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Necrotizing Fasciitis Leading To Septic Shock – After Preterm Cesarean Section

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A B S T R A C T

Background - Necrotizing fasciitis is a subset of aggressive skin and soft tissue infections (SSTIs) that cause necrosis of the muscle fascia and subcutaneous tissues. The infection typically travels along the fascial plane, which has a poor blood supply. Failure to obtain early diagnosis and delay in initiating appropriate treatment can lead to significant mortality and morbidity.

Case report – Our patient was a23year old women, G4 A3 with 35 weeks+4 days of gestation with history of recurrent pregnancy loss came with complains of leaking per vagina since 6 hours. Patient was taken up for emergency Caesarean section as NST was non-reactive. On day 4, patient complained of pain at suture site and was febrile, hyperpigmentation was noted surrounding the suture site. Higher antibiotics were started and on day 5 wound was suggestive of necrotising fasciitis, patient was shifted to ICU and managed accordingly. This case report illustrates the challenging diagnosis and management of a case of necrotizing fasciitis.

Discussion - Necrotizing fasciitis following caesarean section is extremely rare with an incidence of 2 in 1000. Necrotizing fasciitis is rapidly spreading and is fatal if left untreated. High index of suspicion and early diagnosis, combined with surgical debridement and broad spectrum antibiotic therapy are required. Clinicians must quickly recognize the distinction between cellulitis manageable with antimicrobial therapy and Necrotizing Fasciitis requiring surgical intervention

Key Words: *Necrotizing fasciitis, Skin and soft tissue infections (SSTIs), Caesarean section, Pregnancy complications, Early diagnosis and management*

INTRODUCTION

Necrotizing fasciitis is a subset of aggressive skin and soft tissue infections (SSTIs) that cause necrosis of the muscle fascia and subcutaneous tissues. The infection typically travels along the fascial plane, which has a poor blood supply. Initially, the overlying tissues are unaffected, potentially delaying diagnosis and surgical intervention[1]. Necrotizing soft tissue infections (NSTI) are rare, live-threatening diseases associated with a severe systemic inflammatory cascade triggered by bacterial toxins and with a high risk of mortality[2].The disease is generally caused by microorganisms such as streptococci and staphylococci that are found on skin and mucosa on healthy individuals. The causative pathogens attack the subcutaneous tissues and produce toxins causing ischemia, necrosis and septic shock that eventually lead to systemic organ failure[3]. This infection typically travels along the fascial plane, which has a poor blood supply, leaving the overlying tissues initially unaffected, potentially delaying diagnosis and surgical intervention[2,4]. Pregnant women are more likely to develop necrotizing fasciitis postpartum, with the risk appearing greater following caesarean section. Some data suggest that postpartum haemorrhage, preterm birth, and caesarean section are associated with greater odds of sepsis up to 9 months after delivery [4].

CASE REPORT

A 23year old women, booked case Gravida 4 Abortion 3 with 35 weeks+4 days of gestation was admitted in our hospital, Sri Sidhartha medical college and hospital as she came with complains of leaking per vagina since 6 hours. As

patient had previous bad obstetric history, 3 first trimester spontaneous abortions, screening profile of Recurrent Pregnancy loss was done in antenatal period which was unremarkable.

At admission patient was conscious and oriented. On physical examination there were no signs of pallor, temperature was normal, Blood pressure was 120/70mmhg and pulse rate was 78 beats per min. On Per speculum examination there was active leak and liquor was clear and on per vaginal examination findings were - Cervical os admits tip of finger, patulous os, 3-4cm in length, firm in consistency, central in position, absent membranes and station -3, with a Bishops score of 3.

Patient was taken up for emergency Caesarean section as NST was non-reactive. Intra-operative and immediate post operative period was uneventful, patient was symptomatically fine, vitals were stable and urine output was adequate. On day 2 – catheter was removed and patient was allowed semisolids and was made to ambulate. On day 3 - vitals were stable and wound appeared to be healthy. On day 4 – patient complained of severe pain at suture site and was febrile with a temperature of 101degree Fahrenheit, hyperpigmentation was noted surrounding the suture site, culture swab was sent from wound site and wound dressing was done. Inj Piperacillin 4.5g TID was started immediately after ensuring serum creatinine was normal. On day 5 - patient continued to be febrile on and off developed tachycardia with a pulse rate of 110bpm and there was slight fall in blood pressure to 90/50mmhg and wound appearance was suggestive of necrotizing fasciitis as shown in figure1.Laboratory tests showed leucocytosis (49,900/mL3), neutrophils 94%, C-reactive protein 152.6 mg/L.

