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Case Report

An unusual case report on necrotising fascitis following episiotomy

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ABSTRACT

Necrotizing fasciitis is a rare but serious condition with high morbidity and mortality. It is identified by extensive fascial necrosis with relative sparing of the skin and adjacent muscle. Herein, we report a case of 35-year-old, para 2 living 2, who underwent normal vaginal delivery with dextrolateral episiotomy, and was discharged on post-natal day-4 asymptomatic. She was referred to our centre, on post-natal day 9 with excruciating pain and abnormal discharge from episiotomy site, after initiation of broad-spectrum antibiotics. Upon arrival, routine thorough clinical examination done revealed extensive sloughing of tissue at the episiotomy site. Laboratory work up were done, along with which infective markers were also sent. After routine pre-op work up, patient was taken up for emergency surgical debridement. Multi-staged debridement was done during the subsequent days, until healthy granulation tissue was seen. Pus and wound culture were sent, and culture sensitive antibiotics were continued. Post-operatively, patient was continued on antibiotics, sitz bath given and regular wound dressing done for next 5 weeks. She was discharged on post-op day 34. On 12 months follow up, patient was completely asymptomatic, examination revealed a completely healed vulva with minimal disfigurement.

Keywords: Necrotising fasciitis, Substantial morbidity, Clinical diagnosis, Broad-spectrum antibiotics, Emergency debridement

INTRODUCTION

Necrotising fasciitis is a rare life-threatening complication characterised by widespread fascial necrosis with separation of subcutaneous tissue and overlying skin.[1] Incidence is reported to be around 0.4 per 100,000 and associated with a high mortality rate of 35%.[2] Stephenson et al reviewed the clinical details of 29 non-pregnant women with NF of the vulva and found that a delay in diagnosis of more than 48 hours was associated with a mortality rate of 73%.[3] Which all the more emphasises that it is mainly a clinical diagnosis substantiated with laboratory investigations.[4] Aetiology of the condition is attributed to mono or polymicrobial invasion. The most common pathogens include Gram positive organisms like *Staphylococcus aureus*, Streptococcus pyogenes, gram negative aerobes like *E. coli* and Pseudomonas species, and anaerobic organisms like bacteroides or clostridium species.[2] Those with NF risk indicators plus a history of soft-tissue trauma or surgical intervention are more likely to report with severe pain with or without changes in the skin. This is typically followed by a rapid worsening of general well-being. Early indicators include out of proportion pain, rapid deterioration of symptoms, associated systemic toxicity. As a result, close observation in these clinical circumstances should involve strict vitals monitoring, fluid resuscitation, blood tests, cultures of wound and blood, and detailed wound examination.[4] Poorer prognostic indicators include advanced age, uncontrolled diabetes, state of immunosuppression, and delayed diagnosis and treatment.[5]

CASE REPORT

A 35-year-old second para was referred to our centre in view of severe pain and abnormal discharge from the

vulva. She underwent full term normal vaginal delivery with a right medio-lateral episiotomy and delivered a term male infant weighing 2.80 kg. Her past medical history is unremarkable. Her antenatal and immediate post-natal period were uneventful, she was discharged on post-natal day 4 asymptomatic.

Following which on post-natal day 9, patient developed severe pain and abnormal discharge from the episiotomy site, hence was initiated on broad spectrum antibiotics and referred to higher centre. Upon admission her general condition was satisfactory, with stable vitals.

Figure 1: Episiotomy wound at initial presentation with extensive sloughed off tissue along the right and left labia majora and left labia minora.

There was no associated history of fever, nausea, vomiting, loose stools, abdominal pain, or distension. On examination, per abdomen was soft and non-tender. Local examination revealed sloughed off skin and soft tissue in the posterior 2/3rd of the vulva. Lower part of right labia majora sloughed off and pus seen between left labia majora and minora.

