

GYNECOLOGIC CASE REPORT

Actinomyces associated with persistent vaginal granulation tissue

CLIFFORD Y. WAI¹, MIKIO A. NIHIRA¹, PETER G. DREWES¹, JOE S. CHANG¹,
MOMIN T. SIDDIQUI², DAVID L. HEMSELL¹

¹Department of Obstetrics and Gynecology, University of Texas Southwestern Medical Center, Dallas, Texas, USA, and
²Department of Pathology, University of Texas Southwestern Medical Center, Dallas, Texas, USA

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Abstract

Background: We report a case of symptomatic actinomycosis associated with vaginal suture erosion and granulation tissue refractory to conservative management, in an outpatient setting.

Case: Three months after total vaginal hysterectomy and uterosacral ligament vaginal vault suspension, a woman complained of painless, intermittent vaginal discharge and spotting. Despite cauterization of granulation tissue, vaginal spotting persisted for another month. On re-examination, braided polyester suture that was found underlying the granulation tissue was removed. Recurrent symptoms, together with a biopsy revealing actinomycetes, prompted a trial of oral penicillin VK. With persistent symptoms and discomfort during attempts in the outpatient clinic, the woman eventually required suture removal in the operating room. Her symptoms subsequently resolved without recurrence, and no further antibiotic treatment was required.

Conclusions: Actinomyces may be associated with persistent granulation tissue and vault suspension suture material. In rare circumstances, when tissue debridement and suture removal in the clinic is unsatisfactory, surgical intervention in the operating room may be necessary. Ten days of antibiotic therapy alone did not eradicate the granulation tissue, and symptoms resolved only after complete removal of the underlying permanent suture.

Keywords: Actinomycosis, postoperative complications, sulfur granules, suture erosion

Introduction

Actinomyces is a Gram-positive anaerobic organism that can be found in association with a pelvic foreign body, such as an intrauterine device (IUD) [1]. Separate isolation of this organism in an asymptomatic individual without a foreign body has traditionally been considered of no pathophysiologic consequence. In particular, women with an incidental positive culture generally do not require treatment, particularly if pelvic infection is not apparent. However, when symptoms develop, long-term (6 months to 1 year) high-dose antibiotic treatment has traditionally been advocated [2–6]. Some have reported success with short-term antibiotic treatment. Isolation of actinomyces and suture erosion following vaginal vault suspension has not been reported previously in the English-language

literature. We describe a case of superficially symptomatic actinomycosis presenting as granulation tissue associated with vaginal suture erosion, that was refractory to conservative short-term management.

Case report

A 38-year-old, gravida 4, para 4 woman underwent total vaginal hysterectomy and uterosacral ligament vaginal vault suspension for complete cervical and uterine prolapse. At her 3-month postoperative visit, she complained of painless, occasionally malodorous, intermittent vaginal discharge and post-coital spotting. Examination revealed smooth red, friable granulation tissue at the left and right apices of the vaginal canal. No suture material was seen. She was afebrile, the remainder of the physical examination

was normal and a wet mount of the discharge was unremarkable. The granulation tissue was cauterized with silver nitrate applicators, and estrogen vaginal cream was prescribed. Pelvic examination showed good apical support of the vagina.

At her return visit 1 month later, 40 days after cauterization, she reported persistent vaginal spotting, and speculum examination demonstrated a profuse amount of tubular-shaped granulation tissue associated with exposed permanent braided polyester suture. In view of the unusual appearance and the amount of tissue, a biopsy was obtained. The visible permanent sutures were removed and the tissue cauterized again with silver nitrate. Biopsy results showed acute and chronic inflammation as well as microorganisms consistent with actinomycetes (Figure 1).

Six and a half months after her initial cauterization, with complaints of persistent symptoms and return of the granulation tissue, the woman received 10 days of oral penicillin VK after a further attempt at cauterization. No sutures were visible at that visit.

The woman returned once again with persistence of vaginal spotting and granulation tissue. More permanent braided polyester suture was seen, but was deeply imbedded into the vaginal cuff and difficult to remove. Unsuccessful antibiotic treatment, multiple failed attempts at cauterization, coupled with the woman's discomfort during removal in the clinic setting, prompted surgical debridement in the operating room.

In the operating room, after the granulation tissue (Figure 2) was resected from each apex of the vaginal cuff, more permanent suture was removed. The vaginal epithelium underlying each apex was undermined and closed in two layers with delayed

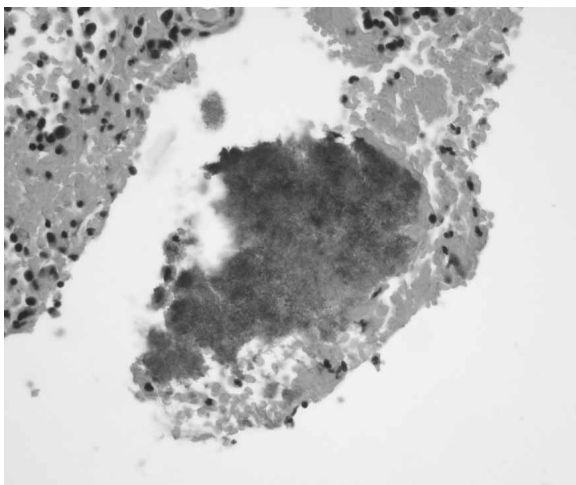


Figure 1. "Sulfur granule". Hematoxylin and eosin (H&E) stain illustrating a microscopic abscess of tangled actinomycetes surrounded by neutrophils (magnification $\times 200$).



