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Unusual cause of lesions in the descending duodenum and liver: A case report and review of literature

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Abstract

The descending duodenum is rarely involved in *Schistosoma japonicum* (*S. japonicum*) infection. Here, we report a case of acute Schistosoma infection, which presented with abdominal pain, abdominal distension and irregular fever. Tumor-like lesions were observed in the descending duodenum. Simultaneously, heterogeneity in hepatic perfusion was demonstrated by dynamic computed tomography scanning. Biopsy of the descending duodenum showed the deposition of Schistosoma eggs. Following administration of the antihelminthic drug praziquantel, the patient showed rapid clinical improvement. In conclusion, we report a patient with acute *S. japonicum* infection presenting as tumor-like lesions in the descending duodenum and heterogeneity of blood perfusion in liver parenchyma.

Key words: *Schistosoma japonicum*; Heterogeneity; Duodenum; Tumor-like lesions; Liver

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Core tip: *Schistosoma japonicum* (*S. japonicum*) is primarily found in the mesenteric veins and tends to involve the colon, rectum and liver. Here, we report a case of acute *S. japonicum* infection in a patient presenting with tumor-like lesions in the descending duodenum and heterogeneity of blood perfusion in liver parenchyma.

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INTRODUCTION

Schistosomiasis is a disease caused by parasitic flatworms called schistosomes. The three major species of human schistosome are *Schistosoma mansoni*, *Schistosoma haematobium*, and *Schistosoma japonicum* (*S. japonicum*)^[1]. *S. japonicum* is widespread in East Asia and the southwest Pacific region. It is primarily found in the mesenteric veins and tends to involve the colon, rectum and liver, and occasionally the duodenum. In this study, we report *S. japonicum* infection involving the descending duodenum presenting as tumor-like lesions. In addition, heterogeneity of blood perfusion in liver parenchyma was observed in the patient. This is the first report to describe patchy infiltration of *S. japonicum* in liver parenchyma.

CASE REPORT

A 47-year-old male farmer presented to our hospital with a 3 wk history of persistent abdominal pain, abdominal distension and irregular low fever. Abdominal examination revealed tenderness in the right upper quadrant with no rebound tenderness or guarding. The results of laboratory tests were as follows: leukocytes, 15450/mm³; eosinophils, 28.7%; erythrocytes, 2.84×10^{12} /L; hemoglobin, 86 g/L. Liver function test findings were as follows: albumin, 24.6 g/L; alkaline phosphatase (ALP), 341 U/L (40-150 U/L); γ -glutamyl transferase (γ -GT), 94 U/L (17-53 U/L). The hepatitis B results were as follows: hepatitis B surface antigen, positive; hepatitis B virus (HBV) e antibody, positive; hepatitis B core antibody, positive. HBV DNA was undetectable, and hepatitis C virus antibody was negative. Erythrocyte sedimentation rate was 96 mm/h; autoantibodies were negative; immunoglobulins were within the normal range. Neither aerobic nor anaerobic bacteria were detected in blood culture. Tumor markers (carcinoembryonic antigen, alpha fetoprotein, carbohydrate antigen 199, carbohydrate antigen 72-4, prostate specific antigen, squamous cell carcinoma antigen) were within the normal range. The results of ascitic fluid examination were as follows: total protein, 26.0 g/L; albumin, 12.0 g/L; serum-ascites albumin gradient, 12.6 g/L; cell count, 450/mm³; leukocytes, 254/mm³; polymorphonuclear, 46/mm³. A panel of ascitic tumor markers was within the normal range, and the remaining blood tests were normal. Upper gastrointestinal (GI) endoscopy indicated protrusive lesions in the esophagus (Figure 1A), swollen mucosa and protrusive lesions in the descending