Mons pubis-normal. Mucosa and muscle below the apex sloughed off. Induration+. Per rectal examination done showed rectal mucosa intact and normal splinter tone. Figure 1 shows episiotomy wound at initial presentation on post-natal day- 9, figure showing sloughed off tissue along the right and left labia majora and left labia minora.

Investigations

The laboratory risk indicator for necrotizing fasciitis score (LRINEC) is a simple tool used to support early diagnosis of necrotizing fasciitis (NF).[6]

Table 1: The parameters assessed for LRINEC scoring, column 1 are the parameters assayed, column 2 represents our patient values and column 3 shows the reference range for score assessment. Based on the score obtained by individual patient, they are categorized as low, medium and high risk.

Parameter	Patient values	Reference range
C-reactive protein (mg/l)	**24 mg/l**	≤150-0 >150-4
Total white blood cell count (1000 cells/µl)	**10,060**	<15-0 15-25-1 >25-2
Haemoglobin (g/dl)	**Hb-11.7 g/dl**	>13.5-0 11–13.5-1 <11-2
Sodium (mmol/l)	**Na-139**	≥135-0 <135-2
Creatinine (mg/dl)	**Creat-0.5**	≤1.6-0 >1.6-2
Glucose (mg/dl)	**Glucose 90 mg/dl**	≤180-0 >180-1
Risk category	**LRINEC Points**	**Probability for Presence of NF**
Low	**≤5**	**<50%**
Medium	6–7	50–75%
High	≥8	>75%

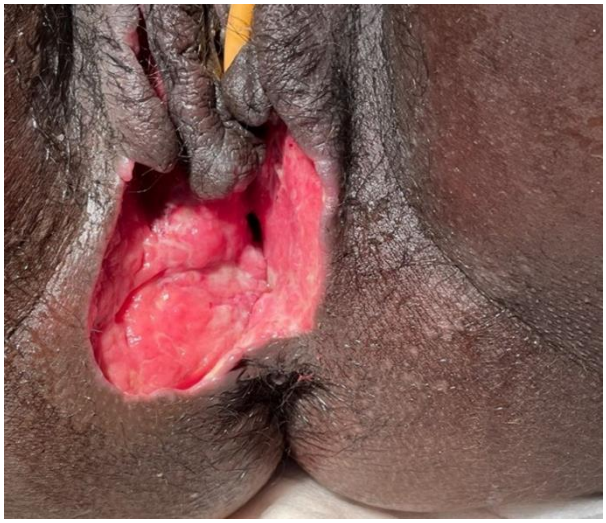

Figure 2: Post-operative picture on day 20, with healthy granulation tissue.

Treatment

The patient was taken in for an emergency surgical debridement under anaesthesia. Intra-op findings showed, extensive sloughing with gangrenous edges extending to anterior 1/3rd of right labia majora. Sloughing extended across fourchette to left labia majora and part of left labia minora. She was then taken in for serial wound

debridement under anaesthesia on post-admission day 3, followed by twice daily debridement for the first three days after local infiltration and once daily debridement for the next four days. Skin grafting was also considered initially, better later deferred due to adequate wound healing. Follow up Image on POD-20, with healthy granulation tissue (Figure 2).

Figure 3: At 1 year follow up, a completely healed vulva with minimal disfigurement.

Pus culture revealed mixed growth *E. coli*, sensitive to amikacin, gentamycin, and piperacillin. Slough culture revealed heavy growth of *E. coli*. Hence, post-operatively, patient was continued on same antibiotics, adequate wound care was given and was advised to take daily sitz bath. Patient was symptomatically better and hence was discharged on post-op day 34. On 12 months follow up, patient was completely asymptomatic, examination revealed a completely healed vulva with minimal disfigurement.

