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Case Report

Rectal perforation secondary to invasive cervical cancer presenting as perineal necrotizing fasciitis with subsequent hindquarter amputation: a case report

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ABSTRACT

Necrotizing fasciitis (NF) is a life-threatening soft tissue infection rarely associated with gynecological malignancies. We present a unique case of NF arising from a locally advanced cervical cancer eroding into the rectum, causing occult fecal spillage leading to severe infection and necessitating a hindquarter amputation. A 39-year-old woman presented with sepsis and a necrotic gluteal wound. Extensive debridement revealed "dishwater"-like discharge throughout the left leg fascial compartments, necessitating hindquarter amputation. Despite initial suspicion of a primary skin infection, further investigation revealed a posterolateral rectal perforation secondary to advanced cervical cancer, confirmed by biopsy and imaging. Microbiology identified Streptococcus constellatus, intermedius, and anginosus. This case highlights the atypical presentation of NF associated with advanced cervical cancer. High clinical suspicion and early surgical intervention are crucial for survival. This case expands the understanding of NF etiology and emphasizes the importance of considering rare causes, even in the absence of traditional risk factors.

Keywords: Necrotizing fasciitis, Rectal perforation, Cervical cancer

INTRODUCTION

Necrotizing fasciitis (NF) is a severe, fulminant polymicrobial soft tissue infection characterized by rapid tissue necrosis, profound systemic toxicity, and a significant mortality rate, around 20%.[1,2] Typically, necrotizing fasciitis develops when several factors, both host and pathogen, are present.

While uncommon, gynaecological procedures and pathologies can create avenues for the development of necrotizing fasciitis. Typically, these stem from postpartum infections following vaginal deliveries or caesarean sections, complications from gynaecological surgeries like hysterectomy or vaginal repairs.[3-6]

In rare circumstances, erosion through internal enteral structures as a result of a malignant process can cause occult infection with a delayed presentation, due to spillage of faecal matter.[7] We present a unique case of necrotising fasciitis which occurred secondary to a locally advanced cervical cancer, which eroded through the posterior-lateral rectum and into the cervical spine, causing feculent contents to flood the fascial planes of the lower limb, resulting in a severe necrotising infection, and necessitating a hindquarter amputation.

CASE REPORT

A 39-year-old female presented acutely unwell for confusion, incontinence, and a general decline over a 4-

day period. She was found unconscious initially and was able to be roused into a disorientated state. Her chief complaint reported was pain in the left gluteal region, although further details were unable to be retrieved in the acute setting due to delirium. Collateral history from a family member noted that she had be bed bound for several days and developed urinary and faecal incontinence over the last twelve hours. The patient lacked any known comorbidities. They were not a diabetic, did not smoke and were not immunosuppressed. This was the patients first known presentation to hospital.

Examination

The patient was urgently seen in the Emergency department with a clinical septic shock. Their blood pressure (BP) was 70/50 mmHg, heart rate (HR) 120, temperature 39.6 C, RR17 and SpO_2 96%. The patient was delirious, with fluctuations in GCS from 11-15 intermittently. Their body mass index (BMI) was 23. On examination, a black circular necrotic wound was noted, approximately 3×3 cm on the left gluteal cleft, with an associated pungent odour. The left leg was mildly swollen and erythematous down to the popliteal region, which was confined to the area with no radiation. There was no abdominal tenderness.

Investigations

A venous blood gas showed a lactate of 4.2 with an associated metabolic acidosis (pH 7.31). The white cell count upon retrospective review was 28 x 10^9 cells/l with a C-reactive protein (CRP) of 471. No further imaging in the elective setting was performed due to the critical clinical condition of the patient.

Treatment

The patient was commenced on peripheral inotropes whilst central access was being placed. Fluid resuscitation and broad-spectrum antibiotics were initiated to cover necrotising infections (Vancomycin, Meropenem, Clindamycin, Ciprofloxacin). The patient was urgently taken to the operating theatre for surgical debridement of the soft tissue infection due to their instability and clinical suspicion of a necrotising infection.

Operation

The wound was entered over the left gluteal muscles and surgically debrided distally. This debridement progressively continued down to the left ankle, which revealed significant 'dishwater' like discharge throughout all the fascial compartments of the left leg, with signs of complete devitalisation of tissue. This is depicted in Figure 1.

