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Case Report
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A Case of Syphilitic Colitis Presenting as Acute Abdomen in a Non-HIV Adult

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Abstract

A 59-year-old man visited the emergency room with colon perforation requiring emergent surgical treatment. The colon biopsy revealed tissue-invading spirochetes with an abscess. We report a case of tertiary intestinal syphilis with a previous failed treatment for latent syphilis in a patient without HIV infection. Tertiary syphilis is rare, but able to induce serious infection. Clinicians should suspect Treponemal disease based on clinical history, and should obtain adequate laboratory tests.

Introduction

Syphilis is a chronic and systemic human disease caused by *Treponema pallidum*. After primary infection, this organism can disseminate to whole body through the blood stream or lymphatics [1]. Then it manifests varying diseases as secondary or tertiary syphilis. This may not become clinically apparent for years or decades [2]. Since the introduction of penicillin, tertiary syphilis has been uncommon, especially in developed countries. Particularly, intestinal syphilis of late manifestation is extremely rare. Here, we present a case of tertiary syphilis involving cecum which causes colon perforation leading to pan-peritonitis.

Case Presentation

A 59-year-old man visited the emergency room because of severe abdominal pain. He complained of diffuse abdominal pain, especially in the right lower quadrant. The pain was severe and not relieved by medication. His symptoms had been lasted for a month and had aggravated over the recent 4 days. It was associated with loose stools 4 to 5 times per day. He experienced a weight loss of approximately 10 kg, which accounted for 15% of his body weight, during the previous 9 months. He did not show any abnormal mucocutaneous lesions or lymphadenopathies.

Regarding medical history, he was diagnosed with diabetes mellitus, which required insulin therapy, and advanced liver cirrhosis related to alcohol consumption. He was unmarried and had unprotected sexual intercourses with multiple sexual partners. His last unsafe sexual activity was over 1 year previously. He had been treated for sexually transmitted diseases several times in his 20s. He was also diagnosed with latent syphilis 3 years previously, but the treatment was limited to only two intramuscular injections of benzathine penicillin G at another hospital. He was lost to follow-up and remained in an undertreated state for latent syphilis.

On examination, his body temperature was 37.1°C with a heart rate of 109 beats/min, blood pressure of 109/68 mmHg, and respiratory rate of 22 breaths/min. His abdomen was rigid and distended. He showed diffuse abdominal tenderness with signs of peritoneal irritation, especially in the right lower quadrant area.

Initial laboratory findings were as follows: White blood cell count, 9400/mm^3 (absolute neutrophil count 7800/mm^3); hemoglobin level, 7.9 g/dL; platelet count, 8200/mm^3; and serum C-reactive protein level, 9.87 mg/dl. Further testing revealed reactivity for Fluorescent Treponemal Antibody Absorption (FTA-ABS) IgG and non-reactivity for FTA-ABS IgM. *Treponema pallidum* Latex Agglutination (TPLA) was also reactive, and the Venereal Disease Research Laboratory (VDRL) was positive with a titer of 1:4. A human immunodeficiency virus antibody test result was negative.

Abdominal X-ray showed non-specific ileus. A contrast-enhanced computed tomography scan of the abdomen demonstrated edematous wall thickening of the ascending colon with suspicious complicated fluid collection in the anterior aspect of the cecum (Figure 1).

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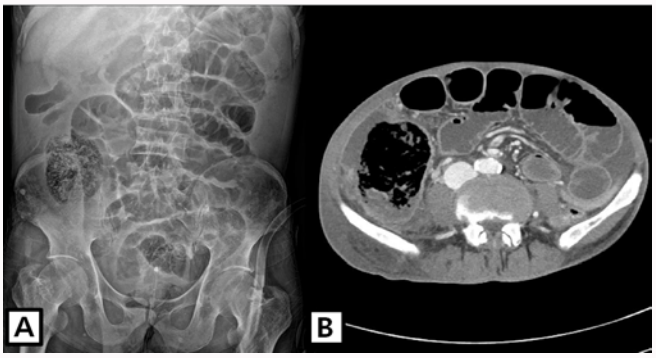

Figure 1: (A) Abdominal supine X-ray of ileus. (B) Axial section of abdomen CT showing edematous wall thickening of ascending colon with complicated fluid collection around the cecum.

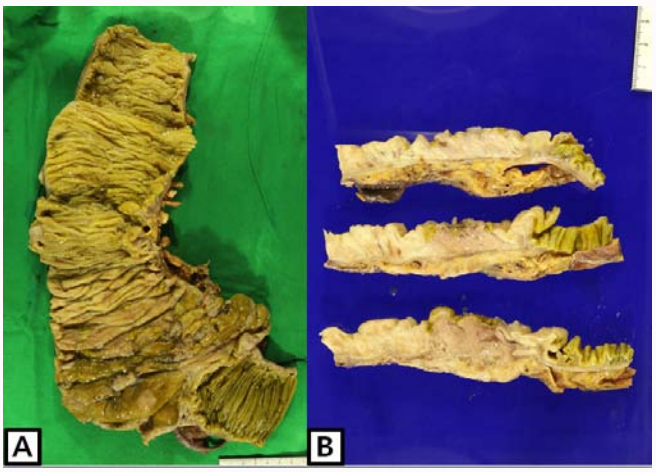

Figure 2: (A) Gross section showing edematous and polypoid lesions on cecum, just above the ileocecal valve. (B) Three fragments of the specimen A.

These findings were thought to reflect a sealed-off perforation of the cecum; thus, he was referred to the general surgery department and underwent emergency right hemicolectomy with end-ileostomy. During operation, severe inflammation was noted around the edematous cecum without definitive bowel perforation. However, bowel necrosis was suspected in the serosal layer of the cecum (Figure 2). In addition, a large amount of ascites was present, with thick and turbid fluid.

