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PARASITIC WORMS FOUND IN STOMACH WHILE DOING UPPER GASTRO-INTESTINAL ENDOSCOPY AND STUDY OF THE DIFFERENCES BETWEEN ADULT HOOKWORMS AND LARVA OF ANISAKIS SIMPLEX INFECTING STOMACH

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ABSTRACT

Objective: To diagnose parasitic worms found in stomach while doing upper gastro-intestinal endoscopy in our patients. There have not been many studies in India which discuss about the presence and the type of parasitic worms present in stomach while doing upper gastro-intestinal endoscopy. Hence this present study was carried out to study about the presence and the type of parasitic worms present in stomach while doing upper gastro-intestinal endoscopy in our institute.

Methods: A study of 707 patients who had undergone upper gastro-intestinal endoscopy for a period of two years and eight months from May 2009 to December 2011 was carried out in our institute. In each of the 707 patients, the stomach was carefully examined to find out the presence of parasitic worms. The results were found as given below.

Results: Of the 707 patients, one patient was found to have hookworm in stomach instead of its usual site in duodenum while doing upper gastro-intestinal endoscopy.

Conclusion: Hence upper gastro-intestinal endoscopy is a very useful investigation to diagnose parasitic infection like hookworm infection of stomach . Hence it is extremely important to carefully look for the presence of parasitic worms like hookworms in stomach while doing upper gastro-intestinal endoscopy.

Key Words: Hookworms, Stomach, Upper gastro-intestinal endoscopy

INTRODUCTION

Hookworms are commonly reported to occur in duodenum while doing upper gastro-intestinal endoscopy especially in tropical and sub tropical countries (1to11). But it is extremely rare to find hookworms in stomach while doing upper gastro-intestinal endoscopy(12,13). Hence an extremely rare and interesting report of hookworm found in stomach instead of its usual site in duodenum while doing upper gastro-intestinal endoscopy is given here. Other parasitic worms like the larva of anisakis simplex are also reported to occur in stomach especially in oriental patients after eating raw fish(14to17). Since both the adult hookworms and the larva of anisakis simplex can occur in the stomach of human beings, the important differences between the adult hookworms and the larva of anisakis simplex are also highlighted in this article.

MATERIALS AND METHODS

This study was conducted in the department of general surgery, Aarupadai Veedu Medical College and Hospital, Puducherry. A study of 707 patients who had undergone upper gastro-intestinal endoscopy for a period of two years and eight months from May 2009 to December 2011 was carried out in our institute. In each of the 707 patients, the stomach was carefully examined to find out the presence of parasitic worms. The results were found as given below.

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RESULTS

Of the 707 patients, one patient was found to have hookworm in stomach instead of its usual site in duodenum while doing upper gastro-intestinal endoscopy. A 30 year old male patient presented with persistent epigastric pain for one month and hence was subjected to upper gastro-intestinal endoscopy. Very interestingly and unexpectedly a single hookworm was found in the antrum of the stomach of the patient [fig 1,2,3] instead of its usual site in duodenum . Small erosions in the gastric antrum were also found near the hookworm [fig 3]. The patient was also found to have bile reflux from duodenum to stomach(duodeno-gastric reflux) [fig 1,2]. The refluxed bile from duodenum to stomach is the most probable cause of shift of hookworm from duodenum to antrum of stomach in this patient. The patient was treated with a single dose of 400mg of albendazole and his symptoms resolved.

Hookworms occurring in stomach

Of all the intestinal worms adult hookworm measuring about ½ inch long is the worm most commonly found in duodenum and hence named as ancylostoma duodenale. But there has been only very few reports of finding hookworms in stomach while doing upper gastro-intestinal endoscopy (12,13) . In both these reports duodeno-gastric reflux[bile reflux from duodenum to stomach] was attributed to the ectopic localisation of hookworm in the antrum of the stomach (12,13) . Our patient was also found to have bile reflux from duodenum to stomach which is the most probable cause of the ectopic localisation of hookworm in the antrum of the stomach in this patient.

DISCUSSION

Hookworms occur commonly in the duodenum but can also occur rarely in the stomach of human beings.

Other parasitic worms occurring in stomach(anisakis simplex)

The finding of worms attached to human gastric mucosa is exceptional because of the hostile atmosphere due to gastric acid pH (14). Howewer other parasitic worms like the larva of anisakis simplex are also reported to occur in stomach especially in oriental patients after eating raw fish (14to17). The parasite [larva of anisakis simplex] has a protective layer against gastric acid and survives burrowed into the gastric wall. The larva of anisakis simplex develops into a reproducing adult only in marine mammals. In humans it cannot survive and dies within a few weeks. But the short time that it lives, it causes stomach pain and nausea. The larva of anisakis simplex is about 2 cm long.

