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Case report

Successful treatment of pelvic actinomycosis using transgluteal drainage: A case report

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ABSTRACT

Actinomycosis is a rare chronic suppurative granulomatous infection, associated with long-term IUD placement. Standard treatment is long-term antibiotic administration. Here, we report a more radical pelvic abscess drainage treatment, because conservative therapy failed to provide relief.

A 52-year-old woman (gravida 4 para 3) with an 18-year IUD history was referred to our hospital with a pelvic abscess, indicated clinically to be pelvic actinomycosis. Standard conservative penicillin therapy provided no relief. We performed transgluteal drainage, confirmed actinomycosis pathologically, administered clindamycin, and observed no relapse.

Transgluteal percutaneous drainage combined with antibiotics may be useful for refractory deep pelvic abscess caused by actinomycosis and may even curtail the antibiotic administration period.

1. Introduction

Actinomycosis is a chronic suppurative granulomatous infection mainly caused by *Actinomyces israelii*, an anaerobic gram-positive bacillus found among normal oral cavity and gastrointestinal tract flora. Pelvic actinomycosis is associated with long-term intrauterine device (IUD) placement [1,2]. Separating and culturing *Actinomyces* is difficult, making diagnosis challenging. Pelvic actinomycosis is also difficult to differentiate from an ovarian malignancy if a tumor has formed, and it is important to confirm a diagnosis of *Actinomyces* before performing surgery. Actinomycosis is generally treated with antibiotics for about 6–12 months [3]. Here, we report a case in which transgluteal drainage was successfully performed to treat pelvic actinomycosis beginning after 18 years of IUD placement.

2. Case report

A 52-year-old woman (gravida 4 para 3) received an inert IUD at age 34, remaining for 18 years. She had forgotten the care of IUD for 18 years. After developing fever and diarrhea that persisted for 3 weeks, she consulted an internal medicine clinic and was prescribed 1 week of antibiotics (Cefditoren pivoxil) orally, but her fever persisted. She consulted an obstetrics and gynecology clinic, was diagnosed with a pelvic abscess, and referred to our hospital, by which time the IUD had been removed by the previous doctor. She admitted to our hospital, underwent several inspection. Blood tests showed white blood cells to be 11.3×10^9 cells/L and C-reactive protein to be 5.59 mg/dL, with normal CA19-9, CA125, and CEA values. There were no abnormalities in her cervical or endometrial cytology reports. Bacteroides was few detected in vaginal secretion culture. The pulled-out IUD itself was also cultured by the previous doctor, but bacteria were not detected. Transvaginal ultrasonography revealed a mass lesion comprising a 4×4.5 cm low-brightness area around the left adnexa. Contrast computed tomography (CT) showed a tumor with contrast effect accompanied by a low-density area in the interior of the left internal pelvis and posterior uterus (Fig. 1). Contrast magnetic resonance imaging (MRI) showed a strong contrast effect at the tumor wall, but the cyst interior was low-signal and not solid, suggesting an abscess (Fig. 2). As she had long-term IUD placement, we suspected pelvic actinomycosis. We also observed multiple nodules with contrast effects intrapelvically. We could not rule out ovarian metastasis of colorectal cancer and performed lower gastrointestinal endoscopy. There was no evidence of malignancy, and findings were attributed to inflammatory changes.

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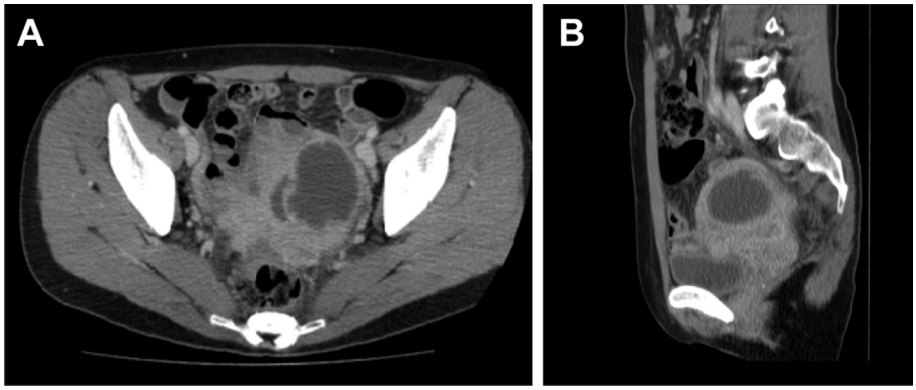

Fig. 1. Abdominal contrast CT examination. (A) Transverse cross-section. A tumor with contrast effect accompanied by a low-density area was noted in the left pelvis. (B) Sagittal cross-section.

