CASE REPORT

Group B streptococcus septic arthritis of the hip following spontaneous abortion

Madeline Lyons,¹ Elizabeth Zielinski,² Jibanananda Satpathy²¹Georgetown University School of Medicine, Washington, DC, USA²Department of Orthopaedics, Virginia Commonwealth University, Richmond, Virginia, USA

Correspondence to

Madeline Lyons,
madelinemlyons@gmail.com

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SUMMARY

Group B streptococcus (GBS) infection of the hip in otherwise healthy adults is a rare entity that is previously only reported following peripartum gynaecological procedure and instrumentation. We report a case of infection of the hip with GBS following spontaneous abortion. Delay in identification of infection as the cause of pain ultimately leads to irreversible joint destruction. This case report will heighten the awareness of the first contact providers as well as orthopaedic surgeons to be more vigilant for possible septic complications associated with gynaecological procedures/complications and subsequent painful joints. To our knowledge, this is the only case report showing association of GBS infection in hip associated with spontaneous abortion.

BACKGROUND

Septic arthritis secondary to bacterial infection can cause irreversible destruction of the affected joint. While commonly described in neonatal or elderly patients, septic arthritis in healthy adults is a less frequent cause of joint pain. Among adult patients presenting with acutely painful joints, approximately 27% are ultimately found to have non-gonococcal infectious arthritis.¹ Predisposing factors for septic arthritis include advanced age, uncontrolled diabetes, rheumatoid arthritis, prior joint surgery including hip or joint prosthesis and skin infections.² On presentation, joint pain, history of swelling and fever are the most sensitive indications for joint infection.² Definitive diagnosis of septic arthritis requires joint aspiration with Gram stain and culture.² Early identification and treatment of joint infection is essential to prevent permanent joint destruction requiring further surgical procedures including arthroplasty or fusion.

CASE PRESENTATION

A 27-year-old woman, originally from Guatemala, presented to the emergency department with 4 weeks of worsening right hip pain. The pain progressed over the course of 1 month, ultimately preventing her from ambulating without crutch assistance, and waking her at night. In the 2 days prior to presentation, she noted of swelling of the right hip in the groin, as well as subjective fevers and chills. She provided a history of a spontaneous abortion that had occurred 4 weeks prior at our institution. On chart review, she complained of 2 days of lower back and right hip pain at that time; this was attributed to her miscarriage. She was seen

at an outside hospital in the interim for the pain, but reports that no interventions were offered. She denied any previous medical or surgical history.

On presentation, she was afebrile with pain in the right lower extremity exacerbated by internal/external rotation and flexion of the hip. Active and passive range of motion of the hip was limited by pain. The right hip and knee were diffusely tender to palpation. There was no instability with range of motion of the hip or knee. Neurovascular examination was within normal limits.

Laboratory work demonstrated a normal white cell count of $8.4 \times 10^9/L$, erythrocyte sedimentation rate of 62 mm/hour (normal <18 mm/hour) and C reactive protein of 2.4 mg/dL (normal <0.5 mg/dL). A plain radiograph of the pelvis (figure 1) demonstrated marked narrowing of the hip joint space with bone-on-bone appearance, osteophytes along the acetabulum and subchondral lucencies consistent with destruction of the joint. Based on radiographic appearance and elevated inflammatory markers, there was concern for infection. An MRI of the pelvis and femur demonstrated similar inflammatory changes consistent with an infectious process, as well as destruction of the cartilage of the hip (figure 2). There was no concern for malignancy or other soft tissue process on MRI.

With high suspicion for an infectious process, a hip aspiration was performed under fluoroscopic guidance. Four millilitres of slightly cloudy, serosanguinous fluid was aspirated from the joint. Analysis of the joint fluid demonstrated an elevated leucocyte count of $42.36 \times 10^9/L$, with 81% polymorphonuclear leucocytes. On microscopic analysis, leucophagocytosis and haemosiderin-laden macrophages were present. No crystals were seen. Gram stain demonstrated Gram-positive cocci. The patient was started on intravenous vancomycin and piperacillin/tazobactam. The following day, *Streptococcus agalactiae* (group B streptococcus or GBS) were identified.

