

CORRESPONDENCE



Strongyloides stercoralis disseminated infection in a patient misdiagnosed with chronic asthmatic bronchitis

Dear Editor,

Strongyloides stercoralis is a soil-transmitted intestinal nematode, commonly causing pulmonary infection, abdominal pain, or diarrhea.¹ If immune systems are compromised, the nematode larvae may spread and develop a potentially fatal auto-infection syndrome in the host.^{2,3} We present a case of a farmer with disseminated strongyloidiasis, whose past medical history included repeated cough and expectoration associated with wheezing for 30 years. He was originally misdiagnosed with chronic asthmatic bronchitis and received intravenous methylprednisolone 40–80 mg/day during an asthmatic episode.

The patient's laboratory data (Table 1) notably revealed a high eosinophil count of 9.4%, a possible indication of a parasitic infection. Blood gas analysis indicated severe hypoxemia with PaO₂/FiO₂ < 150 mmHg (PaO₂ = 44 mmHg and FiO₂ = 40%).

His initial chest radiograph showed diffuse pulmonary infiltrates (Fig. 1A). A potentially significant finding, interlobular septal thickening, was revealed by a high resolution chest computed tomography (CT) scan (Fig. 1B). Contrast-enhanced CT scan of the abdomen only revealed bowel wall thickening (Fig. 1C). However, a subsequent esophagogastroduodenoscopy showed multiple small white milium nodules in duodenal submucosal tissue (Fig. 1D); duodenal biopsy specimens further found the ova and the insect body of *S. stercoralis* (Fig. 1E). While an encephalopathy developed, a head MRI scan showed a blurred slightly hyperintense nodular lesion in the right temporal lobe near the meninges (Fig. 1F, G). As in the case of Feely et al.,⁴ central nervous system damage caused by nematodes migration should be considered. Additionally, stool and sputum parasitological examinations were all positive for *S. stercoralis* larvae, so the diagnosis of *S. stercoralis* disseminated infection was declared.

Within 24 hours after the diagnosis, treatment with albendazole was started up to 2 weeks. On the 3rd day after

the treatment, he had a fever of 38°C, wheezes and coarse crackles were heard throughout both lungs with respiratory acidosis (PCO₂ = 62.5 mmHg). This may have been due to a large number of protein decomposition products released by the dead worms, which caused allergic reactions in the host. On the 12th day, the stool and sputum samples tested became negative, which demonstrated the clinically effective treatment of the primary disease; there was also return of respiratory function. However, with the combination of Gram-positive cocci sepsis, septic shock and multiple organ failure, the patient continued to deteriorate and died eventually.

Table 1 Patient's laboratory results

Test	Results	Low/High	Reference ranges
WBC count, × 10 ⁹ /L	11.7	H	4–10
WBC differential, %			
Neutrophils	75.1	H	51–75
Lymphocytes	10.0	L	20–40
Monocytes	5.4		3–8
Eosinophils	9.4	H	0.5–5
Basophils	0.1		0–1
RBC count, × 10 ¹² /L	3.24	L	4.09–5.74
Hemoglobin, g/L	93	L	131–172
RDW, %	15.1	H	0–14
Hematocrit, %	28.6	L	38–50.8
Platelets count, × 10 ⁹ /L	218		100–300
LDH, U/L	763	H	313–618
AST, U/L	27		15–46

AST = aspartate aminotransferase; H = high; L = low; LDH = lactate dehydrogenase; RBC = red blood cell; RDW = RBC volume distribution width; WBC = white blood cell.

