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Mycoplasma hominis: postoperative pelvic fracture-related infection in a trauma patient

Jordan Bethel[1]
Elizabeth K Tissingh[1]
Aswinkumar Vasireddy[1]
Hector Maxwell-Scott[1]

Author details can be found at the end of this article

Correspondence to:
Jordan Bethel;
jordan.bethel1@nhs.net

Introduction

Mycoplasma hominis is a commensal organism of the urogenital tract which may be transferred through sexual contact. Rarely, it has been a reported causative organism in postoperative wound complications in immunocompromised patients undergoing operations for spinal, brain or urogenital injuries. This article reports a case of a *M. hominis* fracture-related infection in a previously healthy 22-year-old man who experienced significant pelvic trauma with urethral injury. The patient was treated successfully with wound washouts and a prolonged course of targeted antibiotic therapy.

Discussion

M. hominis is a recognised non-pathogenic commensal of the urogenital tract (Noska et al, 2012) and is transmitted by sexual contact. It has rarely been reported as a cause of infective syndromes including septic arthritis (Luttrell et al, 1994), postoperative caesarean section complications (Koshiba et al, 2011), hip and spinal surgery complications (Tyner et al, 2016), brain abscesses (Henao-Martínez et al, 2012) and bloodstream infection in immunocompromised hosts (Razin et al, 1998).

While major surgery is a risk factor for *M. hominis* infection (Stelow et al, 2001), there are very few case reports of post-pelvic trauma infection and so it is not commonly

Case report

A 22-year-old man with no past medical history was admitted to a major trauma centre with an unstable pelvic ring injury and associated posterior urethral injury following a road traffic collision. Bladder content had leaked into his intra- and extra-peritoneal spaces.

On the first day after admission, open reduction and internal fixation of the pelvic ring injury was performed (**Figure 1**). The patient received intravenous teicoplanin and gentamicin on induction and vancomycin powder was applied directly to the metalwork before closure of the operative wound.

Three days after surgery the patient spiked a temperature of 38.6°C and was tachycardic. He was started on intravenous co-amoxiclav after cultures were taken, but there was a poor clinical response. Laboratory investigations demonstrated a white cell count of 38×10^9/litre (neutrophils 36.12×10^9/litre, lymphocytes 0.95×10^9/litre) and a C-reactive protein of 330 mg/litre (**Figure 2**).

A computed tomography scan of the chest, abdomen and pelvis revealed an anterior abdominal wall collection, a left psoas collection and a left gluteal collection 4 days post-surgery (**Figure 3**). The patient underwent washout and debridement through the previous surgical scar 12 days post-surgery. A subrectus collection was drained and six pus samples were collected for analysis which identified *Mycoplasma hominis* 48 hours later. These appeared as pinpoint colonies on horse blood and chocolate agar; the identification was performed by matrix assisted laser desorption/ionisation-time of flight (MALDI-TOF) mass spectrometry. Consequently, the patient was started on 600 mg intravenous clindamycin four times daily and 4.5 mg piperacillin/tazobactam three times daily.

After 25 days, the patient's clinical condition improved and the antibiotics were changed to oral clindamycin 450 mg three times daily after further multidisciplinary discussion. The patient was discussed at a multidisciplinary meeting, at which it was decided to retain the metalwork and suppress the infection with antibiotics until bony union was achieved. Clindamycin was continued for 6 weeks. The patient showed no overt clinical or microbiological signs of infection at 4 weeks follow-up (white cell count 5.7×10^9/litre, neutrophils 3.63×10^9/litre, lymphocytes 0.92×10^9/litre).

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considered as a differential (Brunner et al, 2000; Stelow et al, 2001; Henao-Martínez et al, 2012). Traumatic urogenital injury may provide a pathway for these urogenital commensals to enter the pelvis and abdomen (Whitson et al, 2014).

