

WSC 2020-2021

Conference 22 Case 1.

Tissue from a horse.

**MICROSCOPIC DESCRIPTION:** Long bone (actually humerus): The physeal **(1pt.)** cartilage is segmentally, irregularly and markedly thickened **(1pt.)**, up to 3 times normal with persisting jagged tongues of retained cartilage projecting into the metaphysis. Areas of retained cartilage are composed of chondrocytes of the zone of proliferation **(1pt.)** and the zone of hypertrophy **(1pt.)**. The chondrocyte lacunae of the zone of hypertrophy within areas of retained cartilage often lose their vertical orientation **(1pt.)**, persisting as disordered chondrones, and there is uneven and haphazard vascular ingrowth **(1pt.)**. At one edge of the growth plate, there is a distinct lack of formation of cartilaginous cores, and primary spongiosa below are often horizontally connected. There is a diffuse lack of osteoclasts within the zone of mineralization **(1pt.)** and osteoblasts are decreased in number and appearance along the primary spongiosa with corresponding thin osteoid seams. **(1pt.)** Vascular spaces between tongues of proliferating cartilage contain moderate amounts of fibrous connective tissue **(1pt.)** and hematopoietic elements are markedly decreased. Cartilaginous trabeculae have discontinuously thick osteoid seams up to 60um in diameter **(1pt.)** and occasionally connect horizontally. Some poorly remodeled metaphyseal trabeculae contain cartilaginous cores. The metaphysis is markedly flared **(1pt.)** and the subjacent cortical lamellar bone is markedly thinned. Trabeculae of secondary spongiosa adjacent to the cortex are half to one third of the diameter of those located more centrally medullary cavity. **(1pt.)** There is a focal areas of hemorrhage and fibroblast proliferation at the diaphyseal edge of the section which are concentrically surrounded by trabeculae of secondary spongiosa. **(1pt.)** The endochondral ossification of the epiphyseal cartilage is deficient along the majority of its length. There is diffuse serous atrophy of fat

**MORPHOLOGIC DIAGNOSIS:** 1. Long bone: Physeal and epiphyseal chondrodysplasia, with proliferation and disorganization of the zone of hypertrophy **(1pt.)**, lack of mineralization **(1pt.)**, myelofibrosis **(1pt.)**, and epiphyseal chondrodysplasia.

2. Bone marrow: Serous atrophy of fat.

**CAUSE:** Vitamin D Deficiency **(3pt.)**

**NAME THE CONDITION:** Rickets **(1pt.)**

**O/C:** **(1pt.)**

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Conference 22 Case 2.

Tissue from a horse.

**MICROSCOPIC DESCRIPTION:** Kidney: Approximately 80% of the section (both cortex and medulla) effaced by coalescing areas of granulomatous inflammation (**1pt.**) consisting of sheets of epithelioid macrophages (**1pt.**) admixed with low to moderate numbers of eosinophils (**1pt.**), multinucleated macrophages of the foreign body- and Langhans' types (**1pt.**), lymphocytes (**1pt.**), plasma cells (**1pt.**), fewer neutrophils (**1pt.**), and cellular debris enmeshed in dense bands of mature fibrous connective tissue (**1pt.**). Intertwining bands of moderate numbers of lymphocytes and plasma cells are present at the periphery of the granulomatous inflammation and extend into the adjacent renal parenchyma. (**1pt.**) Entrapped within the granulomatous inflammation there are numerous cross- and tangential sections of adult (**1pt.**) rhabditoid nematodes (**1pt.**) that are 10-25 um in diameter with a smooth cuticle, platymyarian-meromyarian musculature, an esophagus with terminal bulb (**1pt.**), and numerous deeply basophilic 2-3 um internal structures within the pseudocoelom. Smaller larvae (**1pt.**) measuring 8-10um with a thin cuticle are also present. At the edge of the granulomatous area, there is marked interstitial fibrosis which compress remnant glomeruli and tubules, tubular atrophy and loss (**1pt.**), tubular ectasia with protein casts, and interstitial aggregates of lymphocytes and plasma cells.