FIGURE 1: Patient with post-caesarean section necrotizing fasciitis and significant necrotic tissue of the lower abdominal wall.

On day 6 – patient developed tachycardia, tachypnoea, hypotension, skin was cold and calmy on palpation symptoms suggestive of septic shock, patient was immediately shifted to ICU for critical care, vitals were BP-100/60mmhg, PR-120bpm, RR-29cpm, Spo2-94%@RA. The wound culture report of the patient revealed mixed bacteria growth, polymicrobial in nature, composed of Gram-negative bacilli and anaerobes. Antibiotic sensitivity test showed susceptibility to Injection Meropenem 1g TID. Once patient was stabilized, under aseptic precautions wound debridement was done on day 7, well defined raw tissue edges were obtained as shown in figure 2. Dressing was done regularly twice a day for 10 days following which wound was re-sutured with tension sutures. Injection Meropenem was given for 10days TID continuously. Re-sutured wound was inspected after 5 days, wound appeared to be normal and healthy. Patient was discharged after 20 days of intensive wound care with good postoperative recovery. No problems were encountered in the outpatient clinic visits by the patient.

Figure 2-Appearance of healthy granulation tissue following wound debridement and serial dressings.

DISCUSSION

Necrotizing is a life-threatening disorder with a very high mortality rate. Any delay in diagnosis or treatment usually results in a poor outcome. The mortality ultimately depends on the patient's age, type of organism, the speed of diagnosis and treatment, and patient comorbidity[1]. Irrespective of the aetiology and pathogen spectrum, necrotising soft tissue infections require immediate and extensive surgical debridement, broad-spectrum antibiotics and intense supportive care [2]. Necrotizing fasciitis is caused by bacteria that penetrate deep fascia after skin trauma, surgery, burns, or other factors compromising the dermal barrier [4]. Caesarean section is the most commonly performed surgery in obstetric practice. The frequency of Necrotizing fasciitis after undergoing caesarean section is reported as 1.8/1000 in the literature. The mortality and morbidity of infections of the subcutaneous soft tissues with a necrotizing course is quite high. Reported mortality rates range from 30% to 70%. Diagnosis of Necrotising fasciitis is mostly based on clinical findings[6]. Superficial findings may not be distinct beyond erythema and oedema except in few cases where blister and necrotising hyper pigmented areas can be appreciated. Clinicians must quickly recognize the distinction between cellulitis manageable with antimicrobial therapy and Necrotizing Fasciitis requiring surgical intervention. Delay in diagnosis and surgical treatment causes increase in mortality rate. Progression of Necrotising Fasciitis is marked with the development of tense oedema, a greyish-brown discharge, vesicles, bullae, necrosis, and crepitus[5]. The most defining clinical finding for Necrotising fasciitis is severe pain and tenderness which is incompatible with the physical appearance of the lesion. Once occurred, the rapidly progressing necrotizing soft tissue infection can cause life-threatening sepsis, which should be distinguished from wound infection[6].Necrotising fasciitis in post-partum patients is a challenge from both diagnosis and management perspective [7].Treatment combines surgical and medical approach, surgical treatment should always include aggressive excision of non-viable skin, subcutaneous tissue and avascular fascia, it should be performed until viable, well organised tissue margins are identified. High dose broad spectrum antibiotic coverage should be administered and maintenance of circulation and tissue oxygenation should be ensured[8].

CONCLUSION

Necrotizing fasciitis is a serious disorder that carries a mortality rate of anywhere from 30 to 90% if not diagnosed immediately. Vague and nonspecific presentations can make diagnosis difficult. Elevated BMI, tobacco use, chronic hypertension, and leucocytosis at admission are associated with increased risk of post-partum wound infection. Although except recurrent pregnancy loss none of the abovementioned risk factors of Necrotising fasciitis were found in this patient, the most probable cause of Necrotising fasciitis was a pre-existing intra-amniotic infection in the present case.

The bacterial aetiology of necrotising fasciitis in this preterm caesarean case was typically polymicrobial and a mixed growth was identified in this mother with more than 3 species. Timely diagnosis and supportive therapies, including antimicrobials and wound debridement are crucial to improve patient outcomes. Dressing and wound debridement should continue daily until all necrotic tissue has been removed and only healthy tissue remains. More studies are required for seeing association of necrotizing fasciitis with caesarean section.

ETHICAL APPROVAL

No animals were used during this study. All procedures performed in this report on humans were in accordance with the ethical guidelines of the institute's research committee and in compliance with the 1964 Declaration of Helsinki and its later amendments and ethical standards.

CONFLICT OF INTEREST

None

INFORMED CONSENT

Informed consent was obtained from the subject involved.

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