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Case Report

Tubo-ovarian actinomycosis mimicking ovarian malignancy: Case report

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ABSTRACT

Actinomycosis is a chronic suppurative granulomatous infection caused by *Actinomyces israelii,* an anaerobic Gram-positive microorganism. Pelvic actinomycosis is rare and constitutes 3% of all human actinomycosis infections. Pre-operative diagnosis is usually difficult with the majority of cases being diagnosed after the histological and bacteriological examination of the resected specimen. In this paper, the authors report a new case of tubo-ovarian actinomycosis in a 42-year-old woman that was misdiagnosed pre-operatively as ovarian malignancy. Tubo-ovarian actinomycosis should be considered in patients with a pelvic mass especially in ones using intra-uterine devices. Surgeons should be aware of this infection in order to avoid excessive surgical procedures.

KEY WORDS: Actinomycosis, ovary, fallopian tube, intra-uterine device

INTRODUCTION

Actinomycosis is a rare, chronic suppurative and granulomatous infection that produces pyogenic lesions associated with prominent sinus tracts. Pelvic actinomycosis is uncommon accounting for 3% of all human actinomycosis infections [1]. It is usually insidious and is often mistaken for other conditions such as malignant tumors, presenting a diagnostic challenge pre-operatively. In this paper, the authors report a new case of tubo-ovarian actinomycosis that was misdiagnosed pre-operatively as an ovarian malignant neoplasm.

CASE REPORT

A 42-year-old woman gravida 2 para 2, with no particular past medical history, presented with lower abdominal pain and weight loss for the past 8 months. The patient had been an intrauterine device (IUD) user for 6 years. Physical examination revealed tenderness in the lower abdomen. A computed tomography scan and pelvic ultrasound examination showed a right adnexal tumor with irregular margins. Laboratory tests demonstrated marked leukocytosis (white blood cell count 20000/mm^3), whereas CA125 was within normal range. As ovarian malignancy was suspected, the patient underwent right-salpingo-oophorectomy. On gross examination, the fallopian tube was swollen and adherent to the enlarged ovary. The latter measured 4 cm × 6 cm × 7 cm and showed multiple yellow abscess-like lesions on cut section [Figure 1]. Intra-operative frozen section analysis of the resected tubo-ovarian mass showed a dense polymorphous inflammatory infiltrate with no signs of malignancy. The resected specimen was then fixed in 10% phosphate-buffered formaldehyde, embedded in paraffin and sections were prepared for routine light microscopy after staining with hematoxylin and eosin. Microscopic examination revealed the presence of basophilic masses with a radiating arrangement of eosinophilic club-like structures. These basophilic colonies were surrounded by numerous neutrophils and histiocytes [Figures 2 and 3]. Numerous plasma cells were also seen in the surrounding tissue and the solid part of the tumor presented with extensive fibrosis. In addition, there was inflammatory cell infiltrates on the tubal mucosa and pus with actinomyces colonies in the dilated lumen of the fallopian tube. No malignant cells were detected. The final pathological diagnosis was tubo-ovarian actinomycosis. Post-operative course was uneventful, and the patient was treated with high dose of penicillin therapy. At present, the patient is well and is still being followed-up.

DISCUSSION

The incidence of actinomycosis of the female genital tract has greatly increased over the last two decades [2]. Infection is characterized by the presence of granulomas caused by *Actinomyces israelii*, a Gram-positive anaerobic microorganism which forms colonies described macroscopically as "sulphur granules" [2]. Pelvic actinomycosis is associated with

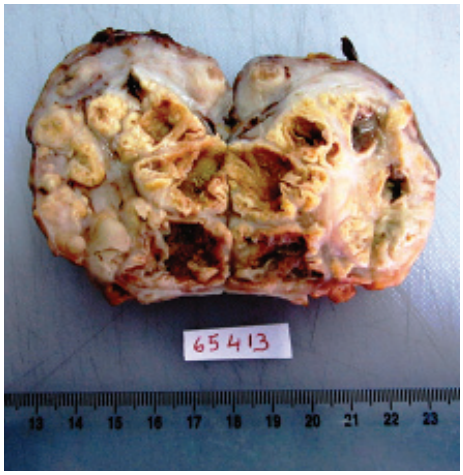

Figure 1: On gross examination, the ovary was swollen with multiple abscess foci on the cut surface