A vaginal and rectal exam were performed, which could not detect any obvious perforation or fistulation, however brown discharge was present in the vaginal cavity causing a high suspicion of colonic communication.

Due to the patient's unstable state and the devitalised and necrotic condition of the entire left lower limb, a decision to perform hindquarter was undertaken to preserve the patient's life and control the source of sepsis, as well as preventing any further expansion.

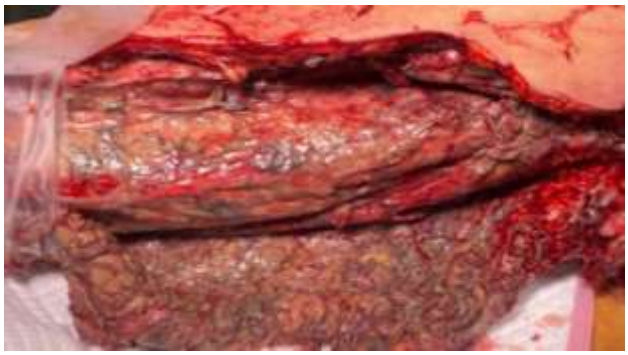

Figure 1: Posterior aspect of affected limb with dishwater like discharge and absence of haemorrhage.

Post-operative investigation

Over the following days, multiple washouts of the lower leg wound revealed healthy tissue, with no concerns of worsening or spreading infection. A defunctioning colostomy was performed to divert faecal matter away from the wound site to allow a vacuum dressing to be placed. Despite presumed source control, the patient remained on low level inotropes.

The cause of the infection was yet to be discovered. No direct communication between the vagina and rectum was seen during the defunctioning colostomy.

Figure 2: Coronal section of CT with portal venous contrast demonstrating complex collection with gas bubble (red arrow).

A computed tomography (CT) scan (Figure 2) was performed and revealed a presumed necrotic collection, obstructing both ureters, with a necrotic cancer being a differential. A flexi-sigmoidoscopy followed which demonstrated a posterolateral (left) perforation in the rectal wall communicating with a large cavity lined by granulation tissue, continuous with pelvic musculature, containing substantial faecal matter. A gynaecological malignancy was confirmed with an MR pelvis (Figure 3), displaying lytic invasion into the S3 and S4 vertebrae.

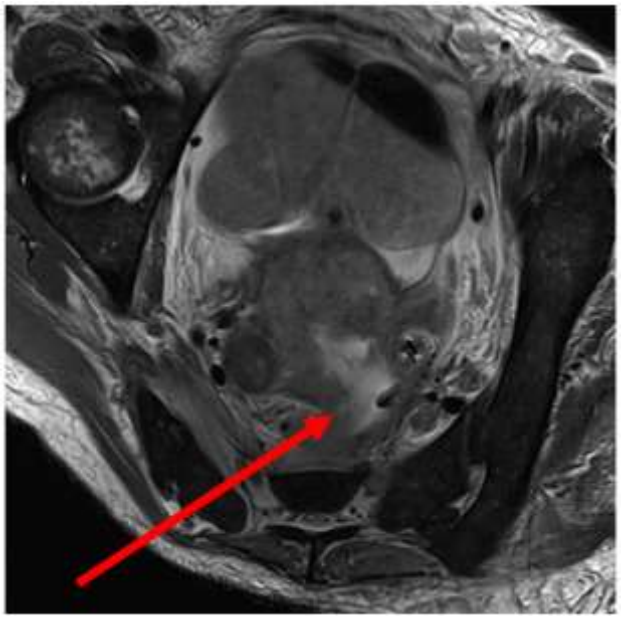

Figure 3: MR T2 axial section showing invasion of cervix into rectum (red arrow).

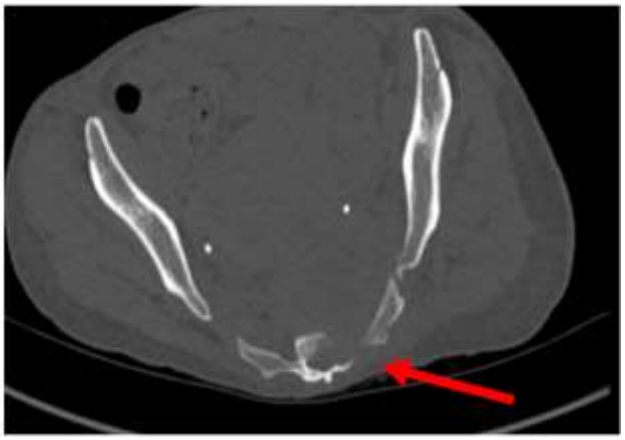

Figure 4: CT axial slice in bone windowing demonstrating sacral lysis from tumour invasion (red arrow).

