

A 16-year-old previously healthy boy is brought to the office for evaluation of a 2-month history of left leg pain. He has had dull, aching, pain over the left thigh that occurs mostly at night but is improved with ibuprofen. The patient has had no trauma, fever, or pain in other joints and extremities. He plays basketball in high school and reports that the pain is not related to physical activity. Examination shows no redness, deformity, or focal tenderness. His leg x-ray is shown below.



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Which of the following is the most likely diagnosis?

☐ A. Ewing sarcoma



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- ☐ A. Ewing sarcoma
- ☐ B. Osteoid osteoma
- ☐ C. Osteomyelitis
- ☐ D. Osteosarcoma
- ☐ E. Stress fracture

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Which of the following is the most likely diagnosis?

- ☐ A. Ewing sarcoma [18%]
- ☒ B. Osteoid osteoma [66%]
- ☐ C. Osteomyelitis [1%]
- ☐ D. Osteosarcoma [13%]
- ☐ E. Stress fracture [2%]

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Explanation:

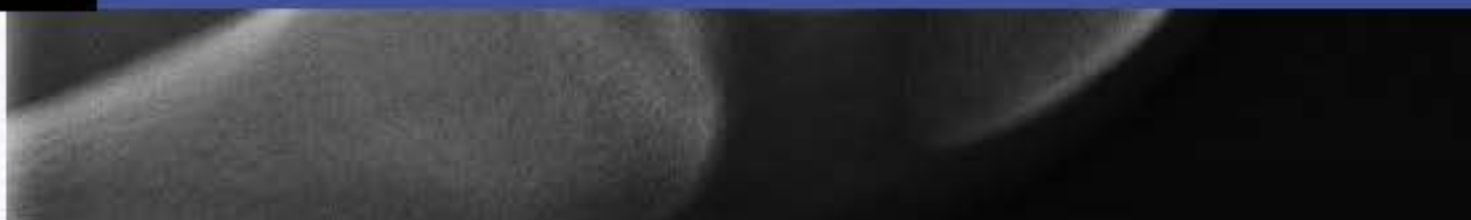
User Id: [REDACTED]

Explanation:

User Id: [REDACTED]



This patient's clinical presentation and lytic lesion on x-ray are consistent with an



This patient's clinical presentation and hypodense lesion on x-ray are consistent with an osteoid osteoma, a benign bone-forming tumor that occurs most often in adolescence and early adulthood and is more common in males. Osteoid osteoma most commonly affects the proximal femur but can also involve other long bones and the spine. Patients develop increasing pain that worsens at night without relation to physical activity. The pain is typically relieved with **nonsteroidal anti-inflammatory drugs (NSAIDs)**, and this is strongly suggestive of the diagnosis.

Children may develop focal tenderness, deformities, or swelling. However, adolescents often have no focal findings on examination. Plain x-rays of the leg show the typical small, round lucency with sclerotic margins and sometimes central ossification. NSAIDs can be prescribed for symptomatic relief, and patients should be followed with **serial examination and x-rays** every 4-5 months to monitor the lesion. Surgical resection is typically reserved for patients with refractory symptoms. Most lesions spontaneously resolve over several years.

(Choice A) Ewing sarcoma presents in the long bones of the extremities with pain for many weeks/months, swelling, and deformity. These rare lesions often have extensive involvement of the affected bone, and may demonstrate multiple layers of new subperiosteal bone formation.

(Choice C) Osteomyelitis often presents with systemic symptoms (eg, fever), focal inflammation (eg, warmth, swelling, pain), and decreased function. The absence of warmth and swelling on examination in this patient makes this less likely.

(Choice D) Osteosarcoma typically presents with chronic localized pain. Examination usually shows a palpable mass, and **x-rays** show destruction of the normal bone pattern with indistinct margins and a mixture of radiodense and radiolucent areas.

(Choice E) Stress fracture usually presents with focal tenderness that worsens with activity and decreases with rest. X-rays can show a linear fracture at an angle to the cortex. This patient's x-ray findings make this less likely.

Educational objective:

Osteoid osteoma is a benign bone-forming tumor that usually presents with progressively increasing pain that worsens at night without relation to physical activity. The proximal femur is the most commonly affected site, and the pain usually improves with nonsteroidal anti-inflammatory drugs.

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Osteoid osteoma is a benign bone-forming tumor that usually presents with progressively increasing pain that worsens at night without relation to physical activity. The proximal femur is the most commonly affected site, and the pain usually improves with nonsteroidal anti-inflammatory drugs.

References:

1. [Osteoid osteoma.](#)
2. [Osteoid osteoma: a pictorial review.](#)

Media Exhibit

arcoma of the distal femur



Media Exhibit

arcoma of the distal femur

