

CASE REPORT

Gas gangrene presenting with back pain

Mohamed El Sayad,¹ Albert Chikate,² Balasundaram Ramesh³

¹Wishaw General Hospital, Wishaw, UK
²Bronglais Hospital, Aberystwyth, UK
³Glan Clwyd Hospital, Rhyl, UK

Correspondence to
 Mohamed El Sayad,
 msayad1@hotmail.com

Accepted 29 March 2014

SUMMARY

A 61-year-old Caucasian man (previously fit and well) presented to the emergency department with 2 days of non-traumatic, non-radiating lower back pain. He was admitted to our department having been provisionally diagnosed with discitis. Later that night, while being reassessed, a skin lesion on his thigh appeared and gas could be palpated. The patient was then taken immediately to theatre and a radical surgical debridement was performed. The organism that grew from tissue samples was *Clostridium septicum*, which when identified is an indication to exclude colonic neoplasms. The patient managed to preserve his limb on this occasion, however, he underwent a right hemicolectomy for what proved to be a colonic tumour at a later date.

BACKGROUND

Patients present with back pain to the emergency department frequently. Many of them usually suffer from mechanical back pain and if deemed safe are sent home. However, it is necessary that doctors are made aware of the importance of thorough investigation and reassessment. These elements were fundamental to this case, as the patient was developing a life-threatening infection at the time of presentation.

CASE PRESENTATION

A healthy 61-year-old Caucasian man presented to the accident and emergency department having experienced 2 days of non-radiating, non-traumatic lower back pain. The patient had no notable family history, was on no medication and was not allergic to any medications. On presentation, his vital signs were a blood pressure of 130/80 mm Hg, pulse 98 bpm and temperature 38.3°C. On examination, his straight leg raise test was more than 45° in both legs; there was no abnormal focal neurology and his cardio, respiratory and abdominal examinations did not detect any abnormalities. He was given cefuroxime, paracetamol and morphine intravenously. Despite this, the pain did not subside. The patient was then referred to the orthopaedic team to investigate the back pain further, having been provisionally diagnosed with discitis.

Overnight, the patient continued with pain, which was now radiating down his left leg. This was despite receiving additional parenteral opiates. During a re-examination, which took place 8 h following his admission, a new ill-circumscribed area of skin in the left trochanteric region showed blue discolouration with a central blister. Within 30 min, this area had doubled in size and palpation revealed thigh crepitus.

INVESTIGATIONS

While in the emergency department, blood tests were taken from the patient. The tests revealed raised inflammatory markers with a white cell count of $16.8 \times 10^9/L$, and a C reactive protein of 202mg/L. Lumbosacral radiographs (figure 1) were also taken (due to the provisional diagnosis of discitis), however, no abnormalities were detected. To exclude any other concomitant infections a urine dipstick was taken and was normal. After thigh crepitus was palpated the patient was sent for a pelvis radiograph (figure 2), which showed extensive gas formation. Tissue cultures that were taken during surgical debridement grew *Clostridium septicum*. Owing to the association between *C septicum* and colonic tumours, a CT scan (figure 3) was performed, which revealed a bulky, circumferential ascending colonic tumour. A colonoscopy was carried out following the patient's surgical debridement and tissue coverage. This confirmed the nature of the tumour and its type (Duke type B).

DIFFERENTIAL DIAGNOSIS

- Discitis
- Vertebral osteomyelitis
- Para spinal abscess
- Mechanical back pain with concomitant infection
- Psoas abscess
- Urinary tract infection
- Renal stones
- Abdominal aortic aneurysm

TREATMENT

Initial management and resuscitation was carried out with intravenous fluids, benzyl penicillin and gentamycin. The patient was taken to theatre for debridement of infected tissue and possible



Figure 1 Normal anteroposterior lumbosacral radiograph that was taken on admission to exclude any vertebral destruction due to discitis.