The histological examination of the surgical specimen revealed acute inflammation in almost all layers of the cecum and colon, with abscess, perforation, vasculitis, and perivascular inflammation. Spirochetes were found in specimens with Warthin starry staining (Figure 3).

We diagnosed him with syphilitic colitis and administered intramuscular penicillin G 2.4 million units per week for 3 weeks.

Discussion

T. pallidum causes chronic infection and various disease manifestations in the human host. Clinical manifestations result from the inflammatory processes driven by the presence of Treponemes within infected tissues. Syphilis is divided into a series of clinical stages. Tertiary syphilis generally presents with a cardiovascular manifestation or benign syphilis (Gumma) [3,4]. Gummas commonly

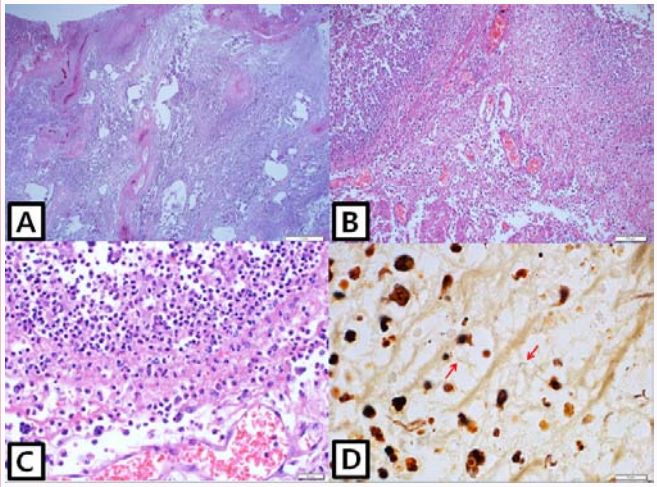

Figure 3: (A) Loss of intestinal mucosa and destruction of normal architecture with infiltration of inflammatory cells involving whole layers of colon (H&E, x10). (B, C) The infiltration was composed of inflammatory cells including lymphocytes, plasma cells and neutrophils (B: H&E, x100, C: H&E, x500). (D) Spirochetes present in submucosa layer with red arrows (Warthin starry stain, x1000).

involve the skin and skeletal system, but any organ could be involved [4,5]. A historical Oslo study identified that gumma, defined as benign late syphilis, occurred in 15% of cases during the natural course of untreated syphilis [6]. These are usually solitary lesions ranging from microscopic to several centimeters in diameter [2]. As a part of late syphilis, intestinal syphilis, presenting as gumma, is a rare disease entity that differs from the rectum-involving primary syphilis or congenital intestinal syphilis of the newborn. Intestinal syphilis shows various symptoms depending on the location and type of lesion (non-ulcerative or ulcerative) [7]. Gumma located in the cecum might ulcerate and extend into the peritoneum, resulting in pan-peritonitis.

Syphilis has gummatous involvement, which usually develops in the tertiary stage, but possibly in the secondary stage. In the disease course of syphilis, there are considerable overlaps between clinical stages, and their boundaries are vague [8]. The natural course of syphilis may differ across cases, and atypical presentation of the disease occasionally occurs. It was very difficult to distinguish the clinical stage in this patient; however, we finally assessed that this was a case of chronic gummatous intestinal involvement in tertiary syphilis. Clinically, there was no evidence of secondary syphilis, such as a characteristic rash or lymphadenopathy. Three years had passed since his diagnosis of latent syphilis and more than 1 year from his last sexual exposure. Therefore, the possibility of early syphilis was very low, even considering re-infection. Histopathologic examination revealed the presence of *T. pallidumas* determined using Warthin-Starry silver staining. Generally, there are abundant spirochetes with active duplication in the early stages. On the other hand, spirochetes are rare or absent in most gummas of tertiary syphilis [5,9]. The burden of *T. pallidum* was not very high in this patient.

Before the patient complained of abdominal pain, he had an asymptomatic period of over 3 years after incomplete treatment of syphilis. How can the spirochetes remain silently in the gumma for such a long time? We can obtain an answer based on the unique architecture and composition of the outer membrane of *T. pallidum*, unlike that of gram-negative bacteria [4,10]. First, the syphilis

spirochete lacks lipopolysaccharide on its cell wall, which typically causes fever and inflammation. Second, the outer membrane of *T. pallidum* contains an extraordinarily low density of proteins. The paucity of proteins and pathogen-associated molecular patterns on the spirochaetal surface is the basis of its capacity for immune evasion, which has earned it the name of 'stealth pathogen' [11]. This makes syphilis spirochetes not readily accessible to innate immune cells. As a result, spirochetes can induce inflammatory processes slowly over several years.

Current guidelines recommend that a longer-duration penicillin therapy may be required for late syphilis because treponemes appear to replicate considerably slowly during later stages of the infection [12]. The patient should have been treated with three doses of weekly penicillin when he was diagnosed with latent syphilis 3 years ago. Partially treated disease might allow a patient to develop syphilis at an advanced stage.

We report a case of late intestinal syphilis with a previous failed treatment for latent syphilis in a non-HIV adult. At present, tertiary syphilis has become rare due to the availability of penicillin. However, clinicians should consider atypical syphilis, especially when patients have a history of untreated syphilis or are at a risk of sexually transmitted disease. Notably, histopathologic findings are important to establish the diagnosis or avoid misdiagnosis, because syphilis can occur anywhere in human body due to the capability of hemolymphatic dissemination of spirochetes.

In conclusion, tertiary syphilis is a very rare disease, but infection with *T. pallidum* should be suspected based on a combination of epidemiologic, clinical, and laboratory features.

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