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Intestinal strongyloidiasis: a diagnosis frequently missed in the tropics

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Summary *Strongyloides stercoralis*, a nematode parasite, is endemic in tropical and sub-tropical regions. Infection usually remains asymptomatic, but in immunocompromised hosts hyperinfection and dissemination can occur, which has a high mortality. Early detection of *S. stercoralis* may alter the fatal course of infection. We present our experience of five patients with *S. stercoralis* hyperinfection diagnosed by endoscopic duodenal and jejunal biopsy in northern India. A predisposing factor was present in all patients in the form of corticosteroid intake, chronic liver disease and pancytopenia. Common gastrointestinal symptoms were abdominal pain, diarrhoea, gastrointestinal bleeding, nausea, vomiting and weight loss with evidence of malabsorption. The initial stool examination and peripheral blood eosinophil count were normal in all patients. Strongyloidiasis was not suspected clinically in any patient and the diagnosis was achieved on endoscopic biopsy. Three of the patients with disseminated disease developed fatal Gram-negative systemic infection. This study highlights the importance of considering strongyloidiasis in all patients on immunosuppressive drug therapy who present with gastrointestinal symptoms so that the patient can be appropriately investigated and promptly treated. In endemic regions, patients with systemic Gram-negative bacterial infections without an obvious cause should be tested for strongyloidiasis.

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1. Introduction

Strongyloidiasis, caused by the nematode *Strongyloides stercoralis*, is often an asymptomatic infection of the upper small intestine. However, gastrointestinal symptoms are common. Autoinfection causes chronic infection and, in patients with defective cell-mediated immunity, may lead to an increased parasite burden and dissemination to almost all organs, including the lungs, liver and central

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nervous system.¹ Dissemination of *S. stercoralis* is potentially lethal as it is often associated with bacterial sepsis, thought to result from transfer of enteric organisms into the bloodstream concomitant with larval penetration. Although patients may survive if diagnosed at an early stage, hyperinfection syndrome has a mortality rate ranging from 15% to as high as 87%.² Relatively non-specific clinical features of this disease lead to diagnostic difficulty. A high index of suspicion by clinicians as well as thorough evaluation using sensitive techniques are essential to diagnose this potentially fatal infection. Treatment of strongyloidiasis is limited to oral formulations with ivermectin, albendazole and thiabendazole.

We present our experience of five cases of *S. stercoralis* hyperinfection diagnosed on small bowel biopsy, with the aim of determining: (i) how often the diagnosis was clinically suspected; (ii) how often the diagnosis was made ante-mortem; and (iii) how often stool microscopy detected larvae.

2. Patients and methods

Five patients diagnosed as having strongyloidiasis on histology of an upper gastrointestinal biopsy over a 12-year period (1996–2007) were identified from the records of the Department of Pathology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, Uttar Pradesh, a tertiary referral centre in northern India. The diagnosis was based on demonstration of larvae and/or adult worms in the intestinal biopsy. Pertinent clinical and endoscopic findings and laboratory results were obtained from the patients, records and are summarised in Table 1.

2.1. Case reports

2.1.1. Case 1

A 50-year-old man presented in October 1996 with a 2-month history of abdominal pain, anorexia, vomiting and weight loss. He had been taking prednisolone (60 mg/day tapered to 10 mg/day) during the previous 1.5 months for polyarthritis. Examination revealed pedal oedema. Laboratory investigations revealed haemoglobin (Hb) 105 g/l, total leukocyte count (TLC) 11.7×10^9 /l (82% polymorphonuclear leukocytes (PML), 17% lymphocytes, 1% monocytes and no eosinophils) and platelets 130×10^9 /l. Serum total protein and albumin were 41 g/l and 15 g/l, respectively. ELISA for HIV was negative. Stool examination did not reveal any ova, cysts or larvae. A barium study showed duodenal mucosal fold thickening and dilated small bowel loops. Endoscopy showed thickened folds and erosions in the duodenum. Biopsy from the duodenum revealed *S. stercoralis* larvae and adult worms within the crypts. The patient was treated with albendazole 400 mg twice daily for 3 days following which his symptoms improved.

2.1.2. Case 2

A 30-year-old asthmatic man, resident of central India, whose case has been previously reported, presented in February 2001 with a 1-year history of large-volume semisolid to watery diarrhoea (600–900 g) associated with borborygmi, anorexia and weight loss.³ Examination

Table 1 Clinical features in patients with strongyloidiasis

Feature	Case 1	Case 2	Case 3	Case 4	Case 5
Age (years)	50	30	19	32	65
Gender	Male	Male	Male	Male	Male
Clinical features	Abdominal pain, vomiting	Diarrhoea, weight loss	Diarrhoea, anorexia, weight loss	Constipation, abdominal pain, vomiting	Melena, anorexia, weight loss
Upper gastrointestinal endoscopic findings	Thickened folds and erosions in duodenum	Normal	Normal	Duodenal mucosal thickening with ulcers	Normal
Associated illness/medication	Arthritis, steroid	Bronchial asthma, panhypogammaglobulinaemia	Corticosteroid abuse	Lepromatous leprosy, steroid	Chronic liver disease
Laboratory findings					
Total leukocyte count (/μl)	11 700	14 100	11 400	15 000	36 000
Eosinophils (/μl)	0	282	228	300	0
Stool examination	Negative	Negative	1 negative, 1 positive	Negative	Negative
HIV serology	Negative	Negative	Negative	Negative	Negative

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