified view showing clearly the straight and bluntly round posterior thick part or tail of the female whipworm without any coil or corkscrew shape and also the anterior, thin part of the whipworm due to the higher magnification.

5. Conclusion

1. Whipworms are the most common nematodes or roundworms found in the large intestine of human beings while doing colonoscopy.
2. Our study and also some other studies have shown female whipworm in the colon while doing colonoscopy. In our study, the tail or the thicker posterior end of the whipworm is straight and bluntly round without any coil or corkscrew shape and hence can be identified as the female whipworm.
3. However other studies have shown male whipworms in the colon while doing colonoscopy. In these studies whipworm was identified as male whipworm since its tail or the thicker posterior end is highly curved and coiled like a corkscrew.
4. Thus, while doing colonoscopy we can easily distinguish between male and female whipworm by looking at the tail or posterior end of the whipworm.
5. The tail or the thicker posterior end of the female whipworm is straight and bluntly round without any coil or corkscrew shape.
6. The tail or the thicker posterior end of the male whipworm is highly curved and coiled like a corkscrew.

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