duodenum (Figure 1B). Endoscopic ultrasonography (EUS) revealed a hypoechoic mass in the muscularis mucosa of the esophagus (Figure 1C, arrow), thickening of the descending duodenal wall, destruction of the descending duodenal wall (Figure 1D, arrow), and ascites (not shown). Dynamic abdominal computed tomography (CT) scanning showed heterogeneous hypointensity in the liver (portal phase) (Figure 1E, arrow), thickening of the descending duodenal wall (Figure 1F, arrow), swollen mesentery around the arteries (regional increase in mesenteric fat density as a result of edema) (Figure 1G, arrowhead), and ascites (Figure 1G, arrow). Serological tests for anti-Schistosoma antibody (ELISA) were positive; a biopsy of the descending duodenum showed the deposition of Schistosoma eggs and infiltration of eosinophils (Figure 1H). The patient received the antihelminthic drug praziquantel. Two months later, the patient underwent a complete checkup, and his symptoms of abdominal pain, abdominal distension and fever had resolved. The results of laboratory tests were as follows: leukocytes, 9280/mm³; eosinophils, 17.60%; erythrocytes, 4.6×10^{12} /L; hemoglobin, 142 g/L; albumin, 49.6 g/L; ALP, 169 U/L; γ -GT, 78 U/L. Upper GI endoscopy demonstrated protrusive lesions in the esophagus (Figure 2A) and normal mucosa (Figure 2B) in the descending duodenum. EUS showed a hypoechoic mass in the muscularis mucosa of the esophagus (no change, not shown), slight thickening and normal layer of the descending duodenal wall (Figure 2C, arrow). Dynamic abdominal CT scanning showed homogeneous hepatic perfusion on the portal phase (Figure 2D), slight thickening of the descending wall (Figure 2E, arrow), shrinkage of swollen mesentery to normal size (Figure 2F, arrowhead), and disappearance of ascites.

DISCUSSION

S. japonicum, which is widespread in China, is primarily found in the mesenteric veins and involves the colon, rectum and liver. Occasionally, the duodenum is involved in *S. japonicum* infection and is manifested as erosion, ulcer, bleeding and granular changes in the mucous membrane^[2-5]. The patient in our study presented with tumor-like lesions in the descending duodenum, which has not been reported in the literature. EUS and CT revealed thickening and destruction of the descending duodenal wall, which resembled tumor-like lesions. Pathological examination demonstrated *S. japonicum* infection in the descending duodenum. The diagnosis of GI Schistosomiasis is established by histological evidences in clinical practice. Thus, endoscopic examination identifies the lesion of GI parasites, and pathological evidence from endoscopic biopsies define the diagnosis of parasites infection^[6]. In addition, ELISA tests for anti-Schistosoma antibody demonstrated the infection of *S. japonicum* because *S. japonicum* is the only human blood fluke that occurs in China. Importantly, rapid

