Necrotising fasciitis after laparoscopic rectal cancer surgery

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ABSTRACT

Necrotising fasciitis is a rare, serious infection of the deep fascia leading to subcutaneous tissue necrosis. It is extremely important for this condition to be identified and treated promptly as it bears significant mortality. We describe a case of necrotising fasciitis after laparoscopic rectal cancer surgery. To our knowledge, this is the first case reported after the specific procedure. This case report aims to encourage surgeons to have a low threshold in recognising necrotising fasciitis postoperatively, especially for patients with possible risk factors.

KEYWORDS

Necrotising fasciitis – Laparoscopic surgery – Rectal cancer – Postoperative care

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Necrotising fasciitis (NF) is a rare infection of the deep fascia causing secondary necrosis of the subcutaneous tissues. It manifests with severe local pain and symptoms of toxicity. NF bears significant mortality rates ranging from 15% to 52%.¹ Early diagnosis and surgical treatment are of the utmost importance although they are difficult to achieve.

NF of the abdominal wall after laparoscopic colorectal surgery has rarely been reported.^{2,5} To our knowledge, this is the first time NF of the abdominal wall, scrotum and the drain site after minimally invasive rectal surgery has been described.

Case history

A 62-year-old man underwent elective laparoscopic anterior resection for a moderately differentiated rectal adenocarcinoma (T3 N1 M0). The tumour was located in the upper rectum (12cm from the anal verge) and the circumferential resection margin (CRM) was not threatened. He had a synchronous renal tumour, for which he was awaiting further treatment. His past medical history included psoriasis. He was therefore receiving acitretin but this was discontinued four weeks prior to his surgery.

The patient did not undergo chemo or radiotherapy prior to his operation. The anterior resection was uneventful. The specimen was retrieved through a Pfannenstiel incision and a surgical drain was placed in the right iliac fossa.

On the first postoperative day, bleeding was noticed from the drain site; this was stopped by the placement of a haemostatic suture under aseptic conditions. The following day, the patient complained of testicular pain. On examination, he

had swelling and erythema in the scrotal area, which was treated as orchitis after relevant recommendation from the urology team. However, symptoms persisted with the addition of abdominal distension and discomfort. Computed tomography (CT) was conducted to exclude intra-abdominal causes for the clinical presentation. This showed no intra-abdominal pathology but revealed marked subcutaneous stranding and air infiltration. An exploratory laparoscopy confirmed the findings of the CT.

The patient was systemically unwell and was therefore transferred to the intensive care unit, where he was treated for sepsis. The results of the CT prompted the involvement of the plastic surgical team, who confirmed the suspected diagnosis of NF around the drain site and scrotum. Urgent treatment was initiated in the form of surgical debridement and vacuum dressing placement, followed by skin graft at a later stage. The patient improved steadily postoperatively and was discharged from hospital 29 days after the initial admission.

Discussion

NF is associated with several risk factors such as diabetes mellitus, chronic illness, immunosuppressive drugs, age over 60 years, malignancy and obesity; surgery is one of the precipitating factors.⁴ The patient in this case report had more than one risk factor. Specifically, he was over 60 years old, obese, had synchronous rectal and renal cancer, and had undergone surgery.

Early diagnosis of NF and surgical treatment is imperative as delays may have a catastrophic impact, with the mortality

Figure 1 Computed tomography of abdominal and pelvic wall (A), and scrotum (B). The red circle shows the area of inflammation and air penetration.

rate in untreated cases approaching 100%.⁴ One of the findings of a systematic review conducted by Goh *et al* was that NF is misdiagnosed in its early stages in 75% of cases.⁵ The most common misdiagnoses are abscess and cellulitis. Goh *et al* also reported the most frequent presenting symptoms as swelling, erythema and pain. Fever is present in 40% of cases while bullae, skin necrosis, crepitus and septic shock are late symptoms.

Lack of fever may be a factor contributing to misdiagnosis but can be explained by the intake of non-steroidal anti-inflammatory drugs (NSAIDs), steroids and antibiotics.⁵ This is particularly relevant in rectal cancer surgery where antibiotics may be given as prophylaxis and NSAIDs may be prescribed postoperatively for pain control.

Abnormal laboratory tests have been noted by several authors. However, they have been criticised for lacking specificity and sensitivity. Scoring systems based on deranged blood parameters (eg Laboratory Risk Indicator for Necrotising Fasciitis) can be helpful in establishing a diagnosis but they too rely on clinical suspicion and should be used in combination with clinical findings.⁵

It has also been suggested that magnetic resonance imaging (MRI) can offer clarity in the early stages of NF as it can demonstrate whether the infectious changes are located in the superficial tissues (skin, fat, superficial fascia) or involve the deep fascia, thereby distinguishing NF from cellulitis. However, this method has low specificity and therefore tends to overdiagnose deep fascia involvement. Nevertheless, if MRI shows no involvement of the deep fascia, NF can be excluded.² It should be noted that the use of MRI is subject to the availability of the relevant equipment and a radiologist who can report on the above mentioned findings.

A positive 'finger test' has been proposed as the best way to diagnose NF.⁵ It involves making a small incision to the deep fascia after infiltration of the diseased area with local anaesthetic. Lack of bleeding, presence of 'dishwater pus' and easy blunt dissection to the deep fascia using the index finger account for a positive test.²

In the case described in this report, the symptoms occurring were indicative of NF with moderately deranged blood test results. The findings of the CT contributed greatly to the establishment of the diagnosis.

The principles of treatment for NF are surgical debridement and commencement of intravenous antibiotics. The latter are initially broad spectrum and then altered according to culture results. Surgical removal of the necrotic tissue should be followed by regular inspection of the wound. Reconstruction at a later stage by a plastic surgeon may be necessary.²

Conclusions

In the case presented here, diagnosis was achieved in a timely fashion and relevant treatment was initiated immediately. Furthermore, treatment was instigated with the help of a multidisciplinary team including intensivists and plastic surgeons. Surgeons should have high clinical suspicion for NF when the triad of swelling, erythema and pain occurs after laparoscopic surgery in a patient who bears risks factors precipitating the disease. It is important to highlight that NF can occur near the drain site and the scrotum after laparoscopic rectal cancer surgery.

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