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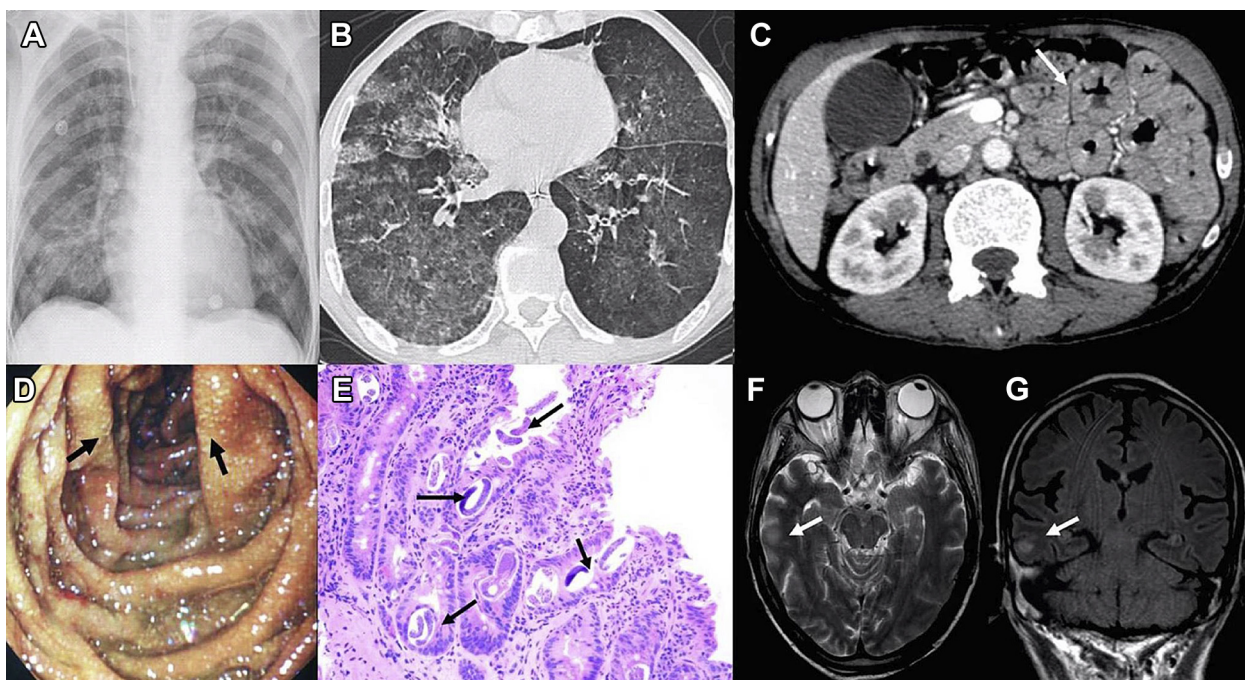


Figure 1. (A) Frontal chest radiograph showing diffuse pulmonary infiltrates over both lungs. (B) A high-resolution chest computed tomography scan revealing interlobular septal thickening. (C) Computed tomography scan of the abdomen showing the small intestine bowel-wall thickness in the upper left abdominal region (arrow). (D) Esophagogastroduodenoscopic view of the duodenum showing multiple small white miliary nodules in the submucosa of the small intestine (arrows). (E) Hematoxylin and eosin stained section of the duodenal mucosa ($\times 200$) showing cross and longitudinal sections of *Strongyloides stercoralis* (arrows). (F,G) Magnetic resonance images of the patient with neurological symptoms after admission. (F) Axial T2-weighted (TR/TE, 2223 /80, turbo spin-echo) magnetic resonance imaging showed a blurred slightly hyperintense nodular lesion in the right temporal lobe near the meninges (arrow). (G) Coronal FLAIR (TR/TE, 7000/120, turbo spin-echo) showed a hyperintense nodular lesion in the same location (arrow).

Although gastrointestinal discomfort is one of the most common complaints in strongyloidiasis, as nematodes first reach the respiratory system through the blood circulation, pulmonary involvement is increasingly recognized. Mukerjee et al.⁵ reported two cases of pulmonary strongyloidiasis associated with interlobular septal fibrosis. Any patient with eosinophilia and restrictive lung function as well as interlobular septal fibrosis on chest CT, if they also have abdominal symptoms (abdominal pain, diarrhea or melena), the diagnosis of strongyloidiasis should be considered before starting corticosteroid therapy, so as to avoid fulminant strongyloidiasis.

To our knowledge, the multi-site imaging features in a patient with disseminated strongyloidiasis have not been reported. Considering the high mortality of disseminated strongyloidiasis, prevention and early diagnosis are of utmost importance.

Conflicts of interest

All contributing authors declare no conflicts of interest.

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Yang Wang^a

Yi Ma^a

Department of Radiology, The Affiliated Nanjing Drum Tower Hospital of Nanjing University, Medical School, Nanjing, China

Ying Xu^a

Department of Intensive Care Unit, The Affiliated Nanjing Drum Tower Hospital of Nanjing University Medical School, Nanjing, China

^a The authors gave same contribution to the paper and were recommended as co-first authors.

Bin Zhu*

*Department of Radiology, The Affiliated Nanjing Drum
Tower Hospital of Nanjing University Medical School,
Nanjing, China*

Hongqian Guo**

*Department of Urology, The Affiliated Nanjing Drum Tower
Hospital of Nanjing University Medical School, Nanjing,
China*

*Corresponding author. Department of Radiology, The
Affiliated Nanjing Drum Tower Hospital of Nanjing,
University Medical School, Number 321 Zhongshan Road,
Nanjing 210008, China.

E-mail address: gobin10266@163.com

**Corresponding author. Department of Urology,
The Affiliated Nanjing Drum Tower Hospital of Nanjing,
University Medical School,
Number 321 Zhongshan Road,
Nanjing 210008, China.
E-mail address: dr.ghq@163.com

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