Necrotising fasciitis caused by metastatic endometrial cancer: a rare cause of a life-threatening condition

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ABSTRACT

We report a case of necrotising fasciitis caused by metastatic endometrial adenocarcinoma. Metastases to the lumbar spine with local invasion to the iliopsoas muscle led to an iliopsoas abscess, which subsequently progressed to necrotising fasciitis of the flank. This patient lacked common risk factors for necrotising fasciitis. There are no previous reports in the literature of necrotising fasciitis with this aetiology. We discuss the available evidence for aetiology of and risk factors for necrotising fasciitis, and the relation of time to surgery with prognosis.

KEYWORDS

Necrotising Fasciitis – Iliopsoas Abscess – Neoplasm Metastases – Endometrial Cancer

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Introduction

Necrotising fasciitis is a rapidly progressive, life-threatening infection of the fascia, with secondary necrosis of the subcutaneous tissue and systemic toxicity. It most frequently presents with swelling, pain, erythema and sepsis. Late features include blistering and visible skin necrosis. Mortality is high, partly because of the difficulty in diagnosis and therefore in treating aggressively in a timely manner.¹ Difficulty in diagnosing necrotising fasciitis is often attributed to its lack of early specific or pathognomonic signs² and its relative rarity: one recent Texan study reported an incidence of 6.9 per 100 000.³ Aetiology of the disease is also wide ranging and poorly understood, and a systematic review of aetiology in a European cohort is lacking in the literature.

Endometrial cancer is the most common gynaecological cancer in the developed world, with an incidence of about 15 per 100 000 in Western Europe. It is primarily a disease of postmenopausal women.⁴ We report a case of a patient in which metastatic endometrial cancer led to the development of this rare but life-threatening infection.

Case report

A 63-year-old woman presented to the emergency department with obvious signs of septicaemia and rapid onset of blistering, erythema and skin necrosis of the left flank (Fig 1). She had a background of endometrial adenocarcinoma with metastases in the lumbar spine and left iliopsoas muscle, which had been managed with total abdominal

hysterectomy several years prior to this presentation and palliative chemotherapy, completed 7 months prior to this presentation. Of note, routine blood tests taken 4 months prior to presentation showed normal values for white cell count ($10.18 \times 10^9/L$) and neutrophils, indicating a functional immune system. Her only other comorbidity was hypertension.

She reported 1 month of progressive pain in the groin. This was attributed to her previous chemotherapy and was ignored. The pain worsened 2 days before admission and, over 24 hours, she developed a swelling in her left flank. She finally presented to the emergency department with malaise, pyrexia and increasing tenderness and erythema of the overlying skin of the left flank. On arrival, she exhibited clear signs of septic shock. The swelling in her left flank had areas of necrosis and epidermolysis. These changes progressed over the next few hours. The psoas sign was positive but the abdomen was difficult to examine due to superficial wall tenderness.

Baseline laboratory blood tests revealed markedly raised inflammatory markers (white cell count $36.0 \times 10^9/L$, neutrophils $35.1 \times 10^9/L$, C-reactive protein 368 mg/L), coagulopathy and metabolic acidosis. The Laboratory Risk Indicator for Necrotising Fasciitis⁵ score was 12. Computed tomography (CT) of the abdomen and pelvis revealed a left iliopsoas muscle abscess communicating with a subcutaneous abscess in the left flank (Fig 2), extensive subcutaneous emphysema, the known pelvic metastases and obstructive hydronephrosis of the left ureter. There was no visible intra-peritoneal pathology. The patient was also reviewed by the

Figure 1 Preoperative left flank demonstrating severe swelling, erythema and blistering

Figure 3 Intraoperative image of left flank post debridement; a surgical drain has been inserted into the fistula communicating with the psoas abscess

Figure 2 Axial preoperative computed tomography of abdomen showing subcutaneous emphysema of the left flank and communicating psoas abscess (red arrow)

general surgical and intensive care teams and was taken to the operating theatre within 6 hours of arrival in the emergency department.

Intraoperatively, she was found to have spillage of necrotic material from the retroperitoneal space into the subcutaneous tissue of the flank through a fistula in the lumbar fascia. This resulted in necrotising fasciitis of the lateral abdominal wall and back. Necrotic tissue was thoroughly debrided and a drain was left through the fistula into the retroperitoneal collection (Fig 3).

