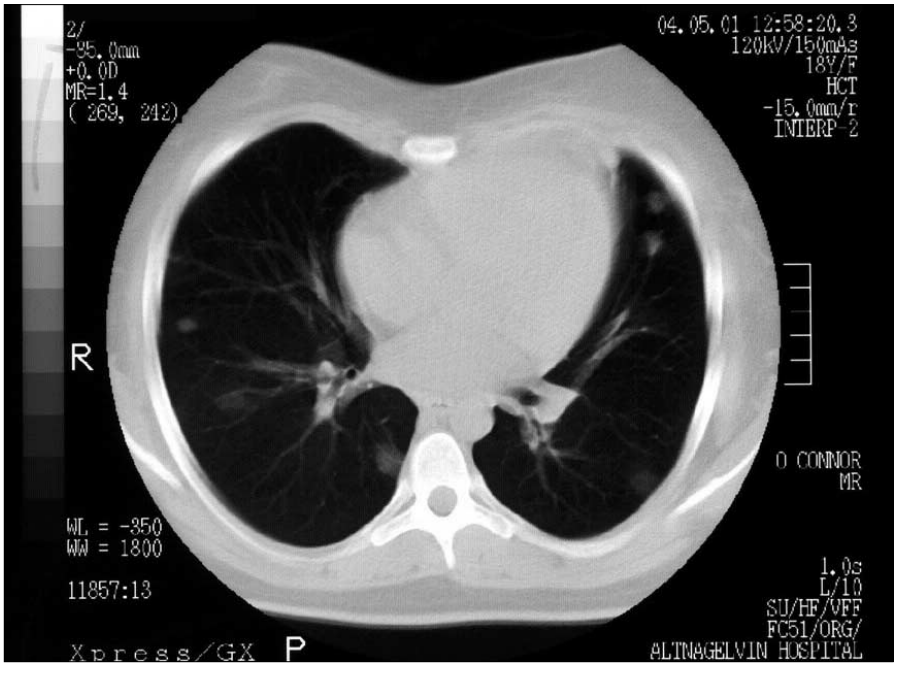
A young woman with urinary symptoms, septicaemia and a pectoral muscle abscess

Seamus J Murphy, Gerard Glynn, Frank A O'Connor

CASE REPORT

A previously healthy 18-year-old woman was admitted to a medical ward with a 5-day history of lower abdominal pain, dysuria and fever. She had no past history of urinary tract disease. Her GP sent a urine sample for analysis at the onset of symptoms. Urine microscopy showed pus cells and culture revealed a positive growth of coliforms (>10^5/ml), sensitive to penicillin. The patient was given oral amoxycillin but her symptoms worsened. Hospital admission was therefore arranged. On admission her temperature was 38.7°C and she was dehydrated with suprapubic tenderness. There was no lymphadenopathy and chest examination was normal. Her haemoglobin was 10.3 g/dl, white cell count 7.75x10^9/litre and platelet count 110x10^9/litre. Liver function tests revealed a bilirubin of 67μmol/litre (normal range 5–17μmol/litre), alkaline phosphatase 140 IU/litre (normal range 20–90 IU/litre), alanine aminotransferase 238 IU/litre (normal range 5–40 IU/litre) and gamma glutamyl-transferase 105 IU/litre (normal range 0–40 IU/litre). Electrolytes, urea and creatinine were normal. She was treated initially with intravenous cephradine. Repeat urine examination demonstrated a sterile pyuria: microscopy showed pus cells but urine culture was negative. Anaerobic blood culture was positive for gram-negative rods after 1 day. Chest X-ray revealed multiple soft shadows throughout both lung fields. Computed tomography scan of the chest and abdomen showed multiple cavitating nodules in both lung fields (*Figure 1*), and multiple gas bubbles in the left pectoral muscle consistent with abscess formation (*Figure 2*). The pectoral muscle abscess was drained under ultrasound guidance and gram-negative rods were cultured from pus. Cultures from blood and pus were subsequently identified as *Fusobacterium necrophorum* using a Biomerieux (Basingstoke, Hampshire) rapid ID 32A kit. The patient made a full recovery with 10 days of treatment with intravenous metronidazole, benzylpenicillin and meropenem. The presumed source of primary infection was the urinary tract with metastatic abscesses arising in the lungs and pectoral muscle.

Figure 1. Computed tomography scan of the chest showing multiple cavitating nodules in both lung fields.



INTRODUCTION

Fusobacterium necrophorum, an anaerobic bacillus, is a normal inhabitant of the mouth and other mucosal surfaces, and is the bacterium responsible for Lemierre's syndrome. This article describes an unusual presentation of this infection in a previously healthy young woman in which the urinary tract was the primary source of infection. The patient became septicaemic and developed metastatic septic abscesses in the lungs and pectoral muscle. Treatment with intravenous antibiotics led to a full recovery.

Infection of the urine with anaerobes occurs rarely, although Lemierre described cases of urinary infection caused by fusobacteria in his original description of 20 cases in 1936. This case illustrates the importance of early blood cultures to diagnose anaerobic infections.

DISCUSSION

Fusobacteria are obligate anaerobic, gram-negative bacilli (Hofstad, 1998). Most species are found in the normal flora of the mouth and to a lesser extent in the gastrointestinal and urogenital tracts. The English term for *F. necrophorum* sepsis is necrobacillosis, which is derived from the fact that the bacteria produce necrotic abscesses.