Gastric anisakiasis

Diagnosis of anisakiasis is made by gastroscopy which allows removal of the worms and cures the patients (18). A case of acute angina like chest pain due to gastric anisakiasis has also been reported in whom the larvae of anisakis simplex in the gastric mucosa were found and extracted endoscopically (19). Hence gastric anisakiasis should be included in the differential diagnosis of acute chest pain (19). Endoscopic extraction of larva is the most effective procedure in dealing with acute gastric anisakiasis (15) . But on the other hand adult hookworms infecting the duodenum and rarely of stomach can easily be treated with a single dose of 400mg of albendazole and endoscopic extraction is not necessary. Hence upper gastro-intestinal endoscopy is a very useful investigation to diagnose parasitic infection like hookworm infection of duodenum and stomach and gastric infection by the larva of anisakis simplex .

Differences between adult hookworms and larva of anisakis simplex

Since both the adult hookworms and the larva of anisakis simplex can occur in the stomach of human beings, both are of almost of the same size and both are parasitic nematodes or roundworms belonging to the phylum nemathelminthes, the important differences between the adult hookworms and the larva of anisakis simplex are highlighted below.

Adult hookworms [ancylostoma duodenale/necator americanus].

1. Infection occurs because of walking barefoot.
2. Infection is very common in India.
3. Only adult hookworms are found in the duodenum and rarely in the stomach of human beings. The larvae of hookworms do not occur in the duodenum and in the stomach of human beings.
4. Adult hookworms are most commonly found in the duodenum of human beings.
5. Adult hookworms measure 0.8to1.3 cm in length and are smaller than the larva of anisakis simplex.
6. Hookworm infection of stomach does not present acutely or with severe acute symptoms like severe chest pain or severe abdominal pain.
7. Hookworm infection can easily be treated with a single dose of 400mg of albendazole and endoscopic extraction is not necessary.

The larva of anisakis simplex.

1. Infection occurs because of eating raw fish.
2. Infection is not common in India and is common only in oriental countries where people eat raw fish.
3. Only larva of anisakis simplex is found in the stomach of human beings. The larval stage dies in human beings without reaching the adult stage. Larval anisakis

simplex develops into a reproducing adult only in marine mammals.

4. The larva of anisakis simplex is found most commonly in the stomach of human beings and hence the resulting infection is called as gastric anisakiasis.
5. The larva of anisakis simplex measures 2cm in length and is larger than the adult hookworms.
6. Gastric anisakiasis commonly presents acutely or with severe acute symptoms like severe chest pain or severe abdominal pain.
7. Albendazole is not effective in relieving the acute symptoms and endoscopic extraction of the larva of anisakis simplex from the stomach of human beings is the best treatment.

CONCLUSION

Hence upper gastro-intestinal endoscopy is a very useful investigation to diagnose parasitic infection like hookworm infection of stomach and gastric infection by the larva of anisakis simplex .

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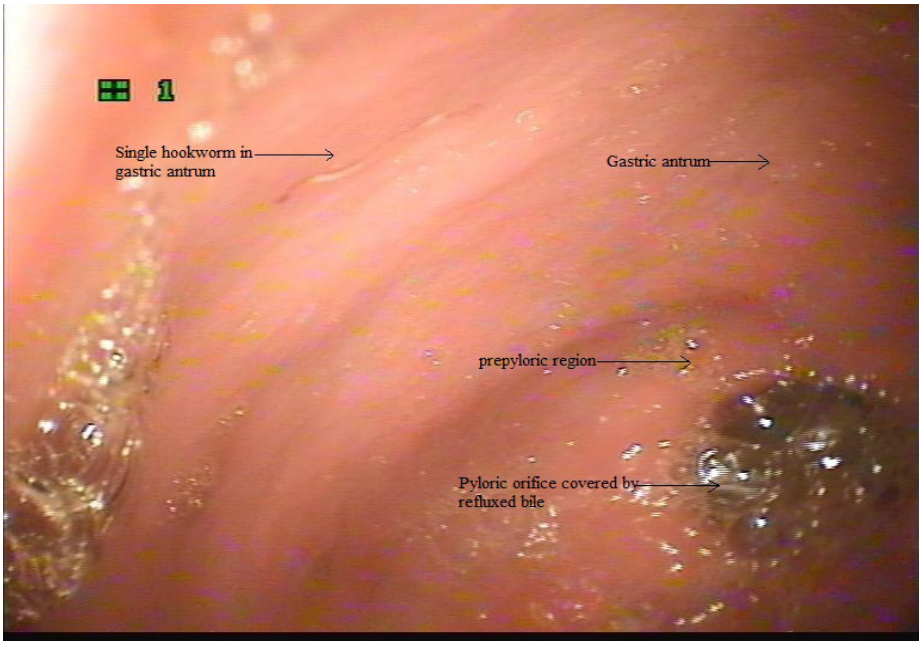

