

## Gastric Ascariasis Presenting as Unique Dyspeptic Symptoms in an Endemic Area

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**To the Editor:** Ascariasis infects more than 1.4 billion people throughout the world (1). However, gastric ascariasis has been rarely reported in the literature. We report clinical and gastroscopic findings in a large cohort of patients with gastric ascariasis in an endemic area.

From June 2007 to November 2009, we performed 1522 diagnostic esophago-gastro-duodenoscopies (EGD) at our center. All had dyspeptic symptoms. The study group included 820 men and 702 women, of mean age  $\pm$ 1s.d.  $32.0 \pm 10.5$  years; all were residents of Kashmir valley and none had travelled outside the country. Worms were seen in the stomach of 22 patients (M:F 8:14; mean age  $43.5 \pm 10.4$  years; age range 32–60 years; **Table 1**). Their symptom duration varied from 2 weeks to 6 years, and the symptoms were broadly divided into three groups. Five patients presented with features of gastric outlet obstruction, which included delayed digestion, halitosis, and food staying in the stomach for hours together, vomiting, weight loss and a distended stomach with gastric splash. The cause of gastric stasis was a single live motile worm in the antrum blocking the tightly closed pylorus in two patients (**Figure 1**; **Supplementary video 1** online) and an aggregated bunch of motile worms blocking the pyloro-duodenal area in three patients (**Supplementary video 2**). Eleven patients had retro-sternal irritation and a strong feeling of something moving in the lower chest, especially during sleep. All these patients had actively motile worms

present in the fundus of the stomach and worms were seen entering the cardiac orifice and esophagus. We believe the symptoms were caused by movement of the worms into the esophagus in search of food, especially at night. Three patients had repeated episodes of cough and choking during night. EGD showed worms in the esophagus and fundus in one patient (**Figure 2**) and in the fundus of the stomach in two patients. The remaining three patients had associated diseases as detected on EGD (cirrhosis with esophageal varices and hypertensive gastropathy-1, gastric carcinoma-1, and nodular lymphoid hyperplasia-1). Mucosa of the stomach in five patients and the duodenal bulb in four patients showed multiple hemorrhagic erosions. These were localized lesions presumably caused by injury at the site at which the mouth of the ascaride was biting or holding the mucosa. None of the patients presented with gastrointestinal bleeding. All patients reported to have vomited worms during the illness. Gastric ultrasound showed actively motile ascarides in the stomach. Ascarides were recognized by their characteristic long echogenic strips

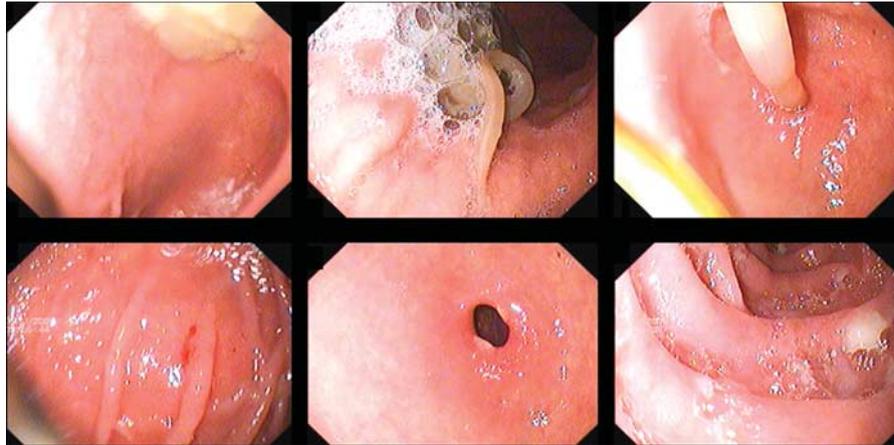
with central anechoic tubes (representing the alimentary canal of the worm) and snake-like mobility.