In 1936, Lemierre described 20 cases of anaerobic septicaemias, of

Dr Seamus J Murphy is Research Registrar in Gastroenterology, Queen's University, Belfast, **Dr Gerard Glynn** is Consultant Microbiologist and **Dr Frank A O'Connor** is Consultant and Honorary Senior Lecturer in Gastroenterology, Altnagelvin Area Hospital, Londonderry, Northern Ireland

Correspondence to: Dr SJ Murphy, Research Registrar in Gastroenterology, Department of Epidemiology and Public Health, Northern Ireland Cancer Registry, Belfast BT12 6BJ

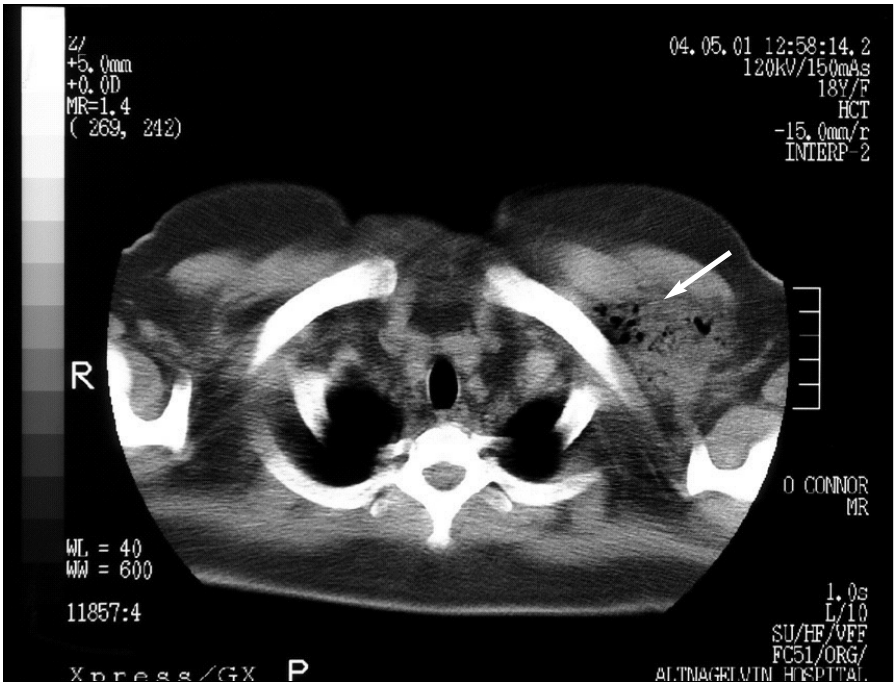


Figure 2. Computed tomography scan of the chest showing multiple gas bubbles (arrow) in the left pectoral muscle, consistent with abscess formation.

which 18 cases were fatal (Lemierre, 1936). Most of these cases were caused by *F. necrophorum*. His description of the cases of 'anaerobic postanginal septicaemias' became known as Lemierre's syndrome. However, his original report also included cases where the urinary tract was the primary infection source.

Necrobacillosis is a rare infection with about 20 reported cases in England and Wales per year over the last decade (Brazier et al, 2002). It tends to fall into two groups. The first is Lemierre's syndrome in previously healthy adults with primary infection in the head. The second is infection in older adults with infectious foci distal to the head. In elderly patients with this infection, an underlying cancer of the gastrointestinal or urogenital tracts has been found in up to 69% of patients (Hagelskjaer et al, 1998), so a search for malignancy in this setting is recommended. This case report is unusual in that a previously healthy young adult presented with a focus of infection distal to the head, the urinary tract being the presumed source of infection.

Diagnosis is by blood culture or anaerobic culture of other tissues. *F. necrophorum* has characteristic pleomorphic morphology with filaments, short rods and coccoid elements that are shown by gram staining.

F. necrophorum is reported to be susceptible to penicillin, cephalosporins, metronidazole, clindamycin, tetracyclines and chloramphenicol (Tuner and Nord, 1993). The optimal antibiotic regimen is not known but most authors recommend combined treatment with high-dose penicillin and metronidazole or monotherapy with clindamycin for 2–6 weeks (Hagelskjaer et al, 1998).

CONCLUSIONS

Although *F. necrophorum* is a rare infection, it needs to be remembered by clinicians since it carries significant morbidity and mortality through its potential to metastasize if not recognized and treated early (Brazier et al, 2002). Early blood cultures and prompt microbiological advice in this case led to an uncomplicated recovery. **HM**

Brazier JS, Hall V, Yusef E, Duerden BI (2002) *Fusobacterium necrophorum* infections in England and Wales 1990-2000. *J Med Microbiol* **51**(3): 269–72

Hagelskjaer LH, Prag J, Malczynski J, Kristensen JH (1998) Incidence and clinical epidemiology of necrobacillosis, including Lemierre's syndrome, in Denmark 1990-1995. *Eur J Clin Microbiol Infect Dis* **17**(8): 561–5

Hofstad T (1998) Fusobacterium and leptotrichia. In: Balows A, Duerden BI, eds. *Topley and Wilson's Microbiology and Microbial Infections.* 9th edn. Edward Arnold, London: 1355–64

Lemierre A (1936) On certain septicaemias due to anaerobic organisms. *Lancet* **i:** 701–3

Tuner K, Nord CE (1993) Antibiotic susceptibility of anaerobic bacteria in Europe. *Clin Infect Dis* **16**(suppl 4): S387–9