Scrub Typhus: Two Cases Presenting as Abdominal Pain

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Scrub typhus, which is caused by Orientia tsutsugamushi, has various systemic manifestations, including GI symptoms. We describe one patient with scrub typhus who presented with symptoms that suggested acute appendicitis and another who presented with symptoms of acute cholecystitis.

Scrub typhus is caused by Orientia tsutsugamushi (formerly Rickettsia tsutsugamushi), which is an intracellular microorganism. This disease occurs mainly in late autumn and has been reported to develop in the “tsutsugamushi triangle” that extends from far-eastern Russia and northern Japan to northern Australia to Pakistan and Afghanistan. Since the late 1990s, the number of reported cases of scrub typhus has increased in Korea. The clinical features vary and include GI symptoms, such as nausea, vomiting, and diarrhea. We report 2 cases of scrub typhus in patients who presented with unusual GI symptoms that suggested acute abdomen—one patient presented with symptoms of acute appendicitis and the other with symptoms of acute cholecystitis.

CASE REPORTS

Case 1
A 63-year-old woman was admitted to a regional hospital with fever, cough, and abdominal pain that began 3 days before admission. She resided in the city of Incheon, Korea, and had visited Seosan in Chungchungnamdo, an area in which scrub typhus is endemic, to pick ginkgo nuts 2 weeks before her symptoms appeared.

Endoscopic examination revealed active gastric ulcers. Chest radiographs revealed an infiltrate and pleural effusion in the right lung field. A clinical diagnosis of pneumonia was made, and 1.5 g of ampicillin/sulbactam was administered intravenously every 6 hours for 3 days. Her symptoms did not improve with this treatment, and the right lower abdominal pain worsened.

On physical examination, generalized abdominal tenderness with rebound tenderness was observed, and the patient was transferred to our hospital for surgical treatment of clinically suspected acute appendicitis. On admission, her vital signs were blood pressure, 100/50 mm Hg; pulse rate, 117 beats per minute; respiration rate, 24 breaths per minute; and body temperature, 37.7°C (99.86°F). The patient still had generalized abdominal tenderness with rebound tenderness, particularly at McBurney point. The laboratory test results were leukocyte count, 8500/µL, with 84% neutrophils and 8% lymphocytes; hemoglobin, 11.2 g/dL; platelet count, 184,000/µL; blood urea nitrogen, 18.6 mg/dL; serum creatinine, 0.9 mg/dL; aspartate aminotransferase (AST), 144 IU/L; alanine aminotransferase (ALT), 100 IU/L; albumin, 2.6 g/dL; total protein, 5.5 g/dL; total bilirubin, 0.4 mg/dL; sodium, 144 mmol/L; potassium, 3 mmol/L; and chloride, 110 mmol/L.

Emergency exploratory laparotomy was performed for clinically suspected intestinal perforation associated with acute appendicitis. At surgery, there were no perforations in the appendix or other parts of the intestine, and there were no findings that suggested peritonitis. The appendix was resected, and the biopsy revealed no abnormalities.

The patient was referred to the department of internal medicine. Careful physical examination revealed a generalized maculopapular rash and cervical lymphadenopathy, but no eschars were detected.

The serum Mycoplasma antibody test result was negative. Both urinary Legionella antigen and
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*Streptococcus* antigen test results were nonreactive. Sputum and blood cultures were negative. On the basis of the clinical diagnosis of abdominal pain and pneumonia associated with scrub typhus, 500 mg of azithromycin was intravenously administered for 3 days, followed by treatment with 100 mg of doxycycline administered twice daily for 14 days. The passive hemagglutination test for *O. tsutsugamushi* performed at admission was positive with a titer of 1:320, and the antibody titer determined 3 weeks after admission was 1:640; this confirmed the diagnosis of scrub typhus. The patient’s fever, abdominal pain, and pneumonia improved after the administration of azithromycin and doxycycline.