**MORPHOLOGIC DIAGNOSIS:** Kidney: Nephritis, granulomatous (**1pt.**), chronic, focally extensive, severe, with adult and larval rhabditoid (**1pt.**) nematodes (**1pt.**) and eggs.

**CAUSE:** *Halicephalobus gingivalis* (**2pt.**)

**O/C:** (**1pt.**)

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Conference 22, Case 3.

Tissue from an opossum.

Long bone (distal ulna): Multifocally, scattered randomly throughout the section, within the marrow cavity **(1pt)** and within Haversian canals of the lamellar cortex **(1pt)**, and within the periosteum **(1pt)** are low numbers of 1mm **(1pt)** round apicomplexan schizonts **(1pt)** with a 10-15um eosinophilic hyaline capsule **(1pt)** that surrounds a thin rim of host cell cytoplasm **(1pt)** with multiple nuclei which in turn surrounds innumerable, densely packed crescentic **(1pt)** 3-5 um **(1pt)** zoites **(1pt)**. Occasional schizonts are degenerate or necrotic and filled with brightly eosinophilic fluid and cellular debris; the capsule is undulant, and these cysts are occasional **(2pt)** There is marked granulocytic hyperplasia of the hematopoietic marrow, which extends into Haversian canals. **(1pt)** There is diffuse loss of marrow adipose tissue.

MORPHOLOGIC DIAGNOSIS: 1. Long bone, medullary cavity, Haversian canals and periosteum **(1pt)**: Apicomplexan cysts, multiple with multifocal granulomatous osteomyelitis. **(2pt)**

2. Bone marrow: Myeloid hyperplasia.

3. Bone marrow: Serous atrophy of fat.

CAUSE: *Besnoitia darlingi* **(3pt)**

O/C: **(1pt)**

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Conference 22, Case 4.

Tissue from a dog.

**MICROSCOPIC DESCRIPTION:** Flat bone (presumptive occipital bone) **(1pt.)**: Extending outward from the cortex and partially along the periosteum is an exophytic, **(1pt.)** poorly demarcated, infiltrative multilobulated **(1pt.)** neoplasm composed of numerous variably sized, circular to oval islands which are centrifugally composed **(1pt.)** of various concentrations of cartilage **(1pt.)** and woven bone **(1pt.)**, and a layer of spindle to stellate cells **(1pt.)** embedded in dense eosinophilic matrix **(1pt.)**. These islands are separated by thin dense fibrous septa. **(1pt.)** Islands of cartilage contain chondrocytes **(1pt.)** within irregularly spaced lacunae surrounded by a basophilic cartilaginous matrix **(1pt.)**. The surrounding layer of woven bone has scalloped margins, a wide osteoid seam **(1pt.)**, resting and reversal lines, and haphazardly arranged osteocytes **(1pt.)** within lacunae in both the mineralized and non-mineralized osteoid. Immediately surrounding these islands of cartilage and bone are plump spindle cells with moderate amounts of pale eosinophilic cytoplasm and an oval nucleus within a dense eosinophilic matrix. In all cell populations there is mild anisocytosis and anisokaryosis and the mitotic count averages 1 per 2.37mm<sup>2</sup> field. **(1pt.)** Within the adjacent infiltrated cortex of the adjacent flat bone, the cortical bone is scalloped by the advancing neoplasm which is composed of spindled neoplastic cells and eosinophilic matrix only, without any evidence of cartilage and bone **(1pt.)**. Small numbers of osteoclasts are present within Howship's lacunae with areas of neoplastic infiltration.

**MORPHOLOGIC DIAGNOSIS:** Flat bone: Multilobular tumor of bone **(4pt.)**

O/C: **(1pt.)**