

Primary Vesical Actinomycosis : A Case Diagnosed by Multiple Transabdominal Needle Biopsies

Primary vesical actinomycosis is an extremely rare disease. In most cases it is misdiagnosed as vesical or urachal tumor and usually diagnosed through post-operative pathologic confirmation. Here we report a case of primary vesical actinomycosis confirmed by preoperative repeated multiple transabdominal biopsies. The patient was a 49-yr-old woman who presented with frequency, dysuria, and intermittent gross hematuria for 2 months. Computed tomography and cystoscopic examination showed broad-based, edematous, and protruding mass at the dome and anterior portion of the bladder. The clinical and imaging findings of the patient initially suggested vesical malignancy. Transurethral resection and multiple biopsies of the mass were performed. Pathologic examination demonstrated fibrosis with chronic inflammation. We performed repeated transabdominal multiple needle biopsies for further pathologic confirmation. Histopathologic examination demonstrated typical sulfur granules, which were consistent with actinomycosis.

Key Words : *Actinomycosis, Bladder tumor, Needle biopsy*

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INTRODUCTION

Primary vesical actinomycosis is an extremely rare disease, caused by gram positive anaerobic *Actinomyces israelii*, thus pre-operative diagnosis has been known to be difficult due to the nature of its clinical presentation. In many instances, it is misdiagnosed as vesical or urachal tumor and is usually diagnosed post-operatively through a pathologic confirmation. Herein, we report a case of primary vesical actinomycosis, which was initially mistaken for bladder cancer. The diagnosis was confirmed by multiple transabdominal needle biopsies.

CASE REPORT

A 49-yr-old woman presented with frequency, dysuria, intermittent gross hematuria, and lower abdominal pain for 2 months. She had a history of laparotomy for ectopic pregnancy 15 yr before. She had not used intrauterine contraceptive device (IUD).

Physical examination revealed lower abdominal tenderness without any palpable mass. Routine urinalysis showed 30 to 60 red and 5 to 9 white blood cells per high power field. Repetitive urine cultures and test for the acid-fast bacilli were negative. Computerized tomography (CT) demonstrated a large infiltrating mass at the dome and anterior portion of

the bladder, extending anteriorly to abdominal wall and posteriorly to the uterus. Perivesical fat involvement was suspected (Fig. 1). Cystoscopic examination showed an edematous, broad-based mass, which protruded from the anterior wall. Invasive bladder cancer or urachal remnant tumor was suspected. Transurethral resection and multiple biopsies of the mass were performed. Pathologic examination of the biopsy specimens demonstrated fibrosis with chronic inflammation. Subsequently, magnetic resonance imaging (MRI) of the pelvis showed a heterogenous, high signal intensity mass on the anterior wall and dome of the bladder on T2-weighted image, which was discriminated from adjacent tissues (Fig. 2).

We decided to perform transabdominal multiple needle biopsies under the guidance of ultrasonography for further pathologic confirmation (Fig. 3). Histopathological examination showed an acute suppurative inflammatory lesion with fibrosis containing typical sulfur granules. The granules contained fine, basophilic filaments with eosinophilic clubs at the periphery, which was consistent with actinomycosis (Fig. 4). On histochemical stain, Gram, Giemsa and Gomoris' methenamine silver stains revealed the typical filamentous bacteria (Fig. 5).

Treatment with a high dose, long-term penicillin was initiated. However, the patient complained of severe dysuria, frequency, and lower abdominal pain and demanded immediate surgical treatment. A 5-cm sized lesion on the anterior



Fig. 1. Lower abdominal CT showed a 6-cm sized infiltrating mass at the dome and anterior wall of the bladder, suggesting urachal remnant tumor or bladder tumor. The mass was suspected to extend anteriorly to abdominal wall and posteriorly to uterus. Perivesical fat involvement was also suspected.



Fig. 2. Pelvic MRI showed a heterogenous and high signal intensity mass on the anterior wall and dome of the bladder on T2-weighted image.



Fig. 3. Multiple transabdominal biopsies were performed. The needle was positioned on the bladder wall under the guidance of ultrasonography.

