

A 6-year-old Caucasian male is brought to your office with a two-week history of right shoulder pain. Physical examination reveals localized swelling below the shoulder joint, and x-ray shows a single lytic lesion in the right humeral head. Laboratory analyses show mild hypercalcemia but are otherwise within normal limits. Which of the following is the most likely diagnosis?

- ☐ A. Osteoporosis
- ☐ B. Sarcoidosis
- ☐ C. Langerhans histiocytosis
- ☐ D. Primary hyperparathyroidism
- ☐ E. Osteogenesis imperfecta

Submit

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- ☐ A. Osteoporosis [1%]
- ☐ B. Sarcoidosis [3%]
- ☒ C. Langerhans histiocytosis [72%]
- ☐ D. Primary hyperparathyroidism [19%]
- ☐ E. Osteogenesis imperfecta [6%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

The differential for a lytic bone lesion in a child is broad, including infectious (Brodie abscess from osteomyelitis), endocrine (hyperparathyroid osteitis fibrosa cystica), neoplastic (Ewing sarcoma, Langerhans cell histiocytosis, metastases) and idiopathic (benign bone cyst, aneurysmal bone cyst) etiologies. The concomitant hypercalcemia in this patient narrows the differential diagnosis to hyperparathyroid state versus lytic bone neoplasm. Parathyroid adenoma is the most common cause of primary hyperparathyroidism, and typically occurs in patients over fifty years of age. Thus, a lytic bone lesion is most likely. Of the choices listed, only Langerhans cell histiocytosis (LCH, Langerhans cell granulomatosis, histiocytosis X) is known to cause solitary, lytic, long bone lesions. Eosinophilic granuloma, the least severe form of histiocytosis X, generally presents in children and young adults as a solitary bone lesion. This lesion may be painful, have overlying tender swelling, and cause pathological fractures. Though these tumors can be locally destructive, they typically resolve spontaneously and are therefore regarded as benign and treated conservatively.

(Choice A) Osteoporosis does not cause lytic bone lesions or hypercalcemia.

(Choice B) Sarcoidosis can cause bone lesions and hypercalcemia, but typically has its

☐ D. Primary hyperparathyroidism [15%]

☒ E. Osteogenesis imperfecta [6%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

The differential for a lytic bone lesion in a child is broad, including infectious (Brodie abscess from osteomyelitis), endocrine (hyperparathyroid osteitis fibrosa cystica), neoplastic (Ewing sarcoma, Langerhans cell histiocytosis, metastases) and idiopathic (benign bone cyst, aneurysmal bone cyst) etiologies. The concomitant hypercalcemia in this patient narrows the differential diagnosis to hyperparathyroid state versus lytic bone neoplasm. Parathyroid adenoma is the most common cause of primary hyperparathyroidism, and typically occurs in patients over fifty years of age. Thus, a lytic bone lesion is most likely. Of the choices listed, only Langerhans cell histiocytosis (LCH, Langerhans cell granulomatosis, histiocytosis X) is known to cause solitary, lytic, long bone lesions. Eosinophilic granuloma, the least severe form of histiocytosis X, generally presents in children and young adults as a solitary bone lesion. This lesion may be painful, have overlying tender swelling, and cause pathological fractures. Though these tumors can be locally destructive, they typically resolve spontaneously and are therefore regarded as benign and treated conservatively.

(Choice A) Osteoporosis does not cause lytic bone lesions or hypercalcemia.

(Choice B) Sarcoidosis can cause bone lesions and hypercalcemia, but typically has its onset between ages 20 and 35 years. Sarcoidosis affecting the bone tends to target the hands and feet. There are classically multiple punched out cortical lesions and/or a reticulated pattern of cortical resorption.

(Choice E) In most cases, osteogenesis imperfecta results from an autosomal dominant defect in Type I collagen. Patients typically present with blue sclerae, diffuse cortical thinning, attenuation of trabeculae and pathological fractures. A solitary lytic bone lesion would be unusual.

Educational objective:

The differential diagnosis of a solitary, painful, lytic long bone lesion with overlying swelling and hypercalcemia in a child should include Langerhans cell histiocytosis as well as other neoplastic processes.

Time Spent: 2 seconds

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