All worms visualized during EGD were extracted through the mouth (**Supplementary video 1**). This necessitated repeated endoscopic insertion in those with multiple worms. All patients received mebendazole therapy 100mg twice per day for 3 days. Patients were followed up from 1 to 30 months (mean  $\pm$ 1s.d.  $16.6 \pm 6.4$  months). Following worm extraction and anthelmintic medication, the patients had rapid relief of symptoms and stayed free of symptoms in the follow-up. Most striking was the disappearance of choking in three patients. Patients with ascari-induced gastric outlet obstruction showed rapid resolution of gastric stasis and those with esophageal symptoms showed significant resolution of the symptoms. **Q1**

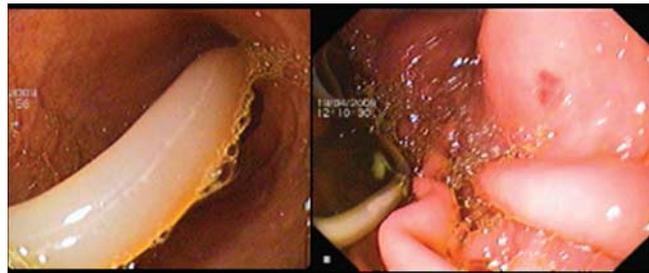
These data point to the fact that gastric ascariasis should be a common entity in regions of the World where this infection is endemic and presents with several dyspeptic symptoms. Gastric ascariasis has been reported to cause chronic intermittent gastric outlet obstruction in several

**Table 1. Clinical profile of the 22 patients with gastric ascariasis**

Age in years- mean $\pm$ 1 s.d. (range)	43.5 $\pm$ 10.4 Years (age range 32–60 years)
Male:female ratio	8:14
<i>Symptom complex</i>	
Associated diseases	3 (Cirrhosis—1, gastric carcinoma—1, nodular lymphoid hyperplasia—1)
Gastric outlet obstruction	5 (A single worm blocking the pylorus—2; multiple worms blocking the pyloro-duodenal junction—3)
Intense nocturnal retro-sternal irritation	11 (Worms present in the fundus and body stomach)
Nocturnal choking	3 (Worms in the esophagus and stomach—1; worms in the fundus and body—2)
Number of worms	One worm—12 patients; 2 worms—3 patients; 3 to 5 worms—3 patients; multiple (>5) worms—4 patients
Placement of worms	Esophagus and stomach—1 patient; fundus and body—3 patients; antrum—10 patients; antrum and duodenum—8 patients
Associated mucosal lesions	Localized hemorrhagic lesions in the stomach—5 patients; hemorrhagic lesions in the bulb—4 patients
Gastric ultrasound	Actively motile worms in the stomach
Gastric biopsies	Unremarkable



**Figure 1.** A 50-year-old man presented with abdominal distension, indigestion, and gastric stasis. His esophago-gastro-duodenoscopic images are shown. Upper left panel: The image shows food residue in the fundus. Upper middle panel: A large ascaride is seen coiled up into a loop. Upper right panel: The ascaride body has blocked the pylorus. The body of the ascaride shows a constriction at the site of the pylorus. Lower left panel: The duodenal bulb shows a hemorrhagic lesion at the site at which the mouth of the ascaride was touching the mucosa. Lower middle panel: The pylorus shows edema, erythema, and ulceration. Lower right panel: Post-bulbar mucosa shows ulceration with overlying slough.



**Figure 2.** A 36-year-old woman presented with repeated episodes of nocturnal choking for the previous 6 months. Her esophago-gastro-duodenoscopic images are shown. Left panel: A large ascaride is seen in the esophagus. Right panel: A large ascaride is seen in the fundus. Mucosa shows a hemorrhagic lesion.

case reports (2–4). However, intense retro-sternal irritation and choking at night were unique symptoms that were not reported in the literature, although ascariasis has been considered in differential diagnosis of peptic ulcer disease, and esophageal and gastric bleeding (5,6).

**Q3** There are a few indicators for when this entity should be kept high in the list. These include (i) residing in endemic areas or visiting such areas; (ii) showing unusual and unique dyspeptic symptoms as reported in this study; (iii) having a history of vomiting worms at any time during the course of illness. Gastric ultrasound performed on a water-filled stomach should be the investigation of choice and EGD should be used for therapeutic purposes to extract the worms.

Management of gastric ascariasis is based on two simple principles: (1) extraction of

the offending worms and (2) institution of effective anthelmintic therapy so that worms downstream in the jejunum do not travel upstream. All our patients had effective relief of symptoms and pointed to the parasite as the cause of symptoms. Dyspepsia is a common symptom in the community. As a significant percentage of dyspeptic patients had gastric ascariasis, this entity should be considered as a differential diagnosis of dyspepsia in endemic regions.

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