Unusual association of diseases/symptoms

Septic arthritis of the pubic symphysis from *Pseudomonas aeruginosa*: reconsidering traditional risk factors and symptoms in the elderly patientFergus To,¹ Penny Tam,² Diane Villanyi²¹Faculty of Medicine, University of British Columbia, Vancouver, Canada²Department of General Internal Medicine, University of British Columbia, Vancouver, Canada

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Summary

A high-functioning 82-year-old man presented with lower lumbar pain and pubic tenderness. On admission he was afebrile with a normal white count. A grossly elevated C reactive protein was noted. CT scan of the pelvis showed a fluid collection anterior to the pubic symphysis and to the right of the midline measuring 2.0×2.2 cm. *Pseudomonas aeruginosa* was cultured from the fluid collection. The patient had no history of intravenous drug use, pelvic surgeries, malignancies or trauma. We report what we believe is the first documented case of *P aeruginosa* infection of the pubic symphysis in an elderly patient that did not have any of the traditional risk factors associated with neither *P aeruginosa* septic arthritis nor infections of the pubic symphysis. Instead, we propose that phimosis with chronic infection of the foreskin and balanitis may have led to septic arthritis.

BACKGROUND

Septic arthritis of the pubic symphysis is usually associated with pelvic surgery, pelvic malignancies, intravenous drug use and recent athletic activity. Similarly, *Pseudomonas aeruginosa* infection of the joint occurs typically in patients with a history of intravenous drug use, inguinal/pelvic surgery or traumatic injury. We present what we believe is the first documented case of *P aeruginosa* infection of the pubic symphysis in an elderly patient who did not have any of the traditional risk factors. Instead, our patient's presentation was most likely due to a chronic foreskin cellulitis that seeded to his pubic symphysis. This, to our knowledge, is the first reported foreskin infection leading to septic arthritis.

CASE PRESENTATION

A high-functioning 82-year-old male presented to the emergency room with 1 day of lower lumbar pain and 1 week of left hip and thigh pain. All areas of pain were associated only with weight bearing. There was no history of trauma, parasthesia, saddle anaesthesia, fevers/chills, recent weight loss or problems with voiding or bowel movements.

One month prior, he had cellulitis of his right leg that required multiple courses of antibiotics (azithromycin, amoxicillin, and clindamycin, sequentially) before clearing. He also had a urinary tract infection from *Escherichia coli* that cleared with ciprofloxacin. After discharge, our patient revealed that he had a concurrent foreskin infection that started 5 months prior. There were no microbiology cultures of this infection that we were aware of.

Other co-morbidities included atrial fibrillation, mechanical mitral valve replacement, pulmonary hypertension, right heart failure, hypertension, psoriasis, gout, osteoarthritis, bilateral total knee replacements, chronic renal failure

and Barrett's oesophagus. He denied any history of intravenous drug use.

Physical exam revealed an afebrile, well-looking patient. Aside from mild sacral oedema, no skin changes were present. The lumbar spine was mildly tender and the patient had normal range of motion in the area. There was no pain with lumbar spine movement, but rather with left hip rotation. He also had an antalgic gait. There was no costovertebral angle tenderness. Neurological and peripheral vascular exams were normal. No radiculopathies were found.

INVESTIGATIONS

CT scan of the pelvis showed mild widening and erosive changes involving the pubic symphysis, measuring 10 mm. A fluid collection was located anterior to the pubic symphysis and to the right of the midline measuring 2.0×2.2 cm. The findings were compatible with septic arthritis of the pubic symphysis. Microbiology cultures from an ultrasound-guided aspiration of the fluid collection yielded *P aeruginosa*.

Other imaging: CT lumbar negative for discitis and osteomyelitis, three phase bone scan negative for osteomyelitis, skeletal survey negative for lytic lesions, transthoracic echocardiography negative for vegetative growth.

Bloodwork on admission was normal apart from an elevated C reactive protein (CRP) (45.8 mg/l), mildly elevated white blood count (WBC) (11.4×10^9 /litre), thrombocytosis (557) and an elevated lactate dehydrogenase (318 U/l). The WBC remained within normal limits throughout hospitalisation. Blood and urine cultures were negative.

TREATMENT

The *P aeruginosa* cultured from the joint aspiration was susceptible to multiple antibiotics, including ciprofloxacin. Our patient was treated with ciprofloxacin 500 mg twice a day for 6 weeks. He was seen in follow-up by an

infectious diseases physician and the decision was made to continue with ciprofloxacin at an increased dose of 750 mg twice a day for an additional 6 weeks.

