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Fulminant Toxic Shock Syndrome: An Unusual Complication of Septic Abortion

Ahmed S El-agwany* and Mervat Ali El-Sersy

*Corresponding author:

Ahmed S El-agwany, Shatby Maternity University Hospital, Department of Obstetrics and Gynecology, Faculty of Medicine, Alexandria University, Alexandria, Egypt, Tel: 00201228254247

Department of Obstetrics and Gynecology, Faculty of Medicine, Alexandria University, Egypt

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✉ ahmedsamyagwany@gmail.com

Abstract

Endometritis and toxic shock syndrome associated with *Clostridium sordellii* have previously been reported after childbirth and after medical abortion. Clinical findings included tachycardia, hypotension, edema, hemoconcentration, profound leukocytosis, and absence of fever. We described a case of a young woman who developed *Clostridium sordellii* toxic shock syndrome after abortion surgically evacuated five days before admission. Although the patient was aggressively treated, death occurred <3 days after admission. Very early recognition of this disease can decrease the mortality associated with this rare disease.

Keywords:

Rare; Fulminant; Toxic shock syndrome; *Clostridium sordellii*; Septic abortion

Introduction

Clostridium sordellii is a gram-positive anaerobic bacillus that has been reported as a cause of infection in the female genital tract and associated with fatal toxic shock syndrome [1-5].

We report a fatal case due to *C. sordellii* toxic shock syndrome that occurred among previously healthy women after abortion.

Case Report

In March 2012, a 35-year-old female, gravida 5, para 2 with previous three abortions, was admitted to the emergency unit of our department complaining of severe abdominal pain, vomiting, diarrhea, fever and foul-smelling vaginal discharge. Five days before admission, the patient had a dilatation and curettage in a district hospital for a missed abortion of ten weeks gestation that was induced by misoprostol. All her children were delivered by normal vaginal delivery.

On examination, the patient was disoriented, pale and toxic. Vital signs were unstable with ABP 90/40 mmHg, heart rate 120 beats/min and temperature 39°C. Her abdomen was distended,

and vaginal examination revealed an enlarged tender uterus with offensive vaginal discharge. Laboratory investigations revealed a high white-cell count of 34,800 cells per microliter, hemoglobin level of 7gm/dl, and platelet count of 100,000 cells per microliter platelets. Liver function and renal function tests were normal.

Abdominal ultrasound demonstrated an enlarged anteverted flexed uterus with a heterogeneous intrauterine mass about four cm in diameter with multiple echogenic air foci highly suspicious of remnants of conception with anaerobic infection.

So, the decision was made to correct the general condition of the patient then evacuate the uterine cavity under umbrella of antibiotics. The patient was treated in the intensive care unit with high doses of metronidazole and ciprofloxacin, as well as with intravenously administered fluid and blood transfusion. Approximately 24 hours after the patient was admitted to the intensive care unit, uterine dilatation and curettage was done. Tissues were biopsied for histological diagnoses and sent for culture and sensitivity for antibiotics. Numerous, large gram-positive bacilli that were suggestive of *Clostridium* species were seen on a Gram stain of the specimen.

The patient's general condition deteriorate over the next 24 hours where drowsiness and severe vaginal bleeding occurred. Vital signs revealed heart rate 140/min, ABP 70/30 mmHg. Laboratory investigations revealed HB 6 gm/dl, white-cell

count of 50,000 cells per microliter, platelet cell count of 60,000 cells per microliter and INR 3 with continuous blood, fluid and antibiotic therapy. SGOT 500 U/L, SGPT 400 U/L, BUN 50 mg/dl, serum creatinine 2 and albumin 1.5 gm/dl.

An abdominal hysterectomy with bilateral salpingo oophorectomy was performed after stabilization of the condition (Figure 1). Soon after surgery, intractable shock with unrecorded ABP, weak pulse of 150 beat/min, temp 35°C, anuria, coma and disseminated intravascular coagulation developed. Laboratory investigations revealed Hb 7 gm/dl, white cell count of 50,000 cells per microliter, platelet cell count of 40,000 cells per microliter, INR 7, SGOT 4000 U/L, SGPT 5000 U/L, BUN 60 mg/dl, serum creatinine 3 mg/dl and serum albumin 0.8 gm/dl. Death eventually followed in less than three days after admission.