Based on the positive aspirate cultures, elevated inflammatory markers, degree of destruction in the hip on imaging and increasing pain levels, operative treatment was indicated. Options discussed with the patient included incision and drainage with or without femoral head ostectomy (ie, Girdlestone procedure) with subsequent total hip arthroplasty. The patient elected to proceed with conservative treatment, declining Girdlestone at this time. Incision and drainage with synovectomy and placement of a Hemovac drain were performed. Intraoperatively, thin, purulent joint fluid and inflammatory synovium were collected

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Figure 1 Anteroposterior radiograph of the pelvis at presentation. Right hip joint shows joint space narrowing and subchondral lucencies.

and sent for analysis. Culture of both the fluid and tissue was positive for GBS. The patient was transitioned to intravenous ceftriaxone in consultation with infectious disease.

Postoperatively, the patient remained afebrile and without leucocytosis. On postoperative day 1, a peripherally inserted central catheter was placed with interventional radiology in anticipation of required intravenous antibiotics. She reported decreased pain and was able to work with physical therapy on ambulation and stair ascent/descent, tolerating toe-touch weight bearing on the operative leg with crutch assistance. The Hemovac drain had collected 20 mL of serosanguinous fluid 48 hours postoperatively and was removed.

Figure 2 Coronal section of T2-weighted, contrast-enhanced MRI of the pelvis at presentation. Right hip joint shows inflammatory changes and cartilaginous destruction.

OUTCOME AND FOLLOW-UP

In coordination with physical therapy, social work and infectious disease, the patient was discharged home on postoperative day 2 with 2 weeks of intravenous ceftriaxone, followed by oral amoxicillin/clavulanate for 1 week and outpatient follow-up with infectious disease and orthopaedics.

DISCUSSION

Septic arthritis secondary to GBS is a rarely reported entity in the healthy adult population. Other reported cases of GBS septic arthritis have followed gynaecological procedures including vaginal delivery with perineal laceration requiring repair, dilation and evacuation and cervical cancer treatment.^{3–5} To our knowledge, this is the first reported case of GBS septic arthritis following non-procedural gynaecological complications.

GBS infection is well-studied in the pregnant and postpartum woman, as neonatal infection with GBS carried a high degree of morbidity and mortality. In pregnant and postpartum women, GBS is a common pathogen associated with bacteraemia, urinary tract infection and pneumonia.⁶ Infection with GBS is associated with early pregnancy loss or preterm delivery.⁶ While the patient in this report was not tested for GBS at the time of her miscarriage, chart review revealed a positive GBS screen during her previous pregnancy 15 months prior. The rate of recurrence of GBS colonisation in subsequent pregnancies has been reported as 38.2%.⁷ Longitudinal studies of GBS colonisation have demonstrated persistence of genital tract colonisation for months.⁷ We hypothesise that our patient's joint became seeded via haematogenous spread of GBS at the time of spontaneous abortion.

Other reports of GBS arthritis have indicated a similarly aggressive arthritis, further exemplifying need for timely diagnosis and treatment.⁵ Complications of untreated septic arthritis include irreversible joint destruction necessitating arthroplasty, osteomyelitis and sepsis.⁸ Earlier identification of the infectious process in this case could have prevented the degree of joint destruction that ensued in this young patient. Based on the degree of cartilage destruction and radiographic findings, the patient will almost certainly require future intervention in the form of total hip arthroplasty to recover joint function. Of note, the patient had presented twice with hip pain prior to diagnosis. The aim of reporting this case is to promote an index of suspicion in young women with joint pain following gynaecological complications.

Learning points

- ▶ All patients with new-onset joint pain and systemic symptoms of infection should be adequately worked up for bacterial arthritis.
- ▶ Young women with recent gynaecological procedures or complications should similarly receive a full diagnostic work-up to rule out septic arthritis of the affected joint.
- ▶ Failure to diagnose joint infection can cause irreversible destruction and loss of function.

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