Figure 1: Endoscopy showing hookworm in antrum of stomach

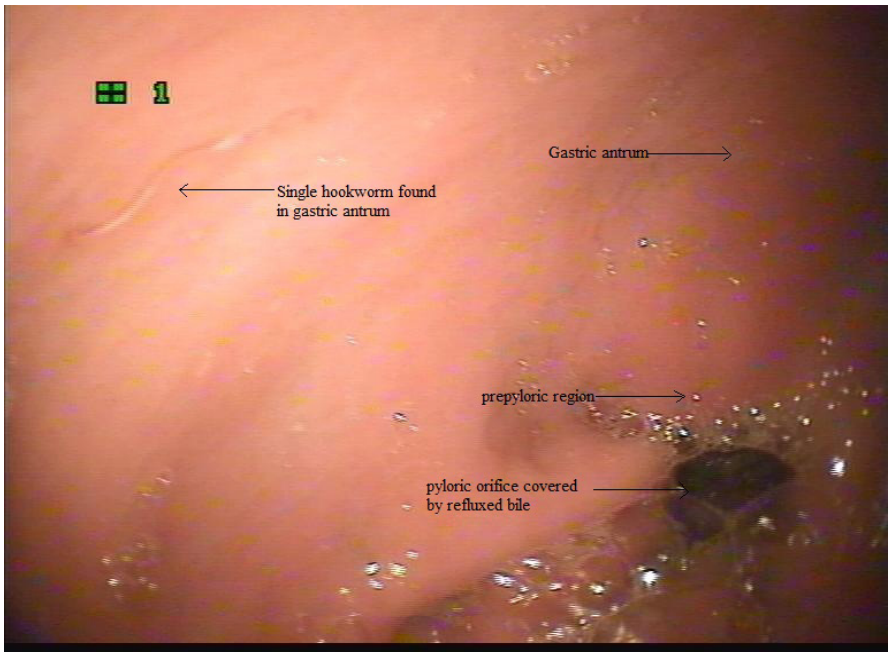

Figure 2: Endoscopy showing hookworm (slightly magnified view) in gastric antrum

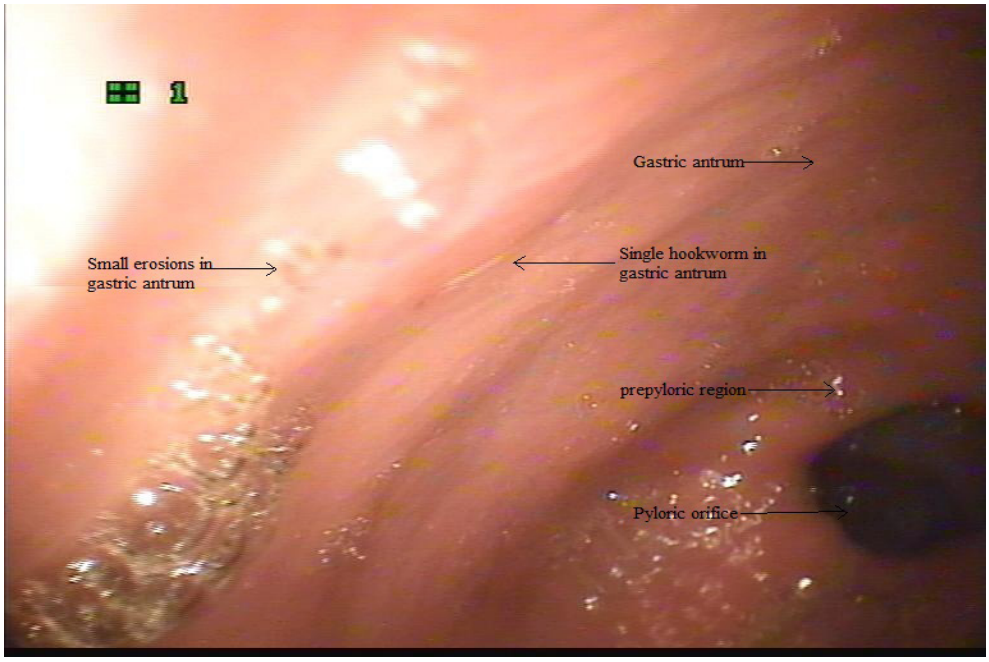

Figure 3: Endoscopy showing small erosions in gastric antrum near the hookworm