DISCUSSION

Necrotizing fasciitis was first defined by Hippocrates in the fifth century B.C. He described it as a complication of "erysipelas".[7] Furthermore, he labelled it as the most detrimental NF of all kinds if it occurs in the perineal area. Necrotising fasciitis is generally rare, and even more so in the obstetric population, posing significant challenges and severe limitations to obstetricians in terms of diagnostic and treatment perspectives. The incidence of necrotizing fasciitis varies between 0.3 to 15 cases per 100,000 population.[8]

Numerous pre-disposing factors for developing NF in obstetric population include Immunocompromised states such as diabetes, anaemia, malnutrition, and post-renal transplantation increasing the susceptibility to infection and poorer prognosis, however none were observed in our patient.[2] The initial symptoms of NF are frequently misdiagnosed as cellulitis or wound hematoma. Nonspecific early local indicators include edema, erythema, crepitus, fluctuation, and soreness. As the condition evolves, the skin sloughs off quickly, leaving an ulcer with eroded margins and plenty of discharge that may be foul-smelling. Suspicion of NF should develop in the presence of acute pain that is disproportionate to these local inflammatory symptoms, as well as the appearance of systemic toxicity.

Episiotomies can be extremely painful and cause a decline in WBC count rather than a spike in the early postpartum days; thus, a high suspicion of serious illnesses could prevent the patient from life-threatening complications such as necrotizing fasciitis, which is easily often misdiagnosed or overlooked. Endomyometritis, parametrises, and adnexitis are known differential diagnoses of puerperal fevers, in addition to previous risk factors and from a gynaecological standpoint.[9]

Imaging modalities like CT and MRI can also be used for diagnosis and assessment of extent of soft tissue damage limiting extensive surgical debridement.[10]

In our case, bacteriology of the infection was suggestive of mixed growth of *E. coli*, sensitive to amikacin, gentamycin, and piperacillin. Antibiotics can be tailored based on the NF microbiological classification criteria (based on history, gram stain, and culture of the polymicrobial infection).[11] Antimicrobial therapy for necrotizing fasciitis is as follows.[5]

Table 2: The antimicrobial therapy administered for necrotising fasciitis.

Antimicrobial therapy for necrotizing fasciitis
Imipenem 1 g every 6 to 8 hours and daptomycin 6 mg/kg QD, and clindamycin 600 mg to 900 mg four times per day.
Piperacillin/tazobactam 3.375 g every 6 hours or 4.5 g every 8 hours and daptomycin 6 mg/kg QD, AND clindamycin 600 mg to 900 mg four times per day.
Meropenem 1 g IV every 8 hours and vancomycin 15 to 20 mg/kg/dose every 8 to 12 hours AND clindamycin 600 mg to 900 mg four times per day.

Wong et al devised the LRINEC score for the classification of NF using a scoring system that assigns scores determined by C-reactive protein, haemoglobin, total leucocyte count, serum sodium, serum creatinine, and blood sugar levels. A score of 8 or higher has a high positive predictive value for diagnosing NF. The LRINEC score was 1 in our case probably due to previous

antibiotics and intravenous fluid administration from outside hospital.[6]

Unlike other infections, even with immediate surgery, appropriate antibiotic coverage, and intensive care support, morbidity and mortality are high, and survivors' the standard of life can be severely compromised. Hence strong index of clinical suspicion, prompt diagnosis is critical for better patient outcomes.

CONCLUSION

Though necrotising fasciitis being a rare entity, prompt clinical suspicion and diagnosis is key to early detection and management of the same. Since there is significantly increased mortality and morbidity, early initiation of broad-spectrum antibiotics and aggressive surgical debridement of sloughed of tissue as a multi-staged procedure, and proper post-operative care greatly enhances patient outcomes. It's also important to note the associated risk factors that pre-dispose patients for developing NF, individualize patients and then initiate treatment accordingly. The use of the LRINEC scoring system aids in risk assessment of patients and tailoring treatment suitably.

Since the aetiology is also attributable to microbial invasion, there needs to be strong emphasis on proper suturing of the episiotomy wound under aseptic precautions and adequate post-natal care. As poor hand hygiene and surgical technique can lead to invasion of the common commensals of the vulva and vagina, and subsequent infections, leading to life-threatening complications like NF.

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