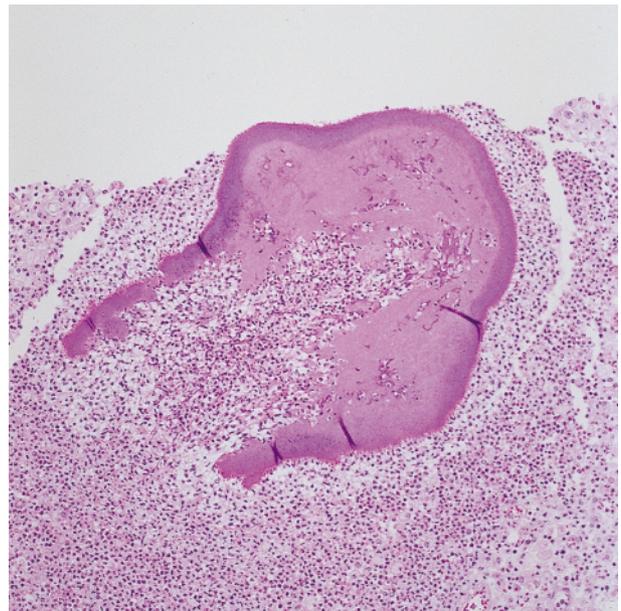


Fig. 4. Histopathologic findings of the biopsy specimens confirmed vesical actinomycosis. The typical sulfur granule contained fine and basophilic filaments with eosinophilic clubbings (H&E, $\times 100$).

wall of the bladder was surgically removed. Other pelvic organs and the abdominal wall were not involved. There was no evidence of grossly remnant lesion. Histologic examination of the surgical biopsy specimen confirmed primary vesical

actinomycosis containing sulfur granules. Post-operation, a treatment with high dose penicillin was administered intravenously for 2 weeks, then orally for additional 2 weeks. The patient remained asymptomatic for 12 months of follow-up.

