Hip osteomyelitis secondary to pressure injury: a case report

CASE REPORT

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ABSTRACT

This study reports on the case of a 74-year-old man with multiple comorbidities who developed hip osteomyelitis secondary to pressure injury. Attempts to contain the osteomyelitis were unsuccessful despite use of antibiotics, debridement, and pressure injury management such as negative pressure wound therapy. Osteomyelitis secondary to pressure injury is difficult to eradicate and associated with a poor prognosis. Pressure injury prevention should be emphasised to avoid such complications.

Key words: Osteomyelitis; Pressure ulcer

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CASE PRESENTATION

In August 2017, a 74-year-old man presented with acute onset of right-sided weakness and visual neglect. This cerebrovascular event was complicated by aspiration pneumonia and a hyperosmolar hyperglycaemic state. The patient had a medical history of stroke with minimal weakness, vascular dementia, hypertension, and diet-controlled type-2 diabetes mellitus. Prior to admission, he took aspirin and atenolol and required assistance to mobilise short distances. The patient was treated with aggressive fluid resuscitation and broad-spectrum intravenous antibiotics. On discharge, he was fully dependent with a nasogastric tube and indwelling urinary catheter.

One month later, the patient presented with rigors and hyperosmolar hyperglycaemic state. On examination, he had a stage-4 sacral pressure injury with suspected osteomyelitis and an unstageable left hip pressure injury. He was treated with intravenous co-amoxiclav for 6 weeks, staged bedside debridement, pressure relief with regular 2-hourly turning and a ripple mattress, glycaemic control, and nutritional supplementation with dietician input. Although his sacral and left hip wounds improved, he developed a right hip pressure injury, which was infective and highly exudative.

Tissue biopsy grew *Proteus mirabilis* and pus swab grew *Enterobacter aerogenes* and *Citrobacter Koseri*; all were sensitive to meropenem. The patient became febrile and the wound worsened, and blood cultures grew multidrug-resistant *Enterococcus faecium* and *Acinetobacter Baumannii*, which were sensitive only to vancomycin and ciprofloxacin, respectively. After discussion with infectious disease specialists, both antibiotics were given for 2 weeks in addition to the 6-week course of meropenem.

Orthopaedic management was advised, but his family declined surgical intervention under general anaesthesia. Negative pressure wound therapy was applied owing to heavy exudate. After a week, the underlying bone within the wound was exposed (**FIGURE 1**). Radiographs showed extensive bone lysis of the right proximal femur with transection of the femoral head lying inferior-medial to the femur (**FIGURE 2**). The patient became progressively unwell and was treated palliatively.

DISCUSSION

We reported a patient who developed hip osteomyelitis secondary to pressure injury. Attempts to contain the osteomyelitis were unsuccessful despite use of antibiotics, debridement, and negative pressure wound therapy.

FIGURE 1. The underlying bone within the wound is exposed.

FIGURE 2. Radiographs showing extensive bone lysis of the right proximal femur with transection of the femoral head, lying inferior-medial to the femur.

Pressure injuries can cause morbidity and mortality, especially among hospitalised older people with poor mobility.^{1,2} In patients aged 70 to 90 years, 11.2% to 34% develop pressure injuries following acute hospital admission.¹ They carry significant physical, psychological, and socio-economic burden with poor health-related quality of life.^{1,2} Measures should be taken to reduce the risk of pressure injuries in hospital.

Pressure injuries can result in osteomyelitis.^{1,3,4} Chronic osteomyelitis is defined as the presence of infection for >6 weeks or recurrent osteomyelitis unsuccessfully treated with antibiotics.³ Pressure injuries in older people may cause indolent chronic osteomyelitis with little systemic symptoms. Owing

to heterogeneity in clinical presentation and diagnosis, epidemiological data are limited, but a prospective study reported an incidence of 1.4 cases per 1000 patient-ulcer days.¹

For management of osteomyelitis, the evidence-based recommendation for antibiotics is lacking in terms of duration, choice, or administration route.⁴ It is an acceptable practice to administer antibiotics for at least 4 to 6 weeks.^{1,3,4} Choice of antibiotics depends on the location of the decubitus wound and the likely source of contamination. Common isolates from infected decubitus wounds include *Staphylococcus aureus*, aerobic gram-negative bacilli, and *Bacteroides fragilis*,^{1,3,5} and 41% are polymicrobial.¹ Oral antibiotics appear equally effective as parenteral antibiotics.²⁻⁴

Interpreting microbiology results can be challenging, as the clinician needs to determine whether the isolate indicates colonisation or infection.¹ Although osteomyelitis is unlikely in stage 3 or 4 decubitus pressure injuries, culture results should be interpreted with caution. There is poor correlation between bacteria identified by wound aspirate, swab culture, and bone biopsy, with a high likelihood of false positives and negatives.^{1,3,6} Diagnostic accuracy of clinical examination is only 33% sensitive and 60% specific.¹ Sampling of deep tissue material and/or imaging studies such as computed tomography and magnetic resonance imaging are required.^{1,3} Bone biopsy remains the gold standard diagnostic tool for osteomyelitis.

Chronic wounds tend to be polymicrobial in nature. In wound recurrence, 86% of wounds grew different organisms, indicating new infections. Therefore, it is important to obtain new microbiology samples if the wound recurs or worsens. The number of surgical debridement procedures or the duration of antibiotic therapy have no effect on recurrence.⁹ Surgical debridement of the wound bed is recommended for stage 3 to 4 decubitus pressure injuries in order to achieve better penetrance by intravenous antibiotics.^{1,3,6}

Optimal nutrition state and pressure relief therapy also aid wound healing.^{1,3,6-8} Negative pressure wound therapy to remove exudate can be considered if all standard care options are exhausted.⁶

Osteomyelitis is difficult to treat; recovery is poor in patients with comorbidities.^{3,7,8} The presence of vascular disease increases the risk of impaired wound healing and chronic osteomyelitis.^{3,7-9} Diabetes impairs peripheral blood flow and delivery of immune mediators, which is compounded by an impaired host immune resistance needed for effective wound healing.⁸ When pressure injury occurs, timely wound bed management including sharp debridement is required. When osteomyelitis occurs, infection is difficult to eradicate and outcome is usually poor. Effective pressure injury prevention strategy should be emphasised to avoid complications such as osteomyelitis.

DISCLOSURE

The authors have no conflict of interest to disclose.

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