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Non-Albicans Candida Necrotizing Fasciitis After Gynecology Oncology Surgery

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ABSTRACT

Necrotizing fasciitis, a rare and potentially lethal infection, is characterized by rapid and progressive involvement of the fascia and subcutaneous tissues. Here, we reported a 55-year-old woman with a history of recent surgery with complaints of erythema and foul-smelling discharge from the surgical incision site. The surgical incision site was opened, and cleaned with a sizable sterile normal saline, and the patient underwent ceftazidime, levofloxacin, metronidazole, and vancomycin. According to the results of microbiological cultures, non-albicans candida and its resistance to fluconazole, caspofungin, were substituted. However, necrotizing fasciitis increased. The rapid recognition, aggressive surgical intervention, and targeted antimicrobial therapy collectively played a pivotal role in successful recovery. The rapid recognition, aggressive surgical intervention, and targeted antimicrobial therapy collectively played a pivotal role in successful recovery. This case underscores the importance of vigilance in monitoring postoperative patients, particularly those with risk factors, and highlights the need for a multidisciplinary approach.

Keywords: Invasive Fungal Infections, Fasciitis, Necrotizing, Cross Infection

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1. Introduction

Necrotizing fasciitis, a rare and potentially lethal infection first described by Meleney in 1924, is characterized by rapid and progressive involvement of the fascia and subcutaneous tissues. It spreads along fascial planes and can be caused by a single organism or a combination of aerobic and anaerobic bacteria. Early diagnosis is crucial, followed by aggressive debridement, nutritional support, and antibiotics for effective treatment. The risk factors include diabetes, age, immunocompromised diseases, and certain procedures. This infection can be associated with various conditions and often spares underlying muscles while involving the skin **(1)**.

Candida species, although infrequent, can be a factor in infections. Routes of transmission include microorganisms from normal skin flora during incision, inadequate instrument sterilization, airborne fungal spores, and microorganism migration through drain tubes **(2)**.

The primary aim of this report was to elucidate the clinical and diagnostic intricacies regarding a rare case of necrotizing fasciitis precipitated by a candida infection following a hysterectomy surgery. The comprehensive analysis of the patient's medical history, clinical presentation, and treatment course contribute valuable insights into the atypical manifestations of necrotizing fasciitis and the challenges posed by fungal pathogens in postoperative infections. Furthermore, this report seeks to underscore the importance of considering candida as a potential causative agent, particularly in immunocompromised individuals or those with underlying risk factors.

2. Case Presentation

The patient was a 55-year-old woman with a history of recent surgery presented to the emergency room with complaints of erythema and foul-smelling

discharge from surgical incision site. She had undergone abdominal surgery, including total abdominal hysterectomy (TAH), bilateral salpingo-oophorectomy (BSO), and staging, approximately 10 days prior to this presentation.

Upon examination, the patient's vital signs were as follows: blood pressure of 137/90 mmHg, pulse rate of 120 beats per minute, temperature of 38°C, respiratory rate of 16 breaths per minute, and oxygen saturation of 95%. Local examination of the surgical incision site revealed a necrotic lesion and a blister.

The patient's recent surgery, as mentioned above, was performed due to the diagnosis of endometrial cancer, specifically endometrioid carcinoma, NOS, FIGO grade 1, low grade. The surgery involved open Maylard incisions for TAH, BSO, and staging. Given the patient's history of obesity, two drains-one subcutaneous and one intra-abdominal cavity-were inserted to facilitate postoperative drainage and reduce the risk of potential complications.

At the time of this presentation, the patient's main concern was the alarming signs of infection and necrotic tissue at the surgical site. Urgent consultation with surgical and infectious disease teams was requested.

Upon examination in the emergency room, the surgical incision site was promptly opened, thoroughly cleaned with a sizable amount of sterile normal saline. Urgent surgical debridement was performed due to the alarming signs of infection and necrotic tissue. During the procedure, it was observed that the skin, subcutaneous tissue, and fascia were necrotized, although the muscle remained intact and closed. Multiple tissue samples were collected during the debridement procedure, and cultures were sent for microbiological and histological evaluation. Necrotic skin, subcutaneous tissue, fascia, and intact muscle were meticulously removed to reach the healthy tissue, which exhibited normal bleeding. Subsequent dressing changes involved wet-to-dry dressings to expedite healing.

The patient was promptly initiated on a combination of antibiotic regimen, including ceftazidime, levofloxacin, metronidazole, and vancomycin, under the guidance of the infectious disease team. The diagnosis of necrotizing fasciitis necessitated an urgent return to the operating room for further debridement (Figure 1). Over the course of subsequent days, the patient's condition was closely monitored in the Intensive Care Unit (ICU). The vital signs were stabilized, and her postoperative recovery was progressing positively. The abdominal drain was removed 48 hours after surgery, and the subcutaneous drain was removed three days later.