Figure 2. Granulation tissue located at the apices of the vaginal fornices.

absorbable suture. A prophylactic dose of cefotetan was given at surgery. The woman was discharged home the same day. Anaerobic culture of the granulation tissue showed Gram-positive branching rods.

The woman currently remains symptom free, with normal appearance of the vaginal apex, 1 year after outpatient surgical resection, without further episodes of vaginal spotting, discharge or recurrence of the granulation tissue. Recent repeat cultures were negative. The vaginal vault remains well supported, without prolapse.

Discussion

Actinomyces in the human was first described by Israel in 1878 [7]. Since then, a number of reports of actinomycetes associated with the intrauterine device have been published, with the first reported case appearing in 1973 [8]. Some workers have documented the presence of actinomycetes in normal vaginal flora [4]. A MEDLINE search did not reveal any literature regarding permanent surgical suture and persistent granulation tissue associated with actinomycetes.

Actinomycetes are commensal organisms that are normal inhabitants of the human oropharynx and gastrointestinal tract, and are occasionally found in the female genital tract. They are Gram-positive, non-acid-fast anaerobic bacteria that form long branching filamentous rods. *Actinomyces sp.* can grow in clusters or "sulfur granules", consisting of tangled filaments within a background of polymorphonuclear neutrophils. Histologic confirmation can be made with Grocott-Gomori methenamine-silver nitrate (GMS) stain.

The presentation of actinomycetes can vary widely, ranging from entirely asymptomatic to a foul-smel-

ling vaginal discharge to abdominal or pelvic abscesses [10]. Actinomycotic infections can present clinically in a cervicofacial, thoracic or abdominal pelvic distribution.

The utility of detecting actinomyces associated with granulation tissue and persistent suture material remains speculative. Incidental detection of actinomyces in an asymptomatic individual without a foreign body does not appear to warrant treatment. However, when symptoms develop and persist or when a foreign body is present, treatment is appropriate. Even though actinomyces are anaerobic bacteria, they are one of the few that are resistant to metronidazole [11]. Penicillin is the antibiotic of choice for the treatment of actinomycotic infections.

In this report, it appears that 10 days of antibiotic therapy alone was insufficient to eradicate the granulation tissue. Perhaps the duration and route of antibiotic treatment were inadequate. A secondary consideration in this case is differentiation between colonization and infection. For an infection, prolonged antibiotics for 6 months to 1 year has traditionally been recommended [10]. A number of cases in the recent literature have reported success with short-term antibiotic treatment ranging from 10 days to 6 weeks [2–6]. However, antibiotic therapy alone may not be adequate if the foreign body is left in place [10]. Indeed, in the cases using short-duration antibiotics, initial surgical debridement or foreign body removal was performed [2–6]. In our report, complete removal of the underlying offending foreign body, specifically the permanent suture, was curative. Of note, no further antibiotic treatment was required after suture removal, suggesting superficial colonization and not an infection of deep tissue planes.

Since the presentation of the case in this report, two women have presented to our clinic with culture-confirmed actinomyces-associated granulation tissue. Each case was unresponsive to conservative management with silver nitrate cauterization and antibiotics. Their symptoms resolved only after discovery and subsequent complete removal of underlying permanent suture. Again, no further antibiotic treatment was necessary and the vaginal vault suspension remained intact.

The severity of the vaginal discharge and the patient's desire for early intervention are important considerations in selecting a clinical strategy. Although cauterization of the granulation tissue and antibiotic treatment is always a therapeutic option, our recent experience suggests that removal of all underlying suture may be required to achieve complete resolution. In rare circumstances, when tissue debridement and suture removal in the clinic setting is unsatisfactory, surgical intervention in the operating room may be necessary. Importantly, removal of transvaginal suture with two-layer closure after resection of the granulation tissue and underlying suture did not result in recurrent prolapse.

References

1. Aubert JM, Gobeaux-Castadot MJ, Boria MC. Actinomyces in the endometrium of IUD users. *Contraception* 1980; 21:577–583.
2. Russo TA. Agents of actinomycosis. In: Mandell GL, Bennett JE, Dolin R, editors. *Principles and practice of infectious diseases*. 5th ed. Philadelphia: Churchill Livingstone; 2000. pp 2645–2654.
3. Kinnear WJ, MacFarlane JT. A survey of thoracic actinomycosis. *Respir Med* 1990;84:57–59.
4. Skoutelis A, Petrochilos J, Bassaris H. Successful treatment of thoracic actinomycosis with ceftriaxone. *Clin Infect Dis* 1994;19:161–162.
5. Hirshberg A, Tsisis I, Metzger Z, Kaplan I. Periapical actinomycosis: a clinicopathologic study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2003;95:614–620.
6. Sudhakar SS, Ross JJ. Short-term treatment of actinomycosis: two cases and a review. *Clin Infect Dis* 2004;38:444–447.
7. Israel J. Neue beobachtungen aus dem Gebiete der Mykosen des Menschen *Arch Pathol Anat* 1878;74:15–53.
8. Henderson SR. Pelvic actinomycosis associated with an intrauterine device. *Obstet Gynecol* 1973;41:726–732.
9. Persson E, Holmberg K. A longitudinal study of *Actinomyces israelii* in the female genital tract. *Acta Obstet Gynecol Scand* 1984;63:207–216.
10. Fiorino AS. Intrauterine contraceptive device-associated actinomycotic abscess and actinomyces detection on cervical smear. *Obstet Gynecol* 1996;87:142–149.
11. Holmberg A, Nord E-E, Dornbusch K. Antimicrobial *in vitro* susceptibility of *Actinomyces israelii* and *Arachmia propionica*. *J Scand J Infect Dis* 1977;9:40–45.