Clostridium sordellii Infection of Female Genital Tract: A Rare but Fulminating Reaction

ABSTRACT
Clostridium sordellii, an anaerobic pathogen, is ubiquitously distributed in the environment and causes fatal necrotizing infections in approximately 70% of all reported cases.

Characteristic clinical features include absence of fever and rash, dramatic leukemoid reaction (LR), capillary leak and fluid sequestration with hemoconcentration, refractory tachycardia and hypotension, and marked edema of infected tissues without gas production or extensive myonecrosis. C. sordellii has rarely been identified in the genital tract, other Clostridium species colonize the vagina in 4 to 18% of healthy women and commonly are associated with postpartum endometritis and septic abortion. Pregnancy, childbirth, or abortion may predispose some women to acquire C. sordellii in the vaginal tract. Dilatation of the cervix may lead to ascending infection of necrotic decidual tissue. The acidic pH of the vaginal tract may enhance the cytopathic effects of C. sordellii lethal toxin C. sordellii infections pose difficult clinical challenges and are usually fatal.

Keywords: Clostridium sordellii, Leukemoid reaction, Toxic shock syndrome.

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INTRODUCTION
Since its first report in 1922, only a few cases of bacteremia due to Clostridium sordellii have been reported.1 In the world literature, only very few cases of a toxic shock syndrome due to C. sordellii necrotizing infections have been reported till now. It has rarely been implicated as a human pathogen. It is a normal inhabitant of intestinal flora of both humans and animals.2 Clostridium sordellii have been isolated in vaginal secretions of 5 to 10% of nonpregnant women. During labor or abortion open cervix permits the passage of vaginal pathogens which appears to be the critical event that leads to infection of the endometrium. Infection occurs almost exclusively in association with infection of the uterus or the perineum after either infected episiotomy or postpartum endometritis.3

Serious infection can occur after trauma, medically induced abortion, childbirth, spontaneous abortion, and surgical abortion and injection drug use.

Clinical presentation includes sudden onset influenza like prodrome, progressive refractory hypotension, hypothermia or absence of fever and absence of purulent discharge. Distinctive pathological finding include significant local edema with pleural and peritoneal effusion, localized tissue necrosis and thrombosis of near by vessels C. sordellii produce several exotoxins that lead to progressive edema and shock.

Clostridium sordellii is associated with a profound exotoxin mediated systemic response characterized by anasarca, refractory hypotension and marked leukocytosis.

DIAGNOSIS
Clostridium sordellii is confounded by early, nonspecific signs and symptoms and by the absence of fever. Diagnosis is often delayed because there is no rapid diagnostic test for the pathogen.4

Diagnosis of C. sordellii toxic shock syndrome (TSS) should be suspected when previously healthy women with recent ‘clean’ obstetric wound present with rapidly spreading edema with cardiovascular decompensation with progressive refractory shock. Definitive diagnosis requires isolation of C. sordellii from infected tissue as blood culture is usually negative. Aldape et al have described 45 cases, eight (18%) were associated with normal childbirth, five (11%) were associated with medially induced abortion, and two (0.4%) were associated with spontaneous abortion. The case-fatality rate was 100%. Ten (22%) of the C. sordellii infections occurred in injection drug users. Other cases of C. sordellii infection in 19 patients (43%) occurred after trauma or surgery.
Overall, the mortality rate was 69%. Eighty-five percent of all patients with fatal cases died within 2 to 6 days of initial infection, and nearly 80% of fatal cases developed leukemoid reaction (LR).

_Clostridium sordellii_ neuraminidase stimulates proliferation of promyelocytic HL-60 cells. It also modifies vascular cell adhesion molecule 1, which orchestrates the release of mature and immature granulocytes from bone marrow stromal cells. Thus, neuraminidase likely plays an important role in the characteristic LR in _C. sordellii_ infection. Sosolik 11 et al have reported a case of postpartum death due to _C. sordellii_ TSS. Fisher et al9 Cohen AI et al10 have reported a fatal case after abortion with mifepristone and misoprostol. Sosolik11 et al have reported a case of primipara developing an episiotomy infection which progressed to involve the underlying fascia and muscle. Despite early and adequate debridement of the devitalized tissue, she developed anasarca, marked leukocytosis, refractory hypotension, hypothermia, and a persistent coagulopathy, and expired on postpartum day 5. The cultures from the excised tissue grew _C. sordellii_ all blood cultures were negative.

**DISCUSSION**

Patients with a _C. sordellii_ characteristically develop a profound systemic capillary leak, refractory hypotension, and a marked LR where circulating white blood cell (WBC) counts often exceed 100,000/l.

The fastidious anaerobic growth, variable staining characteristics, and complex biochemical profiles of _Clostridium_ species make them difficult to isolate. Additional cases of _C. sordellii_ infection of the genital tract in which the organism was not cultured, speciated, or reported probably exist. Evidence of _C. sordellii_ infection can be established with the use of anti-Clostridium species immunohistochemical assay and both organism-specific and broad-range PCR assays performed on fixed uterine tissue. Anaerobic culture techniques or new diagnostic approaches are needed to define the true burden of _C. sordellii_ in gynecologic infections. Limited data is available regarding optimum therapy for _C. sordellii_. Improved treatments are needed to reduce the morbidity and mortality of these infections as these infections are usually fatal.

**REFERENCES**