Postoperatively, she was managed on the intensive care unit because of an acute kidney injury and continuing vasopressor requirement for sepsis. She received intravenous clindamycin, piperacillin/tazobactam and teicoplanin. Her clinical condition and inflammatory markers improved significantly in the first 24 hours postoperatively. Intraoperative

specimens from the debrided tissue confirmed adenocarcinoma and were positive for *Streptococcus anginosus*.

The patient returned to theatre twice, once for definitive debridement of the psoas collection and once for change of dressings. The wound was temporised with negative pressure dressing wound therapy and finally resurfaced with split skin grafting (Fig 4). She made a full recovery from this episode.

Discussion

The aetiology of necrotising fasciitis is poorly understood and has not been systematically reported in a European cohort. A systematic review² incorporating US, Asian and Australasian cohorts reported the most common aetiology to be trauma (including major and minor trauma and surgical wounds), followed by infection with marine bacteria from ingestion of undercooked seafood or injury by fish fins; the latter was largely reported in Asian cohorts. Case reports abound describing necrotising fasciitis secondary to perforation of a viscus due to gastrointestinal malignancy⁶ or immediately following administration of a specific chemotherapeutic agent for rectal cancer.⁷ Necrotising fasciitis secondary to pelvic malignancy without perforation of a viscus or recent chemotherapy has not been previously reported.

In this case, necrotising fasciitis occurred in the absence of the most commonly reported risk factors, which include immunosuppression caused by diabetes mellitus (present in 29–44% of cases),^{1,2} old age, chronic renal failure and alcoholism. The patient did have metastatic malignancy and had had chemotherapy 7 months earlier, but baseline routine blood values were normal and the patient mounted a normal immune response to infection, indicating a functioning immune system.

Figure 4 Left flank wound immediately following split skin grafting (9 weeks post-index presentation)

The survival of this patient is in keeping with evidence that timely and aggressive surgical debridement is correlated with improved prognosis; for instance, Chao et. al. report an adjusted hazard ratio of 0.064 when comparing patients surgically debrided within 12 hours of admission to those debrided 12–24 hours after admission.⁸

Radiological investigations are usually contraindicated in this rapidly progressive condition to avoid delay in surgical debridement. In this case, a multidisciplinary decision was

made to proceed with CT imaging, owing to the complex history and the difficulty in reliably examining the abdomen, and only because this was performed without any undue delay while the operating theatre was being prepared.

This case illustrates a typical presentation of a rare but life-threatening condition with an atypical cause. Owing to the rapid progression of this disease and the relation of timely appropriate management to outcome, a high level of clinical suspicion should be applied even in the absence of typical aetiology and risk factors.

References

1. Glass GE, Sheil F, Ruston JC *et al.* Necrotising soft tissue infection in a UK metropolitan population. *Ann R Coll Surg Engl* 2015; **97**: 46–51.
2. Goh T, Goh LG, Ang CH *et al.* Early diagnosis of necrotizing fasciitis. *Br J Surg* 2014; **101**: e119–25.
3. Oud L, Watkins P. Contemporary trends of the epidemiology, clinical characteristics, and resource utilization of necrotizing fasciitis in Texas: a population-based cohort study. *Crit Care Res Pract* 2015; **2015**: 618067.
4. Morice P, Leary A, Creutzberg C *et al.* Endometrial cancer. *Lancet* 2016; **387**: 1,094–108.
5. Wong CH, Khin LW, Heng KS *et al.* The LRINEC (Laboratory Risk Indicator for Necrotizing Fasciitis) score: a tool for distinguishing necrotizing fasciitis from other soft tissue infections. *Crit Care Med* 2004; **32**: 1,535–41.
6. Evans WD, Winters C, Amin E. Necrotising fasciitis secondary to perforated rectal adenocarcinoma presenting as a thigh swelling. *BMJ Case Rep* 2015; **2015**.
7. Ugai T, Norizuki M, Mikawa T *et al.* Necrotizing fasciitis caused by *Haemophilus influenzae* type b in a patient with rectal cancer treated with combined bevacizumab and chemotherapy: a case report. *BMC Infect Dis* 2014; **14**: 198.
8. Chao WN, Tsai CF, Chang HR *et al.* Impact of timing of surgery on outcome of *Vibrio vulnificus*-related necrotizing fasciitis. *Am J Surg* 2013; **206**: 32–39.