OUTCOME AND FOLLOW-UP

Six weeks after initial treatment with ciprofloxacin, he described marked improvement with regard to pain and ambulation. His repeat CRP after 6 weeks of antibiotics was reduced to 4.8 mg/l. After completing a total of 12 weeks of antibiotic therapy, he was pain-free and ambulating without difficulty.

While on the ciprofloxacin, there was no resolution of foreskin infection and balanitis. A decision was made to circumcise the foreskin 2 months after his initial presentation to us. Since his circumcision, he continues to note steady improvement in ambulation.

DISCUSSION

Pseudomonas aeruginosa infection of the pubic symphysis in an elderly patient.

Although septic arthritis caused by *P aeruginosa* is uncommon,¹⁻³ there are documented cases in specific joints.¹⁻⁶ The site most frequently affected by far is the knee.¹⁻⁵ Others include the shoulder, wrist,⁴ elbow,¹⁻⁴ hip¹⁻⁶ and even the sternoclavicular joint.⁷ Following a review of the medical literature, including both large reviews and case reports, we found no report of similar cases in the geriatric population. We present what we believe to be the first documented case of pubic symphysis septic arthritis by *P aeruginosa* in the elderly patient.

To identify the mechanism of infection, we looked to the traditional risk factors associated with *Pseudomonas* septic arthritis: (1) intravenous drug use,³⁻⁷⁻¹⁰ (2) pelvic and/or inguinal surgery⁸ and (3) traumatic injuries.³ Our patient did not have any of these risk factors. While urinary tract infections (UTI) can seed to the pubic symphysis,¹¹ cultures of our patient's UTI only grew *E coli*. The cellulitis on the patient's leg 2 months prior to his hospital admission was never swabbed, but resolved with clindamycin. *Pseudomonas* should not respond to this drug so the cellulitis is unlikely the original focus. A transthoracic echocardiogram did not show signs of vegetative growth on his native valves or mechanical mitral valve, ruling out infectious endocarditis.

The most likely source of the infection was from the patient's chronic foreskin infection and balanitis. According to a literature search using the PubMed (National Library of Medicine, Bethesda, Maryland, USA) search engine, this is the first reported case of septic arthritis secondary to such infection. Unfortunately, we cannot ascertain that it was the original source as microbiology of the infection could not be attained.

Septic arthritis of the pubic symphysis

Infection of the pubic symphysis is uncommon. Out of 1073 cases of septic arthritis from seven large studies dating back to 1976, none involved the pubic symphysis.¹⁻⁸⁻¹²⁻¹⁷ However, a review in 2003 by Ross did look specifically at 100 cases involving the pubic symphysis. They identified four risk factors (in descending order): (1) surgical correction of urinary incontinence, (2) athletic activity (especially with rigorous hip adduction), (3) pelvic malignancies and (4) intravenous drug use.⁸

Our patient did not have any of these predisposing factors. He did, however, have several important conditions associated with septic arthritis non-specific to the pubic symphysis: advanced age,¹⁻¹¹⁻¹⁸ osteoarthritis,¹⁹⁻²⁰ past cellulites,¹⁸⁻¹⁹ frequent broad-spectrum antibiotic use,¹⁰ prosthetic joints¹⁹ and gout.¹⁻²⁰ These risk factors, rather than those pointed out by Ross, may have contributed to our patient's infection and should be considered when a patient presents with joint pain.

Presentation of septic arthritis in the elderly

Our patient did not present with an infectious picture on admission. He was afebrile, not bacteremic and displayed only a mildly elevated WBC on routine laboratory work. CRP, a non-specific marker, was the only grossly abnormal result. Thus, we did not immediately attribute his pain to an infectious aetiology.

Given his age, however, his presentation was actually not atypical. In a review of 335 cases of adult septic arthritis, Gavet showed that 30% of patients over 80 were afebrile, 50% mounted no leucocytosis and blood cultures were positive in only 25%.¹ Erythrocyte sedimentation rate (ESR) may be normal, but CRP is almost always high within a day of infection.¹¹

Recognising the presentation of infection in the elderly can be challenging. The presentation is often non-specific and can resemble the clinical presentation of non-infectious illnesses. These symptoms include: loss of appetite, functional decline, changes in mental status, falls and incontinence.²¹ Our patient is a helpful reminder that the older adult frequently does not display signs and symptoms of infection.