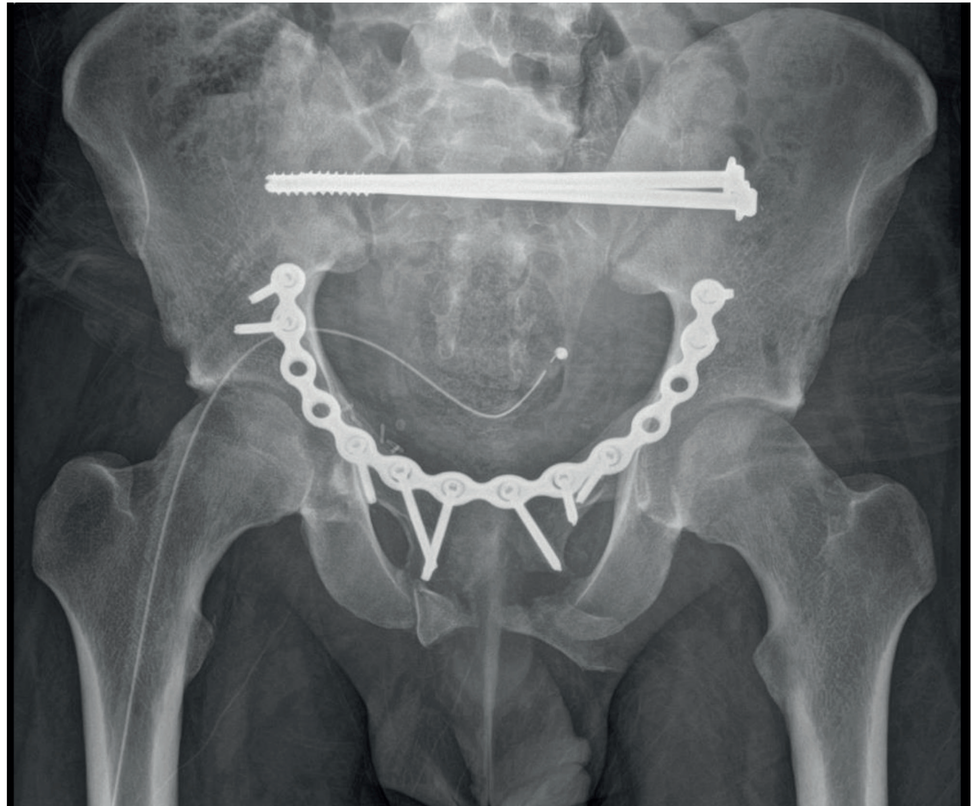

Figure 1. Anterior-posterior X-ray of the pelvis post fixation with a 14-hole plate and sacro-iliac screws.

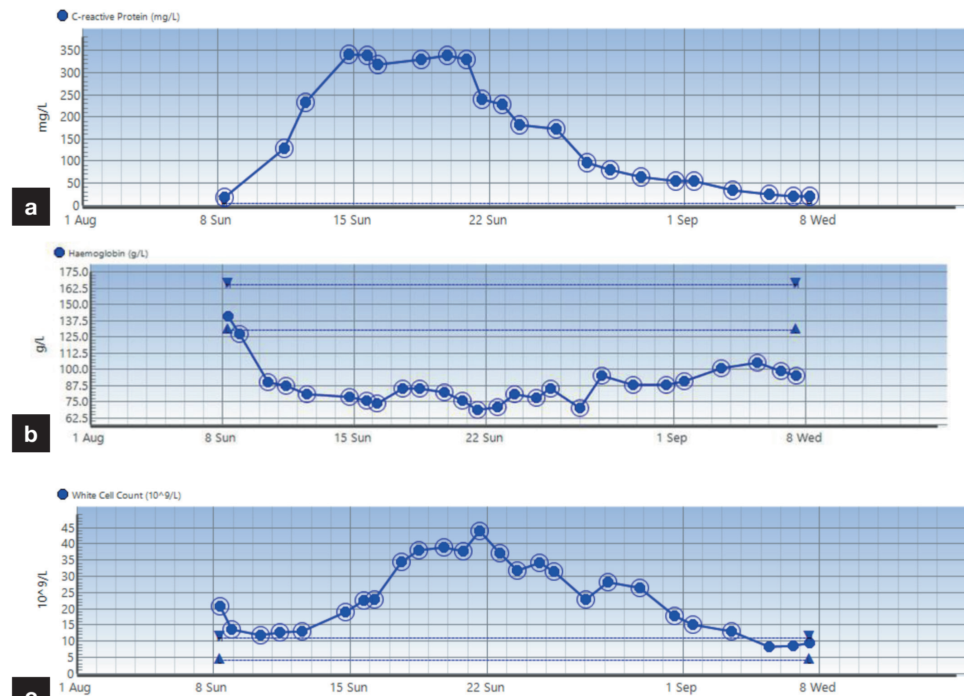

Figure 2. a. C-reactive protein, (b) haemoglobin and (c) white cell count trends during admission.