Figure 1: Showing hysterectomy specimen

Microscopy of the hysterectomy specimen revealed massive coagulation necrosis of the uterine wall, the fallopian tubes, and the ovaries, with leukocytoclastic inflammation of the adjacent viable tissue. Bacterial cultures of samples obtained from the uterus yielded *Clostridium sordellii*. Coagulable necrosis of the decidua and the superficial myometrium associated with hemorrhage and acute inflammation of the adjacent viable tissue. Evidence of *C. sordellii* infection was established with the use of PCR assays performed on fixed uterine tissue.

Discussion

C. sordellii, a pathogen that is infrequently found in humans, has a broad spectrum of clinical presentations. Among them, a fulminant toxic shock syndrome characterized by marked leukemoid reaction (WBC >80,000) and hemoconcentration (Hct >50%) and caused by a massive capillary leak has been reported almost exclusively in association with infections of the uterus or the perineum after either infected episiotomy (in 2 patients) or postpartum endometritis (in 4 patients). In 1 patient, the syndrome manifested as spontaneous endometritis [1-4].

Highly active hemorrhagic and lethal toxins of *C. sordellii* play a central role in the pathogenesis of the syndrome.

The rate of vaginal colonization with *Clostridium* species in the period after abortion occurs has been reported to be as high as

29%, whereas these bacteria have been isolated in the vaginal secretions of 5% 10% of nonpregnant women [8,9]. Opening of the cervix during labor or abortion, which permits the passage of vaginal pathogens, appears to be the critical event that leads to infection of the endometrium also sharp curettage might accelerate the process of deterioration after surgery due to disruption of the defensive leukocytic barrier (shift from compensated to decompensated state), so blunt curettage is highly recommended in this condition.

To improve diagnosis and therapy, clinicians should be aware of the distinctive features of this potentially fatal entity, including tachycardia, hypotension, edema, hemoconcentration, profound leukocytosis, and absence of fever.

There are limited data regarding the optimal therapy for *C. sordellii*. As with other severe histotoxic clostridial infections, aggressive surgical wound débridement, removal of infected organs (e.g., by means of hysterectomy), and antibacterial agents with good anaerobic activity are logical first steps to decrease the bacterial load and minimize further production of toxins. In vitro susceptibility testing on 24 *C. sordellii* strains showed low minimal inhibitory concentrations for penicillin, ampicillin, erythromycin, rifampin, tetracycline, cefoxitin, clindamycin, and metronidazole; antibiotics that interfere with bacterial protein synthesis (such as clindamycin) may have additional benefit. However, débridement, surgery, and antibacterial therapy will not mitigate the effects of preformed toxin [10-13].

Antitoxin therapy directed against the toxins of clostridial species causing gas gangrene was used intensively from 1918 to the end of World War II, but it was later proven to be ineffective [14]. Experience with anticlostridial toxins is limited; however, other than for use in the treatment of tetanus and botulism, anticlostridial toxins probably could be useful only for prevention of the syndrome in subjects exposed to *C. sordellii* or, at best, could be useful as treatment if administered very early in the infectious process. Obviously, animal studies are needed before a compassionate protocol could be approved for such treatment.

This syndrome is very rare and, to date has claimed the lives of all individuals who have been affected by it. We believe that the association of a capillary leak with hemoconcentration and a marked leukemoid reaction in a patient during the postpartum or postabortion period is very characteristic and should hasten early recognition of this disease before development of irreversible shock. Given the present state of knowledge regarding this disease, we can only hope that very early recognition of this disease, along with an aggressive surgical approach and appropriate antimicrobial therapy and resuscitation techniques, will decrease the mortality associated with an ailment that occurs mostly among young, otherwise healthy women.

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