Considering the patient's history of the long-term insertion of IUD, we chose conservative, penicillin-based pieracillin (PIP) treatment intravenously to which pelvic actinomycosis is typically sensitive. Antibiotic administration decreased the inflammatory response, and her fever subsided. Liver dysfunction and drug eruption were noted 1 month after antibiotic initiation, so treatment was discontinued, and she was discharged for outpatient follow-up. No abscess reduction was observed, however, so we performed percutaneous CT-guided drainage through the sciatic foramen, as the abscess site risked intestinal damage by abdominal wall or vaginal puncturing (Fig. 3). Surgical treatment, such as hysterectomy and salpingo-oophorectomy was not enforced, because surgical treatment may require intestinal resection and also it has a greater damage to the patient. The tumor contained 40 mL of aspirated ash-gray foul-smelling abscess fluid. Laboratory cultures on the drained fluid identified *Actinomyces* and *Bacteroides* (Fig. 4). Gram staining revealed *Actinomyces*-characteristic filamentary radiating bacterial masses. Drug susceptibility testing revealed penicillin-resistant *Bacteroides*. *Actinomyces* had no drug resistance. Her antibiotic was changed to clindamycin and taken for 3 months. After antibiotics were stopped, the abscess cavity continued shrinking without fever for 1 year at present.

Written informed consent was obtained from the patient and filed.

3. Discussion

Although *Actinomyces* is found within the normal oral and gut flora and is not usually pathogenic, infection is believed to occur when the mucosa is damaged. Occurrence sites include the head and neck, abdomen, and chest, in that order; in the abdomen, the ileocecal region is the most common region. Growth of *Actinomyces* is slow. It appeared within five days and is necessary to continue the culture for 15–20 days. At least 10 days is necessary to determine that the culture of *Actinomyces* is negative. Most *Actinomyces* are anaerobic bacteria, and so we have to be cultured *Actinomyces* in strictly anaerobic, such as *A. meyeri*. *Actinomyces* is possible to culture at 37 °C in a chocolate agar media. Pathological diagnosis by Gram stain is useful in the diagnosis of *Actinomyces*, better sensitivity than cultures. Once *Actinomyces* have invaded tissues, causing the infection of chronic granulomatous, and form tiny clumps, called sulfur granules for the yellow color [4].

Infection is rare in the female reproductive organs but has been recently increasingly reported after long-term IUD placement [1,2]. Keebler et al. reported that longer IUD placement times correlated with increased *Actinomyces* detection rates [5]. *Actinomyces* infection has been observed in 8.4% of cases with 1–2 years of IUD placement and in 19.0% of cases with 2–3 years of placement, irrespective of age. Long-term IUD placement cases necessitate considering pelvic actinomycosis risk. Unfortunately, separating, culturing, and ultimately diagnosing *Actinomyces* is difficult. Heger et al. [6] reported a 2% detection rate of *Actinomyces* culture methods for 8% of cytology reports. Other reports state that *Actinomyces* was diagnosed with cervical cytology and endometrium biopsy in IUD insertion cases. Thus, pathologically testing for cervical cytology and endometrial biopsy is important [6,7].

Pelvic actinomycosis can be difficult to differentiate from a malignant tumor because it forms a pelvic mass. It is often operated on as an ovarian tumor and commonly only postoperatively pathologically diagnosed as actinomycosis from the resected specimen. Reportedly, <20% of cases receive a preoperative diagnosis [7]. Clinicians should consider actinomycosis preoperatively in cases of indwelling IUDs and similar cases where the infection could occur.

Pelvic abscesses can be generally be treated by drainage and washing by laparotomy, but *Actinomyces* is unlike other bacteria. As the bacteria are characterized by infiltration, laparotomy is likely to damage other organs; therefore, actinomycosis is generally treated with antibiotics. The first choice is penicillin G (recommended dose 10 million–20 million units/day for 4–6 weeks) followed by 2–4 g of oral penicillin/day, or 6–12 months of amoxicillin [8]. There is no need to consider the drug resistance to *Actinomyces*. Risk of penicillin resistance is small. Piperacillin-tazobactam, imipenem,

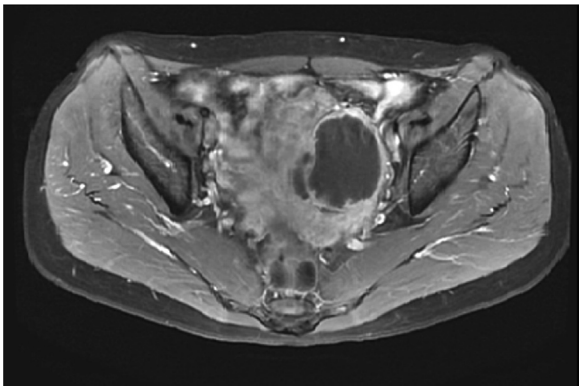

Fig. 2. Pelvic contrast MRI T1-weighted image. Strong contrast effect noted in the tumor wall; low-signal cyst interior.