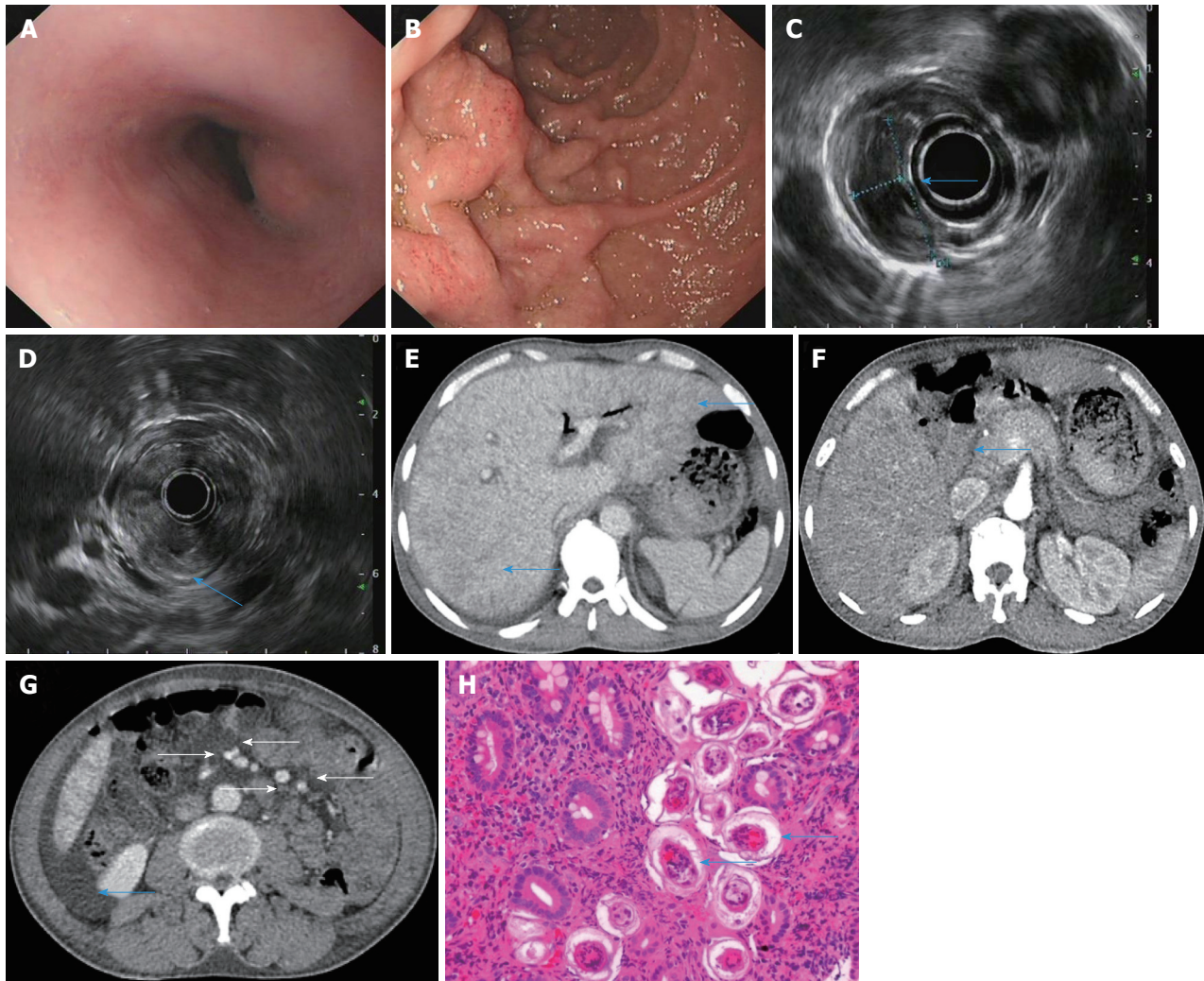


Figure 1 A 47-year-old male patient with acute *Schistosoma japonicum* infection underwent endoscopic examination, endoscopic ultrasonography and dynamic computed tomography scanning at the baseline visit. A, B: Upper gastrointestinal endoscopy showing protrusive lesions in the esophagus (A), swollen mucosa and protrusive lesions in the descending duodenum (B); C, D: Endoscopic ultrasonography revealing a hypoechoic mass in the muscularis mucosa of the esophagus (C, arrow), thickening of the descending duodenal wall, and destruction of the descending duodenal wall (D, arrow); E-G: Dynamic computed tomography showing heterogeneous hypointensity in the liver (E, arrow), thickening of the descending duodenal wall (F, arrow), swollen mesentery around the arteries (G, arrow), and ascites; H: Biopsy of the descending duodenum showing deposition of *Schistosoma* eggs.

improvement of the descending duodenal lesions was observed following administration of praziquantel. The clinical manifestations, pathological changes (uncalcified eggs) and the increase in eosinophils confirmed the diagnosis of acute *S. japonicum* infection in this patient.

In addition, heterogeneous hypointensity in liver parenchyma on the portal phase of dynamic CT was observed in the patient, which demonstrated a difference in blood perfusion of liver parenchyma. Patchy liver enhancement on the portal phase of dynamic CT was observed in the areas of liver parenchyma, which received better blood perfusion^[7-9]. Patchy hepatic infiltration of *S. japonicum* gave rise to the heterogeneity of blood perfusion in liver parenchyma. Liver biopsy can provide direct evidence of *S. japonicum* infection in patients; however, liver biopsy was not performed in our patient due to extensive ascites. Following treatment with praziquantel, dynamic abdominal CT showed

homogeneous hepatic perfusion on the portal phase. These findings showed that patchy infiltration of *S. japonicum* resulted in the heterogeneity of blood perfusion in the liver. Portal hypertension resulted from massive deposition of *S. japonicum* eggs in portal branches of the liver, which might give rise to ascites and heterogeneity in hepatic perfusion.

In conclusion, we report a patient with acute *S. japonicum* infection presenting as tumor-like lesions in the descending duodenum and heterogeneity of blood perfusion in liver parenchyma. Thus, in areas affected by *Schistosomiasis* epidemics, *S. japonicum* infection should be considered when patients have tumor-like lesions in the duodenum or hepatic heterogeneous hypointensity on dynamic CT. In addition, duodenal involvement in patients with *S. japonicum* infection should receive long-term follow-up to prevent the development of malignant lesions.

