Giardiasis of the stomach

D.M. Berney, D. Rampton¹ and J.D. van der Walt

Institute of Pathology and ¹Department of Gastroenterology, The Royal London Hospital, Whitechapel, London E1 1BB, UK

Summary: A patient with giardiasis in an inflamed gastric antral biopsy specimen is reported. *Helicobacter pylori* were not identified and no other cause of the gastritis was apparent. This condition may be more common than has been previously supposed and may be linked to bile reflux or hypochlorhydria.

Introduction

Duodenal infestation by *Giardia lamblia* is a well-known clinical and pathological entity but giardiasis of the stomach has only recently reappeared in the medical literature. The apparent rarity of this manifestation of giardiasis may lead to the diagnosis being overlooked by gastroenterologists and pathologists. We report a recent case to highlight the unusual presentation of a well-known organism.

Case report

A 79 year old woman presented with a history of recent burning epigastric pain worse at night and associated with nausea. There was no other relevant history: in particular, she had never been abroad and had no history of diarrhoea. Abdominal examination revealed only mild tenderness in the epigastrium. Endoscopy showed diffuse patchy hyperaemic gastritis and bile reflux. Antral gastric biopsies were taken for histology and for a urease test, which was negative. Neither duodenal biopsy nor aspiration was undertaken. On review, 4 weeks after endoscopy, the patient's symptoms had spontaneously resolved and have not recurred one year after endoscopy.

Results

The gastric biopsy specimen was fixed in buffered formalin, embedded in paraffin wax and routinely stained with haematoxylin and eosin. A section was also stained by a giemsa technique to assist in identification of *Helicobacter*-like organisms. The

biopsy was examined for evidence of micro-organisms, inflammation, intestinal metaplasia and dysplasia.

The biopsy was of antral type gastric mucosa. *Giardia lamblia* trophozoites were easily identified adhering to the surface epithelium (Figure 1). The biopsy had a villous configuration, although no intestinal metaplasia was seen. The lamina propria showed a moderate chronic inflammatory cell infiltrate. *Helicobacter*-like organisms were not seen in the surface mucous. No lymphoid follicles were present.

Discussion

Giardia lamblia is a well-recognized parasite of the small bowel mucosa in man.^{1,2} Histological changes in the small bowel due to infection with *Giardia lamblia* are non-specific, including acute and chronic inflammation, epithelial damage and lymphoid hyperplasia.^{1,3} Trophozoites have also been

Figure 1 *Giardia lamblia* trophozoites adjacent to gastric antral mucosa.

shown to infect the gall bladder and biliary tree in man.⁴ Clinically unsuspected and symptomatically atypical infections are common.⁵ There have only been two recent reports of gastric giardiasis,^{6,7} though as long ago as 1916 there is a report of '*Lambliia intestinalis*' occurring in cases of adenocarcinoma of the stomach.⁸ The clinical importance of *Giardia lamblia* in the stomach is unknown.

Giardia lamblia is thought to show a marked preference for an environment of pH 6.38–7.02⁹ though encystation occurs in the acidic environment of the stomach and has been shown to be maximal at pH 1.3–2.7¹⁰. Our patients had bile

reflux on endoscopy. Bile acts as a primary growth factor stimulant to *Giardia*¹¹ by providing lecithin for the synthesis of the *Giardia* phospholipid membranes.^{1,11} *In vivo*, bile reflux may also favour gastric colonization by *Giardia* by raising gastric pH. In the elderly, hypochlorhydria may have the same effect. Different strains of the parasite have been shown to have different effects on the host,¹² therefore gastric giardiasis could be related to a specific strain of the parasite, with an enhanced ability to parasitize a more acidic environment. Further investigations may clarify the aetiology and clinical significance of this manifestation of human giardiasis.

References

1. Farthing, M.J.G. Host-parasite interactions in human giardiasis. *Q J Med* 1989, **263**: 191–204.
2. Ferguson, A., Gillon, J. & Monro, G. Pathology and pathogenesis of the intestinal mucosal damage in the giardiasis. In: Myer, E.A. (ed.) *Giardiasis*. Elsevier, Amsterdam, 1990, pp. 155–195.
3. Oberhuber, G. & Stolte, M. Giardiasis: Analysis of histological changes in biopsy specimens of 80 patients. *J Clin Pathol* 1990, **8**: 641–643.
4. Wolfe, M.S. Giardiasis. *JAMA* 1975, **233**: 1362–1365.
5. Gillon, J. Clinical studies in adults presenting with giardiasis to a gastro-intestinal unit. *Scot Med J* 1985, **30**: 89–95.
6. Doglioni, C., De Boni, M., Cielo, R. *et al.* Gastric giardiasis. *J Clin Pathol* 1992, **45**: 964–967.
7. Quincey, C., James, P.D. & Steele, R.J.C. Chronic giardiasis of the stomach. *J Clin Pathol* 1992, **45**: 1039–1041.
8. Fantham, H.B., Stephens, J.W.W. & Theobald, F.V. *The Animal Parasites of Man*. John Bale, Sons and Danielson, London, 1916, pp. 57–60.
9. Haiba, M.H. The pH of the alimentary tract in normal and giardia-infected culture mice. *Parasitol* 1954, **44**: 387–391.
10. Bingham, A.K. & Mayer, E.A. *Giardia* encystation can be induced in vitro in acidic solutions. *Nature* 1979, **277**: 301–302.
11. Halliday, C.E.W., Clark, C. & Farthing, M.J.G. *Giardia*-bile salt interactions in vitro and in vivo. *Trans R Soc Trop Med Hyg* 1988, **82**: 428–432.
12. Nash, T.E., Herrington, D.A., Losonsky, G.A. & Levine, M.M. Experimental human infections with *Giardia lamblia*. *J Infect Dis* 1987, **156**: 974–984.