To cite: El Sayad M, Chikate A, Ramesh B. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-010241



Figure 2 Anteroposterior pelvis radiograph with extensive gas formation taken after crepitus of the left thigh was palpated.

disarticulation if deemed necessary. Surgical exploration carried out 9 h after admission showed extensive gangrene of the quadriceps muscle, with foul-smelling gas passing through. The gangrenous muscles were debrided, and samples were sent to microbiology for cultures and sensitivities. The wound that measured (25×15 cm) was washed with 6 L of normal saline, hydrogen peroxide and covered with a vacuum-assisted closure dressing. The patient was transferred to intensive therapy unit, as during surgery he went into septic shock and inotropes were required to stabilise him, and also due to the need to keep him intubated.

The patient went for four further wound washouts and debridements that week. Ten days later, his inflammatory markers

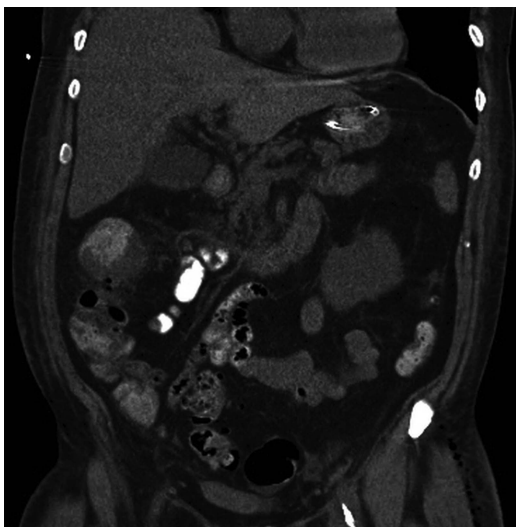


Figure 3 Coronal section abdominal CT scan showing bulky circumferential tumour in distal ascending colon/hepatic flexure. After *Clostridium septicum* grew from tissue cultures, it was an indication to exclude colonic neoplasms.

and general condition improved and he was transferred to the regional plastic surgery unit for wound coverage with a muscle flap and skin grafting.

The results of the cultures came back positive for *C septicum*. Owing to the association between *C septicum* and colonic tumours, the patient underwent a CT scan and a colonoscopy confirming the presence of a colonic tumour, which was treated with an extended right hemicolectomy with no postoperative complications 1 month after his tissue coverage procedure. The tumour was completely excised and classified as a Duke B carcinoma.

OUTCOME AND FOLLOW-UP

The patient was followed up 6 months following his initial presentation in the outpatient orthopaedic departments for wound-dressing changes and to assess the graft take, which was 100%. He was also followed up in the outpatient general surgical department after his extended right hemicolectomy, to assess his progress. The patient made a full recovery with preserved limb function.

DISCUSSION

Gas gangrene is a rapidly spreading infection, usually following a traumatic contaminated wound. *Clostridium perfringens* is the most common organism associated with this infection, but in 1.3% of cases it is caused by *C septicum*.¹

C septicum is a normal commensal in the gastrointestinal tract. It is an opportunistic organism, which tends to be associated with high-mortality rates in people that are immunocompromised due to diabetes or malignancies, especially caecal carcinoma.²

Larson *et al*³ reviewed 241 clostridial infections and found that in 10% of these cases it was attributed to an underlying malignancy but that rate increases to 52.6% in cases when *C septicum* is the causative organism.⁴

The interesting aspects of this case are: first the initial presentation of back pain and second the coexistence of an occult colonic tumour that only presented itself with an aggressive infection. The tumour in this case acted as a portal of entry into the systemic circulation, by providing a small break in the gastrointestinal mucosa and subsequently the organism seeded into muscle tissues.⁵ Owing to early diagnosis, adequate resuscitation and treatment, this man survived an infection that when spontaneous has a mortality rate between 67% and 100%.⁶

Learning points

- ▶ Patients present with back pain and fever should be admitted to detect the source of infection and be continuously re-evaluated for change of symptoms or signs.
- ▶ Early and aggressive treatment of gas gangrene with radical surgical debridement is associated with a favourable outcome.
- ▶ When *Clostridium septicum* is the causative organism for gas gangrene, colonic neoplasms should be excluded.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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