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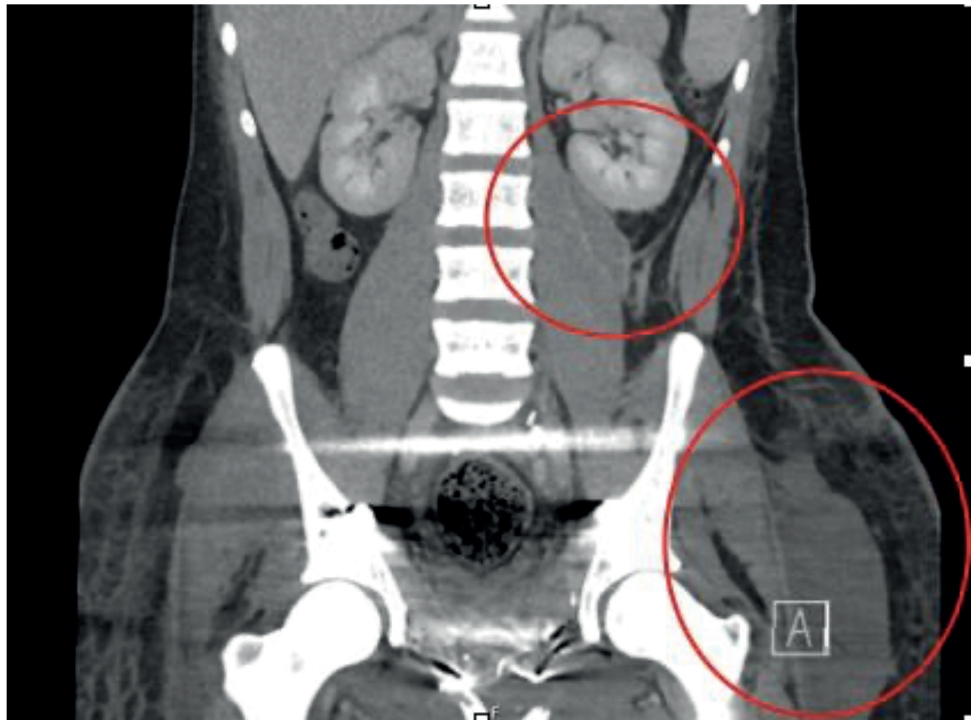

Figure 3. Coronal computed tomography view of lateral thigh collection and left psoas collection.

Mycoplasma belong to the smallest class of bacteria, the mollicutes. They do not possess a typical bacterial cell wall so are not detected on Gram stains, which makes them difficult to diagnose. They are also intrinsically resistant to cell wall active antibiotics such as penicillins, cephalosporins and carbapenems, which are frequently used as first-line agents.

Clindamycin is a lincosamide antibiotic with activity against Gram-positive aerobes and a wide range of anaerobes, as well as some protozoan parasites (Uusküla and Kohl, 2002). Clindamycin, quinolones and tetracyclines all show activity against *M. hominis*; while resistance to tetracyclines, and less commonly quinolones, is recognised, no resistance to clindamycin has been described. Conversely high-level macrolide resistance is common. For this reason, clindamycin is often considered first line for *M. hominis* infection and was given in this case after expert consultation.

Washout and drainage of a postoperative wound collection is the most important intervention alongside appropriate antibiotic therapy.

This case demonstrates the ability of *M. hominis* to cause deep-seated infection in an immunocompetent host with urethral injury. Clinicians managing such patients should consider the possibility of *M. hominis* infection if patients fail to respond to initial broad spectrum antibacterial therapy.

Learning points

- *Mycoplasma hominis* should be considered as a causative organism in postoperative infection in pelvic fracture patients with associated urogenital injury, such as urethral rupture.
- *M. hominis* should be considered as causative organisms in patients with pelvic collections that are not responding to first-line antibiotics.
- The biological properties of the Mycoplasma cell wall make it difficult to detect through routine laboratory investigations, such as Gram staining, and this may lead to a delay in diagnosis.
- Because *M. hominis* is rarely the causative agent in postoperative wound collection in pelvic trauma patients, it is not often considered in the first instance.

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Author details

[1]Department of Trauma and Orthopaedics, King's College Hospital, King's College Hospital NHS Foundation Trust, London, UK

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