

A 14-year-old African-American boy presents to your office with difficulty walking for the past several weeks. He complains of pain in the right hip. He describes two episodes of severe hip pain and one previous episode of abdominal pain requiring hospitalization. Physical examination reveals motion restriction in the right hip joint. His joint is not erythematous or tender to palpation. His hematocrit is 22%. This patient's difficulty walking is most likely secondary to which of the following:

- ☐ A. Osteoarthritis
- ☐ B. Septic arthritis
- ☐ C. Gouty arthritis
- ☐ D. Osteonecrosis
- ☐ E. Osteoporosis
- ☐ F. Osteomalacia
- ☐ G. Osteosarcoma
- ☐ H. Charcot arthritis
- ☐ I. Paget's disease
- ☐ J. Osteitis fibrosa cystica

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- ☐ A. Osteoarthritis [1%]
- ☐ B. Septic arthritis [4%]
- ☐ C. Gouty arthritis [0%]
- ☒ D. Osteonecrosis [85%]
- ☐ E. Osteoporosis [0%]
- ☐ F. Osteomalacia [1%]
- ☐ G. Osteosarcoma [3%]
- ☐ H. Charcot arthritis [2%]
- ☐ I. Paget's disease [1%]
- ☐ J. Osteitis fibrosa cystica [3%]

[Proceed to Next Item](#)

Explanation:

User Id: [REDACTED]

This patient most likely has osteonecrosis (a.k.a. avascular necrosis) of his right hip due to sickle cell anemia. Osteonecrosis is common complication of sickle cell anemia secondary to red cell sickling, microinfarctions, and bone hyperplasia. Up to 50% of patients homozygous for the sickle cell gene will develop osteonecrosis by adulthood. The most common sites are the humeral and femoral heads. Treatment is pain management and limitation of weight bearing, with surgical intervention if conservative management is unsuccessful (e.g., joint reconstruction).

(Choice A) Osteoarthritis is a common cause of hip pain in older adults but is unlikely to be the cause in this vignette.

(Choice B) Splenic dysfunction in patients with sickle cell disease predisposes them to infections with encapsulated organisms (e.g., *S. pneumoniae*, *H. influenzae*, and *N. meningitidis*). However, most bone and joint infections in patients with sickle cell disease are caused by *S. aureus* and gram-negative organisms, such as *Salmonella*.

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(Choice A) Osteoarthritis is a common cause of hip pain in older adults but is unlikely to be the cause in this vignette.

(Choice B) Splenic dysfunction in patients with sickle cell disease predisposes them to infections with encapsulated organisms (e.g., *S. pneumoniae*, *H. influenzae*, and *N. meningitidis*). However, most bone and joint infections in patients with sickle cell disease are caused by *S. aureus* and gram-negative organisms, such as *Salmonella*. This patient does not have a fever or joint tenderness to suggest an infection.

(Choice C) Gouty arthritis occurs when monosodium urate crystals deposit in joints. The classic patient with gout is an overweight, middle-aged man.

(Choice E) Osteoporosis is a condition of decreased bone mass with increased fragility due to loss of bone density. It is common in post-menopausal women and a frequent contributor to hip fractures in the elderly.

(Choices F and G) Sickle cell anemia is not associated with osteomalacia or osteosarcoma.

(Choice H) Charcot arthritis, also known as Charcot's joint or neurogenic arthropathy, is joint destruction resulting from deterioration of proprioception, pain sensation, and temperature sensation. It can be seen in diabetic neuropathy, syringomyelia, spinal cord injury, vitamin B12 deficiency, tabes dorsalis, or peripheral nerve diseases. Charcot arthritis is not associated with sickle cell anemia.

Educational Objective:

Osteonecrosis is a common complication of sickle cell anemia due to vaso-occlusion of the bone. It causes significant joint pain and functional limitation. The humerus and femur are the most frequently affected bones.

Time Spent: 2 seconds

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