

A 6-year-old boy is brought to the physician for refusal to walk. Today he has been asking his father to carry him and cries when he attempts to move his right leg. One week ago, he was diagnosed with cellulitis from an insect bite. He completed a 7-day course of cephalexin today. His 9-year-old brother was treated for acute lymphoblastic leukemia and is currently in remission. The patient's temperature is 38.9° C (102° F), blood pressure is 96/60 mm Hg, pulse is 118/min, and respirations are 18/min. On examination, he keeps his right hip externally rotated and screams with any movement involving the right hip. He refuses to stand or walk. The remainder of his examination is normal. Laboratory and ultrasound-guided joint aspiration results are as follows:

Complete blood count

Leukocytes	35,000/ μ L
Neutrophils	92%
Lymphocytes	4%
Bands	3%
Hemoglobin	13 g/dL
Platelets	280,000/ μ L

Erythrocyte sedimentation rate 52 mm/h

Blood culture Pending

Synovial fluid analysis

Color	Yellow
Clarity	Turbid
Leukocytes	110,000/ μ L
Neutrophils	95%
Gram stain	Negative
Culture	Pending

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Which of the following treatment options would be most beneficial in preventing long-term morbidity?

- ☐ A. Chemotherapy
- ☐ B. Intra-articular corticosteroid injection
- ☐ C. Physical therapy
- ☐ D. Surgical drainage of the hip
- ☐ E. Total hip arthroplasty

Submit

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- ☐ A. Chemotherapy [3%]
- ☐ B. Intra-articular corticosteroid injection [5%]
- ☐ C. Physical therapy [3%]
- ☒ D. Surgical drainage of the hip [87%]
- ☐ E. Total hip arthroplasty [3%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Joint fluid characteristics				
	Normal	Noninflammatory (eg, OA)	Inflammatory (eg, crystals, RA)	Septic joint
Appearance	Clear	Clear	Translucent or opaque	Opaque
WBC count (mm ³)	<200	200-2,000	2,000-100,000	50,000-150,000
PMNs	<25%	25%	Often >50%	>80%-90%

OA = osteoarthritis; PMN = polymorphonuclear leukocytes; RA = rheumatoid arthritis; WBC = white blood cells.

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This patient presents with fever, acute joint pain, and inability to bear weight associated

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Often >50%

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This patient presents with fever, acute joint pain, and inability to bear weight associated with marked leukocytosis and elevated erythrocyte sedimentation rate. These findings are highly concerning for septic arthritis, a bacterial infection that can result in rapid and permanent joint destruction.

Septic arthritis is often preceded by a seemingly mild infection (eg, cellulitis) in which there may be intermittent bacteremic showers, allowing for hematogenous spread of bacteria into the synovial fluid. Therefore, blood cultures should be obtained in addition to synovial fluid cultures. The most common offending organisms in children are *Staphylococcus aureus* and streptococci. Empiric intravenous antibiotics (eg, vancomycin) should be administered immediately after culture collection and adjusted according to speciation and sensitivity data. Gram stains and cultures can be falsely negative and confounded as this patient was pretreated with outpatient antibiotics for his recent skin infection.

Synovial fluid aspiration with >100,000/ μ L leukocytes, >90% neutrophils, and purulent fluid should prompt orthopedic consultation for emergency **surgical drainage**. Debridement and irrigation of the joint space is the most important intervention in preventing long-term disability. A delay of even 4-6 hours in treatment can lead to femoral head necrosis, resulting in hip dislocation or leg-length discrepancy. Physical therapy (**Choice C**) can help restore some mobility and strength. Unfortunately, some patients go on to develop osteoarthritis and require hip replacement surgery (**Choice E**).

(**Choice A**) Acute lymphoblastic leukemia can cause joint pain in children due to leukemic infiltration of bone and is treated with chemotherapy. Although leukocytosis can be seen, anemia and/or thrombocytopenia are often present due to marrow infiltration interfering with production of these other cell lines. Pain is usually insidious, chronic, and worse at night in contrast to septic arthritis.

(**Choice B**) Intra-articular corticosteroid injection is an important palliative therapy for rheumatoid arthritis. It has no role in septic arthritis. In fact, joint infection and osteonecrosis are potential catastrophic complications of intra-articular steroids.

Educational objective:

Septic arthritis should be suspected when a patient has acute fever, joint pain, turbid synovial fluid, and neutrophil-predominant leukocytosis. Emergency surgical drainage and intravenous antibiotics are needed to prevent permanent joint destruction.

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References:

1. Validation of a clinical prediction rule for the differentiation between septic arthritis and transient synovitis of the hip in children.
2. Treatment of early septic arthritis of the hip in children: comparison of results of open arthrotomy versus arthroscopic drainage.
3. Pneumococcal septic arthritis: review of 190 cases.