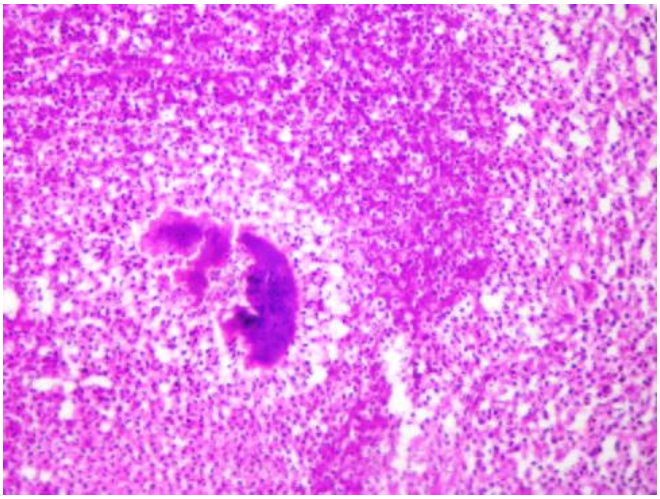

Figure 2: Microscopic examination revealed inflammatory reaction in the right ovary with abscess formation. Colonies of actinomyces were present within a purulent exudate. (hematoxylin and eosin, magnification ×200)

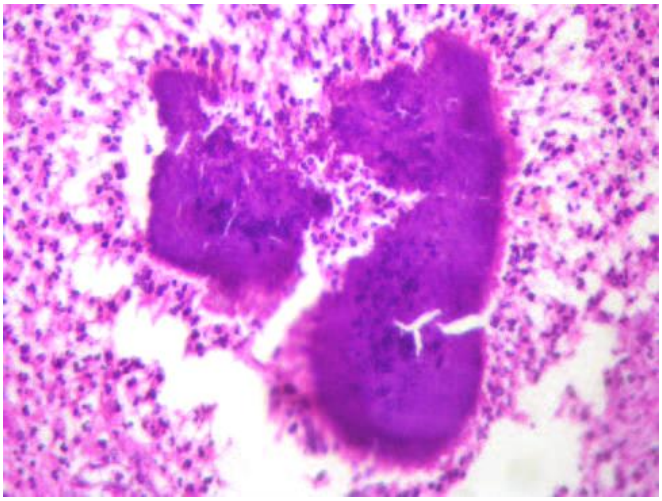

Figure 3: A colony of actinomyces surrounded by a purulent exudate (hematoxylin and eosin, magnification ×400)

abdominal surgery, bowel perforation, or trauma [1]. In addition, the presence of a long-standing IUD is a reported risk factor in young women. IUD have a traumatizing effect on the endometrium, causing erosions that in the presence of pre-existing pelvic inflammatory disease or anaerobic infection, create a favorable environment for the development of actinomyces [3,4]. Clinical presentation may include abdominal pain, vaginal discharge, fever, weight loss, anemia, and repeated urinary infection. Pelvic actinomycosis may result in endometritis, salpingo-oophoritis, tubo-ovarian abscess or a pelvic mass [4-6]. Ultimately, an extension to the abdominal wall or deep pelvic structures can occur. Diagnosis of actinomycosis can be difficult because of the insidious nature of the infection [7]. Pre-operative diagnosis of actinomycosis is made in <10% of the cases [8]. A diagnosis of actinomycosis may be made before salpingo-oophorectomy in some cases by finding the granules within endometrial curettings or cervico-vaginal smears. Imaging investigations are not able to distinguish between actinomycosis, malignancy and other inflammatory diseases. In the great majority of cases, diagnosis is reached by histopathological examination of the specimen obtained by surgical exploration and resection. Histopathologic examination of the infected tissue should include a search for characteristic, but not pathognomonic, appearances of sulfur granules. The granules measure 0.4-4 mm and stain Gram-positive with a mycelium-like structure [9]. In addition, microscopic examination typically reveals a non-specific inflammatory response composed predominantly of neutrophils and foamy histiocytes sometimes admixed with lymphocytes and plasma cells. The differential diagnosis of sulfur granules includes nocardiosis, streptomycosis, chromomycosis, eumycetoma, and botryomycosis [10]. *Actinomyces* granules regularly show a positive reaction with periodic acid-Schiff and Grocott's dye, but the Kossa reaction is negative. The diagnosis of actinomycosis can also be achieved by culture, but false negative results have been frequently reported [1]. Treatment of actinomycosis depends on the severity of the involvement. Medical therapy alone can achieve cure in mild cases. The role of surgical intervention is debatable. Surgical intervention is suggested in complicated disease process where malignancy cannot be excluded. An extended course of antibiotics may eliminate the need for surgery as suggested by some authors [8,11]. The drug of choice for actinomycosis is intravenous penicillin G at doses of 18-20 million units/day for 4-6 weeks followed by oral penicillin for 6-12 months [11]. Actinomycosis generally carries a good prognosis when treated expeditiously; however if treatment is delayed, extensive local involvement and complications can develop [12].

CONCLUSION

Tubo-ovarian actinomycosis should always be considered in patients with a pelvic mass especially in ones using IUD. Surgeons should be aware of this infection in order to avoid excessive surgical procedures.

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