Blackheads, whiteheads, femoral head

Joshua Osowicki^{1,2,3}, Ke Juin Wong¹, Leo Donnan⁴, Penelope A Bryant^{1,2,5}

Affiliations

1. Infectious Diseases Unit, The Royal Children's Hospital Melbourne, Parkville, Victoria, Australia

2. Murdoch Children's Research Institute, Parkville, Victoria, Australia

3. Division of Pediatric Infectious Diseases, Department of Pediatrics, University of British Columbia, BC Children's Hospital, Vancouver, British Columbia, Canada

4 Department of Orthopaedics, The Royal Children's Hospital Melbourne, Parkville, Victoria, Australia

5 The University of Melbourne, Department of Paediatrics, Parkville, Victoria, Australia

Corresponding author

Dr Joshua Osowicki

Infectious Diseases Unit

The Royal Children's Hospital Melbourne

50 Flemington Road,

Parkville,

VIC 3052

Australia

Tel: +1 778 859 7041

Email: joshua.osowicki@rch.org.au

Consent

The patient provided verbal and written consent for preparation and publication of this image and commentary.

Conflicts of interest

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as doi: [10.1111/jpc.13082](https://doi.org/10.1111/jpc.13082)

All authors state that they have no conflicts of interest.

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Question

A 17-year-old female presented with months of increasing right hip pain, years after internal screw fixation for slipped upper femoral epiphysis. Two weeks following elective screw removal, she re-presented with a painless, erythematous, fluctuant lump beneath her surgical scar. The collection was drained, although culture-negative, and she was discharged on oral cephalexin, only to re-present in identical circumstances four weeks later. MRI showed a large collection extending through fascia into the proximal femur medulla, highlighting the ghostly outline of the recently departed screw (Fig. 1). After repeated culture-negative drainage/debridement procedures, associated with prolonged immobility and complicated by deep vein thrombosis and pulmonary embolism, a Gram positive bacillus was eventually identified by prolonged culture and 16S ribosomal RNA PCR. What was the organism? (Answer on page XXX)

Dr Joshua Osowicki^{1,2,3}

Dr Ke Juin Wong¹

Mr Leo Donnan⁴

Associate Professor Penelope A Bryant^{1,2,5}

1 Infectious Diseases Unit, The Royal Children's Hospital Melbourne, Parkville, Victoria, Australia

2 Murdoch Children's Research Institute, Parkville, Victoria, Australia

3. Division of Pediatric Infectious Diseases, Department of Pediatrics, University of British Columbia, BC Children's Hospital, Vancouver, British Columbia, Canada

4 Department of Orthopaedics, The Royal Children's Hospital Melbourne, Parkville, Victoria, Australia

5 The University of Melbourne, Department of Paediatrics, Parkville, Victoria, Australia

Answer

Paediatricians have long been aware of the key role played by *Propionibacterium acnes* in acne vulgaris (1). There is increasing recognition that *P. acnes* also causes indolent invasive infections, particularly associated with surgery and prosthetic materials **where biofilm formation is a key virulence factor** (2). These infections are characterised by long periods from surgery to symptoms, and for lack of inflammation. **Anaerobic culture for at least 10-14 days is recommended for optimal recovery**, and molecular methods can improve the yield of *P. acnes* (3).

While the organism is susceptible *in vitro* to multiple antibiotic classes (although not metronidazole), perioperative antibiotic prophylaxis (eg with first generation cephalosporins) does not prevent late infections, and clinical management is typically complicated. Antibiotics active in bacterial biofilms, such as rifampicin, are often used, and prosthesis removal and extensive debridement are usually required.

P. acnes often infects children and adolescents with multiple disabilities requiring orthopaedic and/or neurosurgical instrumentation. Prompt diagnosis and treatment is possible when their most involved clinician, their paediatrician, is aware of the pathogenic potential of *P. acnes* and its typically atypical presentation.

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Figure 1. T2 post-contrast MRI of the right femur and pelvis showing increased signal in the screw track indicative of infection.

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Author/s:

Osowicki, J;Wong, KJ;Donnan, L;Bryant, PA

Title:

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Date:

2016-07-01

Citation:

Osowicki, J., Wong, K. J., Donnan, L. & Bryant, P. A. (2016). Blackheads, whiteheads, femoral head. JOURNAL OF PAEDIATRICS AND CHILD HEALTH, 52 (7), pp.781-+. <https://doi.org/10.1111/jpc.13082>.

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