**Case 2**

A 76-year-old woman presented with a 1-week history of general malaise, fever, and pain in the right upper abdomen. She resided in an urban area in Incheon and had worked in fields for 3 weeks before her visit to the clinic in Hongseungkun, Chungchungnamdo. Her temperature was 38.5°C (101.3°F), blood pressure was 130/80 mm Hg, and pulse rate was 72 beats per minute. A generalized maculopapular rash was observed. No palpable lymphadenopathy was found, but eschars were detected on the heel and popliteal fossa on the right side. There was severe tenderness in the right upper abdomen, and Murphy sign was positive. The patient’s laboratory results were: leukocyte count, 11,300/µL; hemoglobin, 12.3 g/dL; hematocrit, 34.8%; platelet count, 260,000/µL; AST, 72 IU/L; ALT, 43 IU/L; alkaline phosphatase, 239 IU/L; total bilirubin, 0.4 mg/dL; total protein, 7.2 g/dL; albumin, 3.4 g/dL; serum glucose, 85 mg/dL; blood urea nitrogen, 28.8 mg/dL; serum creatinine, 1.3 mg/dL; sodium, 137 mmol/L; potassium, 3.5 mmol/L; and chloride, 102 mmol/L. On the basis of these findings, acute cholecystitis with scrub typhus was suspected, and cholecystectomy was considered. However, a CT scan of the abdomen revealed no evidence of inflammation in the gallbladder, so the patient was observed closely and treated with antibiotic therapy based on the suspicion of abdominal pain complicated by scrub typhus. The patient was given 100 mg of doxycycline twice daily for 7 days. One day after the initiation of antibiotics, the fever gradually dropped and the abdominal pain started to subside. Three days after admission, the abdominal pain disappeared, and the patient was discharged from the hospital. The passive hemagglutination test for *O. tsutsugamushi* was positive with a titer of 1:5120, which confirmed the diagnosis of scrub typhus.

**DISCUSSION**

Scrub typhus is a mite-borne bacterial infection caused by *O. tsutsugamushi* that affects humans and leads to severe multiorgan failure when patients are untreated. It is characterized by fever, rash, and eschars, and its clinical features vary in severity from self-limited to fatal. Severe complications, such as encephalitis, myocardopathy, acute renal failure, and disseminated intravascular coagulation, may develop.

More than one-third of patients with scrub typhus present with GI symptoms, such as nausea, vomiting, diarrhea, and abdominal pain, although there are limited precise descriptions of these presentations. Kim and associates found that all patients with scrub typhus and GI symptoms had 1 or more abnormal findings, such as erosion and ulcers on endoscopic examination, which correlated with clinical severity. Using 99mTc-HAS abdominal scanning, Min and associates observed vasculitis in the small bowel and the ascending and descending colons of patients with scrub typhus. In our cases, acute appendicitis and acute cholecystitis were suspected on the basis of the physical examination findings. The severe pain in the right upper and lower quadrants of the abdomen could not be clearly explained. However, one plausible explanation is that since tenderness of enlarged lymph nodes is common in scrub typhus, mesenteric lymphadenitis could be the cause of the lower abdominal pain.

Another possible explanation is the presence of acute lesions in the ileocecum, such as erosion or ulcers; however, these findings were not confirmed by colonoscopy. In the patient in case 1, scrub typhus was accompanied by pneumonia, which may be related to the GI symptoms in patients with severe scrub typhus, as indicated by Kim and associates. The abdominal pain in the patient in case 2 appeared to be induced by hepatic lesions, such as those of acute hepatitis. Yang and associates have also reported 2 cases of scrub typhus with unusual presentation of acute abdomen—one case of acute appendicitis and another of acute cholecystitis. The 2 patients underwent surgery, but their symptoms did not improve. Appropriate antibiotics were administered, and the symptoms improved. There were no findings of inflammation in the resected surgical specimens.

Both of our patients presented with high fever, rash, and abdominal pain. One patient underwent surgery for clinically suspected acute surgical abdomen; however, her symptoms did not improve until after she was treated with azithromycin and doxycycline. The other patient’s symptoms...
improved after she was given doxycycline. In particular, the patient with suspected acute cholecystitis rapidly recovered from the upper abdominal pain after antimicrobial therapy. This suggests that short-term close observation with medical treatment would enable physicians to distinguish scrub typhus from surgical abdomen.

In summary, in patients with suspected scrub typhus who present with fever, maculopapular rash, lymphadenopathy, and eschars and whose clinical findings of acute abdomen may require surgical treatment, the symptoms might be successfully managed with appropriate medical treatment and close observation without any unnecessary surgery. Further studies with large numbers of cases are needed for a better understanding of the relationship between scrub typhus and GI symptoms.

References:
REFERENCES

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