On the fourth day after admission, culture results revealed the presence of Escherichia coli (E. coli). E. coli exhibited resistance to ceftazidime due to extended-spectrum beta-lactamase inhibitor (ESBL) production. Consequently, ceftazidime was discontinued, and along with discontinuation of vancomycine, levofloxacin and metronidasol, meropenem was initiated to effectively target the identified pathogens

On the seventh day after admission, the patient's laboratory tests showed leukocytosis with a white blood cell count (WBC) of 18,000, thrombocytosis with a platelet count of 673000, and an elevated erythrocyte sedimentation rate (ESR) of 90 mm/hour (Table 1). Examination of the wound revealed the presence of new signs of infection, erythema in border, discharge and dehiscence of sutures. The recent microbiological exam showed fungal mycelium in the smear of wound discharge. In response to the suspected fungal infection, fluconazole was promptly added to the treatment regimen to combat the fungal pathogen. According to the result of microbiological cultures, non-albicans candida and its resistance to fluconazole, caspofungin was substituted. Patient's condition dramatically improved with the combined treatment of meropenem and caspofungin.

By the end of the second week following the initiation of caspofungin, the patient's condition had significantly improved. The vital signs stabilized, and her wound-related symptoms significantly decreased. She was transferred from the ICU to the surgical ward and subsequently discharged from the hospital with good condition. The patient continued to receive diligent follow-up care with evaluations of the wound healing progress. At follow-up visits, the medical staff provided guidance on proper wound care techniques, emphasizing the importance of maintaining good hand hygiene and a sterile environment to reduce the risk of infection.

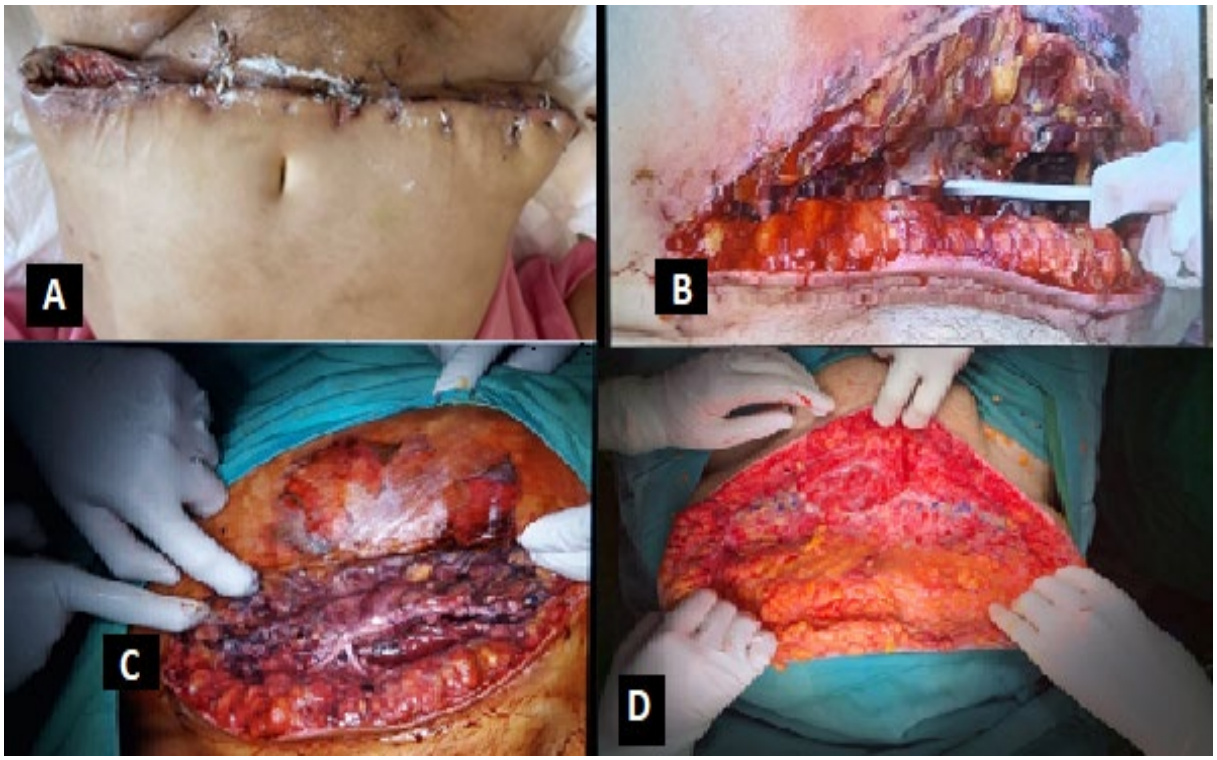


Figure 1. **Non-albicans candida necrotizing fasciitis post total abdominal hysterectomy and bilateral salpingo-oophorectomy**