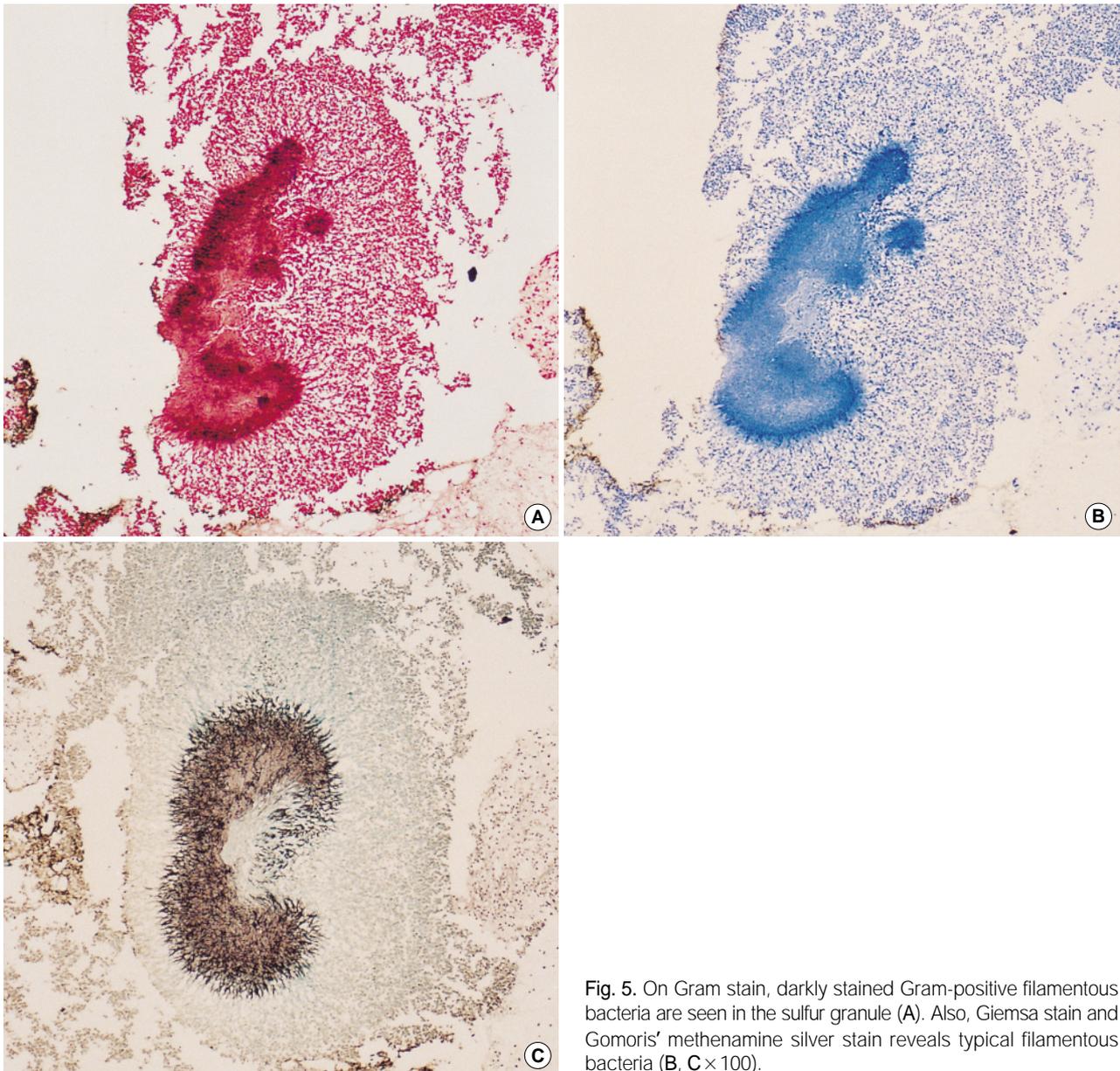


Fig. 5. On Gram stain, darkly stained Gram-positive filamentous bacteria are seen in the sulfur granule (A). Also, Giemsa stain and Gomoris' methenamine silver stain reveals typical filamentous bacteria (B, C $\times 100$).

DISCUSSION

Actinomycosis is a chronic suppurative infectious disease caused by anaerobic *Actinomyces israelii*, which is a normal flora in the oral cavity and gastrointestinal tract (1). The incidence of genitourinary actinomycosis is very low. Actinomycosis of the kidney, bladder, and scrotum has been reported previously (2-4).

Actinomycosis of the bladder usually occurs via direct extension from primary infection of the pelvic organs (5). The diagnosis of actinomycosis may be suggested by identifying "sulfur" granules in biopsy specimens (5). A morphologic diagnosis of actinomycosis can be made by the demonstration of Gram positive filaments. The definitive diagnosis requires

anaerobic culture or histological identification of actinomycotic granules. Histologically, actinomycetes are Gram-positive, branching, filamentous, hypha-like anaerobes with suppurative areas surrounded by fibrosis and inflammation (6). In our case, pathologic examination of the transurethral biopsies revealed acute and chronic inflammatory findings without malignant cells, and the repeated multiple transabdominal needle biopsies confirmed actinomycosis of the bladder.

Traditionally, pelvic actinomycosis, including the vesical actinomycosis, has been treated surgically or needed exploration based on pre-operative imaging and clinical features, which may mimic malignancy (7-9). Primary treatment of vesical actinomycosis is partial or total cystectomy due to difficulties in making a diagnosis. However, the treatment

of vesical actinomycosis requires chronic administration of antibiotics for weeks or months. A high dose, long-term intravenous penicillin has been preferred, while macrolide such as tetracycline or erythromycin can be used alternatively. The dosage and duration of the treatment are determined by the extent of invasion and size of the lesion along with the responsiveness and compliance of the patient. Surgery may be needed for the treatment of abscess and sinus tract formation. Actinomycosis of the bladder is most often mistaken as invasive bladder tumor due to the nature of its clinical presentation. Unfortunately, surgical exploration is usually needed and the diagnosis is made pathologically. Vesical actinomycosis can be cured by antibiotics administration to avoid unnecessary surgical intervention.

In our case, an extensive infiltrative mass on the anterior wall and dome of the bladder in the radiographic imaging, and a broad-based edematous protruding mass in cystoscopic finding suggested invasive bladder cancer. The transurethral biopsies showed inflammatory cells. Additional repeated transabdominal needle biopsies confirmed the diagnosis of vesical actinomycosis. Based on our unusual experience, we suggest that vesical actinomycosis be included in the differential diagnosis of the bladder cancer. Repeated multiple and elaborate biopsies are necessary for the definitive diagnosis of vesical actinomycosis.

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