Metastatic Chondroblastic Osteosarcoma

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Signalment

- 8 year 7 month old
- Female, intact
- Canid
- Rottweiler
- Weight: 72.6 lbs
Presentation

- Patient presented to TU-VMTH SAC for weight loss, mass on right hip

- Upon arrival, patient collapsed on floor, was agonal, went into cardiac arrest and died after CPR attempts

- Submitted for necropsy
Necropsy Findings

- Firm, raised mass of dimensions 19 cm x 17 cm x 4.5 cm was present on the right dorsal pelvis

- Mass was white, round to irregular, multilobulated and infiltrative into gluteal muscles on cut surface
Necropsy Findings

- Multifocal to coalescing white nodules ranging from 0.5 cm to 1.0 cm were present in all lung lobes

- Further dissection: nodules were continuous within the pulmonary arteries and were flattened, firm, flexible and glistening

- Completely occluded the lumen of the arteries
Lung: Flattened, firm, glistening structures in pulmonary arteries
Elongated structures extracted from pulmonary arteries
Necropsy findings

- There was a single red, coiled, elongated, flexible structure entangled on the chordae tendineae of the tricuspid valve

- A single, white, flattened, firm, glistening structure occluded the lumen of the abdominal aorta
Coiled structure entangled on chordae tendineae
Microscopic Findings
Microscopic findings:
Hip mass, Skeletal muscle
Neoplastic cell population

Mitotic figure
Emboli of neoplastic cells in blood vessel adjacent to mass
Microscopic findings cont’d

- Production of chondromatous matrix
- Osteoid adjacent to mass in skeletal muscle
Pulmonary vascular metastasis

Similar population of neoplastic cells present within blood vessels of lung.
Coiled structure on chordae tendineae

Population of neoplastic cells similar to those of primary mass
Diagnosis:

- **Skeletal muscle:** Chondroblastic osteosarcoma

- **Lung:** Pulmonary metastasis of chondroblastic osteosarcoma

- **Chordae tendinea:** Acute traumatic endocarditis with entrapment of neoplastic emboli
Discussion

- Osteosarcomas are primary, malignant tumors of bone
- Characterized by the production of osteoid, bone and or cartilage formation
- Common in giant breed dogs
- Rapidly progressive leading to early mortality
- Strong site preferences
Discussion

- May be found on the axial or appendicular skeleton or extra skeletal sites

- Commonly seen on distal radius and proximal humerus

**FIG. 74-1** Site of origin of 1215 primary osteosarcomas in the dog.

http://cal.vet.upenn.edu/projects/saortho/chapter_74/74fi.jpg

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# Classification of Osteosarcomas

<table>
<thead>
<tr>
<th>Tumor Classification</th>
<th>Typical features</th>
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<tbody>
<tr>
<td><strong>Poorly differentiated</strong></td>
<td>Produces small amounts of osteoid and sometimes spicules of bone. Highly aggressive and forms lytic bone lesions.</td>
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<tr>
<td><strong>Osteoblastic</strong></td>
<td>Produces tumor bone, further classified as non productive, moderately productive and productive</td>
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<tr>
<td><strong>Chondroblastic</strong></td>
<td>Osteoid and chondroid matrices. Important to differentiate from Chondrosarcoma, which does not contain osteoid</td>
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<tr>
<td><strong>Fibroblastic</strong></td>
<td>Initially a lytic bone lesion. Neoplastic cells are spindle shaped, may resemble fibrosarcoma. Usually has a favorable prognosis.</td>
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<tr>
<td><strong>Telangiectatic</strong></td>
<td>Aggressive and osteolytic radiographically, bloody cystic lesions on gross examination. DDx, metastatic hemangiosarcoma of bone. Carries worst prognosis</td>
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<tr>
<td><strong>Giant Cell type</strong></td>
<td>Produces expansile lytic bone. Resembles non productive osteoblastic type. Giant cells predominate, must be differentiated from Giant cell tumor of bone.</td>
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Discussion

Differential diagnoses:

- Chondrosarcoma
- Fibrosarcoma
- Giant cell tumor of bone
- Rhabdomyosarcoma
- Sarcoma of the periosteum
- Hemangiosarcoma metastases
- Osteomyelitis
- Healing fracture
Discussion

- Metastasis is usually to lungs via hematogenous route, rarely via lymphatics.

- Prognosis: Usually poor
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