CONCLUSIONS

Septic arthritis due to *P aeruginosa* and infection of the pubic symphysis have been traditionally associated with specific risk factors. In the case reported herein, we found a patient that did not have the typical predisposing conditions. Clinicians should consider the possibility of septic arthritis and *P aeruginosa* infection when the older patient complains of pubic pain even if the conventional risk factors are not evident. A foreskin infection with balanitis, for example, is not a traditional risk factor, but may lead to such an infection.

Because of his advancing age, our patient did not display signs and symptoms of infection. He is a good example that elderly patients may not exhibit the cardinal signs of infection when afflicted with septic arthritis.

Learning points

- ▶ *Pseudomonas aeruginosa* septic arthritis does not only occur in patients with a history of intravenous drug use, pelvic and/or inguinal surgery and traumatic injuries.
- ▶ Infection of the foreskin and balanitis may seed to the pubic symphysis.
- ▶ Septic arthritis of the pubic symphysis is rare, but can occur in the absence of traditional risk factors, especially if the patient is predisposed to septic arthritis of other joints.
- ▶ Elderly patients with septic arthritis may not always present with signs and symptoms of infection.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Gavet F**, Tournadre A, Soubrier M, *et al*. Septic arthritis in patients aged 80 and older: a comparison with young adults. *J Am Geriatr Soc* 2005;**53**:1210–13.
2. **Adwan MH**. Pseudomonas arthropathy in an older patient. *Age Ageing* 2009;**38**:629–35.
3. **Keynes SA**, Due SL, Paul B. Pseudomonas arthropathy in an older patient. *Age Ageing* 2009;**38**:245–6.
4. **Vickers MH**, Price T. Recurrent pseudomonas septic arthritis. *Postgrad Med J* 1993;**69**:950–1.
5. **Dan M**, Jedwab M, Shibolet S. Recurrent septic arthritis due to *Pseudomonas* sp. *Postgrad Med J* 1981;**57**:257–8.
6. **Grieco MH**. Pseudomonas arthritis and osteomyelitis. *J Bone Joint Surg Am* 1972;**54**:1693–704.
7. **Kaw D**, Yoon Y. Pseudomonas sternoclavicular pyarthrosis. *South Med J* 2004;**97**:705–6.
8. **Ross JJ**, Hu LT. Septic arthritis of the pubic symphysis: review of 100 cases. *Medicine (Baltimore)* 2003;**82**:340–5.
9. **Ross JJ**, Shamsuddin H. Sternoclavicular septic arthritis: review of 180 cases. *Medicine (Baltimore)* 2004;**83**:139–48.
10. **Goldenberg DL**, Brandt KD, Cathcart ES, *et al*. Acute arthritis caused by Gram negative bacilli: a clinical characterization. *Medicine (Baltimore)* 1974;**53**:197.
11. **Kortekangas P**. Bacterial arthritis in the elderly: an overview. *Drugs Aging* 1999;**14**:165–71.
12. **Cooper C**, Cawley MI. Bacterial arthritis in an English health district. *Ann Rheum Dis* 1986;**45**:458–63.
13. **Goldenberg DL**, Cohen AS. Acute infectious arthritis: a review of patients with non-gonococcal joint infections. *Am J Med* 1976;**60**:369–77.
14. **Kaandorp CJ**, Dinant HJ, van de Laar MA, *et al*. Incidence and sources of native and prosthetic joint infection: a community-based prospective survey. *Ann Rheum Dis* 1997;**56**:470–5.
15. **McCutchan HJ**, Fisher RC. Synovial leukocytosis in infectious arthritis. *Clin Orthop Rel Res* 1990;**257**:226–30.
16. **Sharp JT**, Lidsky MD, Duffy J, *et al*. Infectious arthritis. *Arch Intern Med* 1979;**139**:1125–30.
17. **Weston VC**, Jones AC, Bradbury N, *et al*. Clinical features and outcome of septic arthritis in a single UK health district 1982–1991. *Ann Rheum Dis* 1999;**58**:214–19.
18. **Kaandorp CJ**, Van Schaardenburg D, Krijnen P, *et al*. Risk factors for septic arthritis in patients with joint disease. A prospective study. *Arthritis Rheum* 1995;**38**:1819–25.
19. **Mathews CJ**. Septic arthritis in the elderly. *Aging Health* 2010;**6**:495–500.
20. **Cooper C**, Cawley MI. Bacterial arthritis in the elderly. *Gerontology* 1986;**32**:222–7.
21. **Htwe TH**, Mushtaq A, Robinson SB, *et al*. Infection in the elderly. *Infect Dis Clin N Am* 2007;**21**:711–43.

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