Table 1. **Laboratory Results**

Parameter	Day 1	Day 4	Day 7	Day 10
WBC ($\times 10^3/\mu L$)	11.0	14.3	18.0	7.6
Platelet ($\times 10^3/\mu L$)	353	568	673	---
Hemoglobin (g/dL)	9.3	10.4	---	---
Albumin (g/dL)	2.7	2.7	---	---

3. Discussion

The current case report spotlights the development of necrotizing fasciitis, an uncommon but life-threatening soft tissue infection marked by rapid tissue damage. It's often associated with high morbidity and mortality rates, necessitating immediate recognition and intervention. Initially, the patient's postoperative recovery seemed positive, with evidence of wound healing and stable vital signs. However, her abrupt deterioration, characterized by erythema, foul-smelling discharge, and necrotic tissue at the incision site, indicated a severe infection. Necrotizing fasciitis can manifest variably, but key indicators like severe pain, rapid tissue necrosis, and systemic symptoms were prominent in the present case.

Necrotizing fasciitis typically arises from the invasion of polymicrobial pathogens into the fascial planes, causing extensive tissue destruction and compromised blood supply. Factors such as the patient's compromised immune status due to diabetes and obesity potentially increased susceptibility. The urgency of the situation prompted immediate aggressive surgical debridement, a crucial pillar of necrotizing fasciitis management. This involved removing necrotic tissue and identifying microbial pathogens via tissue cultures. The patient's favorable response to the initial debridement, coupled with appropriate antimicrobial therapy targeting identified pathogens, significantly contributed to recovery. Notably, the addition of caspofungin to address fungal infection exemplified the dynamic nature of necrotizing fasciitis treatment.

The potential for fungal superinfection underscored the necessity for continuous monitoring and adaptive treatment strategies. Managing necrotizing fasciitis in this case was complex, further compounded by the patient's underlying medical conditions. A multidisciplinary approach, including infectious disease consultation, specialized wound care, and surgical intervention played a pivotal role in the patient's care. Ultimately, the successful transition from intensive care to the general ward and eventual discharge underscored the critical importance of timely

intervention, comprehensive wound management, and tailored antimicrobial therapy in achieving a positive outcome.

In the report of Beuker et al **(3)** study, a case of necrotizing fasciitis following inguinal hernia repair was discussed, where yeast was identified as the causative agent. Their study highlights the rarity of such cases and the need for aggressive medical and surgical management. However, there are no reported cases of infectious complications presenting within 24 hours of elective herniorrhaphy specifically related to the diagnosis of necrotizing fasciitis. While Beuker's study provides valuable insights, our case report surpasses it in several aspects **(3)**.

In a case report by Atallah et al **(4)** the rare cases of fungal pathogens, particularly candida species, have been described in the literature, although the majority are sequalae of trauma or contaminated wounds. This was the first report of necrotizing fasciitis caused by candida albicans following an elective surgical procedure **(4)**.

Moreover, Aslıer **(2)** presented a rare case of necrotizing fasciitis caused by Ccndindida infection after thyroid surgery. Surgical site infections (SSIs) following thyroidectomy are uncommon and typically affect superficial tissue. However, in this case, the infection rapidly spread, leading to tissue necrosis. A 65-year-old male patient developed neck swelling 24 hours after surgery, revealing a deep neck infection instead of a superficial SSI. Treatment involved broad-spectrum antibiotics, surgical debridement, and subsequent identification of candida albicans through cultures. The patient's condition improved with antifungal and antibiotic therapy, resulting in complete wound healing. This case underscores the significance of considering fungal infections in SSIs unresponsive to antibiotics. Swift identification and appropriate management are crucial to prevent severe complications and potential fatality **(2)**.

4. Conclusion

The development of necrotizing fasciitis in the present case added a critical layer of complexity to an already challenging clinical scenario. The rapid recognition, aggressive surgical intervention, and targeted antimicrobial therapy collectively played a pivotal role in successful recovery. This case underscores the importance of vigilance in monitoring postoperative patients, particularly those with risk factors, and highlights the need for a multidisciplinary approach to manage this severe soft tissue infection.

5. Declarations

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Ethical Considerations

Not applicable.

Authors' Contributions

Each author participated in the patient's management, drafting, and revising of the manuscript and consented to assume responsibility for all aspects of this project.

Conflict of Interest

The authors declare no conflict of interest.

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