Histology/microbiology

Swabs and tissue samples from the index procedure were performed. Gram staining showed populations gram negative bacilli, gram positive cocci and gram-positive bacilli. Microbiology swabs from the index procedure revealed primarily *Streptococcus constellatus*, *streptococcus intermedius* and *Streptococcus angionsus*. Se. cervical biopsy demonstrated squamous cell carcinoma.

DISCUSSION

This case represents a unique occurrence of a necrotising infection caused by a condition rarely witnessed in the Western world due to the presence of cervical screen and HPV vaccinations. Effectively all squamous cell carcinomas of the cervix are HPV positive and hence early detection is the reason this event seldom occurs.[8] Rectal perforation leading to necrotising infection has been documented however the cases are a result of primary colonic malignancy or due to stercoral colitis.[7,9] As such, primary general surgical conditions have more overt symptoms of either pain or obstipation, whereas this case had occult features.

Necrotising fasciitis relies on a breach of host immunity, through both physical and immunological factors. Diabetes, immunosuppression, and obesity are very important risk modifiers which not only raise the incidence of necrotising infections, which increase the mortality rate if a necrotising infection occurs.[10,11] Old age, chronic renal disease and alcoholism are also significant contributing factors.[12,13] Our patient had an absence of the typical factors mentioned, and the innocuous perforation was a hidden breach in host immunity.

The major presenting features of necrotising fasciitis are signs of sepsis with skin changes and clinical signs being quite varied depending on the duration of disease.[14] Importantly, visual changes in the skin my be quite occult in the initial stages and may lead to a missed diagnosis, which has led to the several clinical scoring systems being developed.[15] Pain of proportion to the visual appearance of the skin region is a cardinal finding which should dramatically increase the suspicion of a necrotising infection.[16] If in our case, the patient presented prior to septic features, the decision to immediately operate may not have been apparent to the inexperienced surgical doctor. Furthermore, if the patient presented in the after-hours setting, the ability to expedite an operation would be more limited in most centres.

Early intervention is essential in managing necrotising infections. Delay in debridement (>6 hours since presentation) doubles the risk of mortality.[17] Our patient was debrided in approximately one hour from arriving in the emergency department. An adjunct to early debridement is broad spectrum antimicrobials to cover gram positive, gram negative and anaerobic bacteria. Additional agents to cover against MRSA are also utilised (i.e. vancomycin). Clindamycin is also utilised for its anti-toxin effect. Our institutions antimicrobial cover (mentioned above) follows that of the Therapeutic Guidelines for Australia. It should be noted that if freshwater or saltwater exposure is expected, then

coverage for these Vibrio and is achieved with a fluroquinolone and doxycycline respectively.

The microbiology of necrotising fasciitis is complex. Simplification utilised be segregation into type 1 (monomicrobial) and type 2 (polymicrobial) infections, which may aid in antimicrobial stewardship, however the early principles of surgical debridement and wide spectrum antibiotics remain. The microbials cultured from our case are not specific for enteral origins and given the delay to perform cultures, they serve more as an academic purpose and don't guide initial treatment.

Lower limb amputations are necessary in many lower limb necrotising fasciitis cases, to prevent the spread of infection. Hindquarter amputation in perineal necrotizing fasciitis, has only been described several times.[18] The surgical principles of necrotising fasciitis dictate that debridement until healthy tissue is reached and repeat wound review within 24 hours to determine if further spread of infection is present. Our patient had five wound examinations under anaesthetic, which occurred daily, until the wound was deemed clear of any further necrotising infection. As this pathology has not been described previously, the choice investigation to determine the aetiology is unproven, however given the accessibility to CT imaging in most institutions, we would advocate for this an investigation after debridement has occurred.

CONCLUSION

Necrotising infections can arise from a wide range of aetiologies, in unsuspecting patients. We use this case to highlight the importance of clinical judgement to rapidly suspect a necrotising soft tissue infection, and proceed urgently to surgical intervention, even if the primary cause is not determined. This case also emphasises the importance of considering novel causes of necrotising infections, even if they have not been described in the literature previously.

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