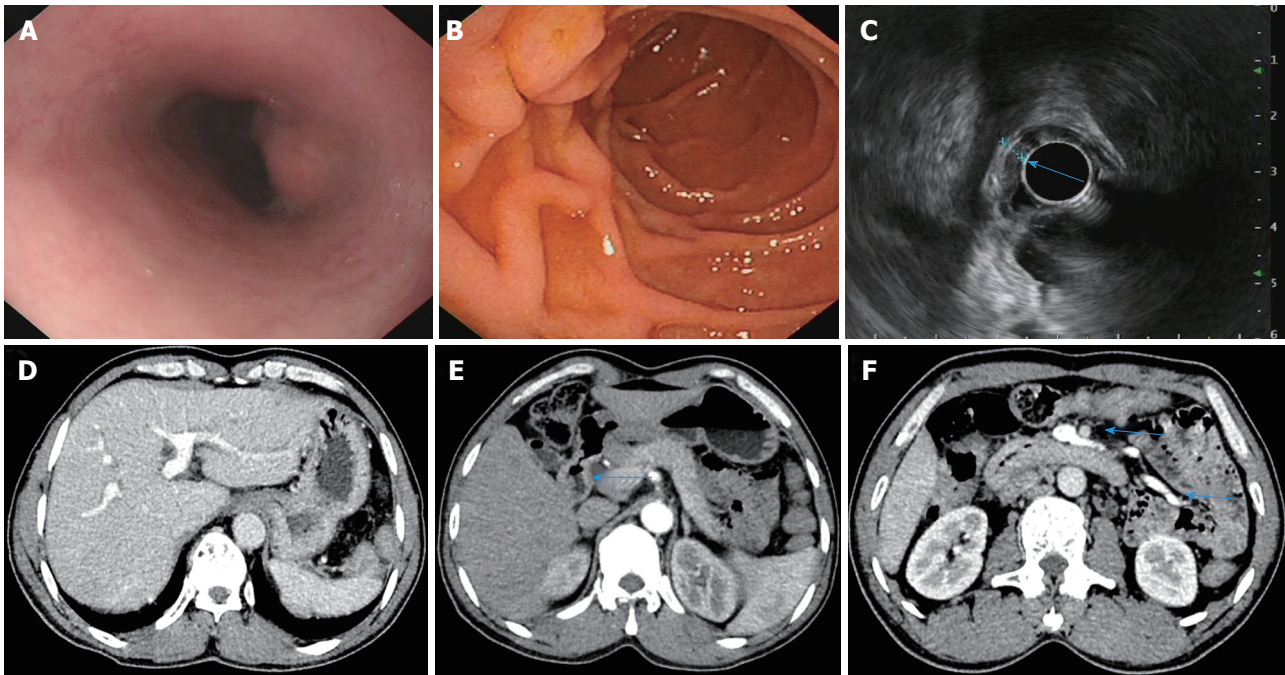


Figure 2 Following administration of praziquantel, the patient with acute *Schistosoma japonicum* infection received a complete check-up at the follow-up visit. A, B: Upper gastrointestinal endoscopy showing protrusive lesions of the esophagus (A) and normal mucosa in the descending duodenum (B); C: Endoscopic ultrasonography revealing slight thickening and normal layer of the descending duodenal wall; D-F: Dynamic abdominal computed tomography showing homogeneous hepatic perfusion on the portal phase (D), slight thickening of the descending wall (E, arrow), shrinkage of the swollen mesentery to normal size (F, arrow), and disappearance of ascites.

ARTICLE HIGHLIGHTS

Case characteristics

A 47-year-old male farmer presented with persistent abdominal pain, abdominal distension and irregular low fever.

Clinical diagnosis

The diagnosis of parasitic disease was made by serological test or histological examinations.

Differential diagnosis

Differential diagnosis with malignant lesions due to the thickening and the destruction of the descending duodenal wall.

Laboratory diagnosis

Serological tests for anti-Schistosoma antibody (ELISA) were positive.

Imaging diagnosis

Dynamic abdominal computed tomography (CT) scanning showed heterogeneous hypointensity in the liver, thickening of the descending duodenal wall, swollen mesentery around the arteries, and ascites.

Pathological diagnosis

Pathologic examination of the descending duodenum showed the deposition of *Schistosoma* eggs and infiltration of eosinophils.

Treatment

The patient received the antihelminthic drug praziquantel.

Related reports

The infection of *Schistosoma japonicum* (*S. japonicum*) is primarily found in the mesenteric veins and tends to involve the colon, rectum and liver, and

occasionally the duodenum.

Experiences and lessons

S. japonicum infection should be considered when patients have tumor-like lesions in the duodenum or hepatic heterogeneous hypointensity on dynamic CT.

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