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Original Research Paper

General Surgery

NECROTISING FASCIITIS OF THE VULVA, VAGINA AND PERINEUM - A RARE COMPLICATION OF IMPERFORATE HYMEN

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ABSTRACT Necrotizing fasciitis (NF) is a rapidly progressive, life-threatening infection of the soft tissues, typically seen in immunocompromised or diabetic patients. However, its occurrence in a previously healthy young woman involving the vulva, vagina, and perineum is extremely rare. We present a unique case of NF in a young woman, secondary to an imperforate hymen. The patient arrived in septic shock, with extensive gangrene of the perineal and vaginal regions. Imaging revealed bilateral pyosalpinx and air pockets around the rectum, necessitating urgent laparotomy, unilateral salpingo-oophorectomy, and extensive surgical debridement of the affected tissues. Despite aggressive intervention and intensive care, including broad-spectrum antibiotics and dual inotropic support, she tragically succumbed to unresuscitable septic shock on the third postoperative day. This case emphasizes the need for high suspicion of NF in atypical presentations and highlights the critical importance of early, aggressive surgical intervention in such rare and devastating infections.

KEYWORDS : 1. Necrotising fasciitis 2. Imperforate hymen 3. Bilateral pyosalphinx

INTRODUCTION

Necrotising fasciitis is a severe and often fatal infection of the soft tissues. It is an especially deadly complications in the elderly and the immunocompromised such as diabetics, chronic steroid use and human immunodeficiency virus. This infection commonly occurs in the soft tissue of the lower limbs in patients with diabetes.

The perineum is an extremely uncommon location though necrotising fasciitis of the scrotum (Fournier's gangrene) and anterior abdomen wall (Meleney's gangrene) are well described. Here we describe a young women with no comorbids presenting with necrotising fasciitis involving the perineum and vagina secondary to an unusual underlying cause.

Case Presentation

A young women in her late twenties was referred to the critical care unit of our tertiary care hospital in an intubated state with unstable hemodynamic status. She had been apparently asymptomatic 5 days previously when she developed fever which was high grade and did not respond to steroids. She further complained of abdomen pain, which was poorly localised and did not relieve with medications. She was initially suspected of having dengue and a test was sent for the same.

Meanwhile she developed hypotension after syncopating attack and was admitted to the hospital and treated with intravenous fluids and supportive care. Her status rapidly deteriorated and had to be referred to our hospital. After initial stabilisation and a diagnostic work up for acute febrile illness, it was noticed that the patient had foul smelling vaginal discharge and blackish discolouration of the perineum. A surgery consult was obtained for the same. We examined the patient to discover that the vulva was in early stages of gangrene. We evacuated 60 ml of a blood from the vagina and further found that the vagina was stenotic. A detailed history of the menstrual status could not be elicited from the relatives.

An abdominal imaging was ordered which revealed bilateral pyosalphinx and air pockets around the vagina and rectum. An emergency laparotomy was immediately planned and performed considering the critical status of the patient.

Figure 1 - Necrotic issue encountered on laparotomy in the suprapubic region

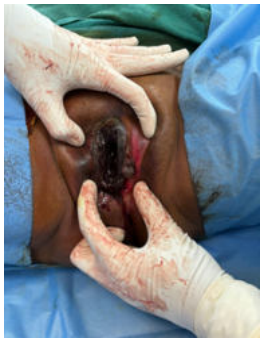

Figure 2 - Necrotising fasciitis encountered at the Vulva and Vagina

Figure 3- Intraoperative view of the bilateral pyosalphinx

We discovered on laparotomy, a bilateral pyosalphinx with around 20 mL of pus in the pelvis (Figure 1).An intraoperative gynaecology opinion advised us to perform a unilateral salphingo-oopherectomy considering the young age of the patient. The uterus and rectum appeared normal in their intra-abdominal portions. The laparotomy was closed and a perineal debridement was begun. This revealed extensive gangrene of the soft tissue of the vulva, vagina, perineum and anterior abdomen wall (Figure 2). This required extensive surgical debridement extending up to the suprapubic region, perineal-anal region and gluteal clefts (Figure 3). The vagina was stenotic at a point, a third of the way up its total distance. The rectum was found to have an anterior wall rent as well.

Post-operatively the patient was shifted the the critical care unit. She was in severe septic shock on dual ionotrope supports. She was given broad spectrum antibiotics and wound care. Her condition deteriorated progressively and she unfortunately passed away on the third post-operative day from severe unresuscitatable septic shock.

DISCUSSION

Necrotising fasciitis(NF) is most commonly found in the extremities and is typically associated with trauma, surgical wounds, or compromised immunity. Although Fournier's gangrene, a type of NF localized to the scrotum and perineum in men, has been extensively described, vulvar necrotizing fasciitis in women is far less common. Most cases in females have been linked to diabetes or obstetric infections such as episiotomies or Bartholin gland abscesses [1]. In this case, the patient's imperforate hymen likely led to the accumulation of menstrual blood, which, combined with pyosalpinx, created an ideal environment for polymicrobial infection, progressing rapidly into NF.

The rapid progression of infection in NF is driven by the production of bacterial toxins that induce microvascular thrombosis and subsequent tissue necrosis [2]. The high mortality rate, often exceeding 30% despite aggressive treatment, underscores the virulence of these infections [3]. The patient's swift deterioration, from febrile illness to full-blown septic shock, is characteristic of necrotizing infections, which demand early recognition and intervention.

The imperforate hymen in this case may have led to hematocolpos, which predisposed the patient to infection. Hematocolpos can become infected and, in rare cases, result in pelvic abscess formation, as was seen here with bilateral pyosalpinx. This finding is consistent with previous reports of necrotizing fasciitis arising secondary to gynecological infections such as tubo-ovarian abscesses or post-partum endometritis [4]. The air pockets around the vagina and rectum seen on imaging further suggested the polymicrobial nature of the infection, likely involving both anaerobes and aerobes [5].

The mainstay of treatment for necrotizing fasciitis includes early surgical debridement and broad-spectrum antibiotics. In this case, despite timely surgical intervention, which included emergency laparotomy and extensive debridement, the patient's condition deteriorated, reflecting the difficulty in managing such advanced cases of NF. The decision to perform unilateral salpingo-oophorectomy, guided by intraoperative gynecological consultation, was appropriate given the extensive pyosalpinx. However, even with aggressive surgical debridement extending to the suprapubic and perineal regions, the patient's septic shock proved unmanageable, highlighting the severe systemic response characteristic of necrotizing infections [6].

Current evidence emphasizes the importance of early recognition and intervention in NF to improve outcomes. The mortality in this case, occurring on the third post-operative day, is in line with studies that report mortality rates of up to 40% when septic shock and multiple organ failure develop despite maximal supportive measures [7]. Dual inotropic support and broad-spectrum antibiotic therapy are standard in managing such septic patients, but once overwhelming sepsis sets in, outcomes are often poor.

CONCLUSION:

Necrotizing fasciitis of the vulva, vagina, and perineum is a rare but deadly complication that requires prompt diagnosis and aggressive surgical intervention. This case emphasizes the importance of considering atypical etiologies, such as imperforate hymen, in the differential diagnosis of necrotizing fasciitis, even in patients without classic risk factors. Given the high mortality associated with necrotizing infections, early recognition, extensive debridement, and supportive critical care are paramount, though outcomes remain guarded in advanced cases complicated by septic shock.

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