

A Case of Hypertrophic Osteopathy in a Cat Associated With a Pneumonia Due to an Awn

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Introduction:

Hypertrophic osteopathy is a disease characterized by periosteal reaction, whereby the appendicular skeleton is predominantly affected. In many cases it is associated with neoplastic or inflammatory lesions, but even idiopathic cases are described. Most of the time the underlying cause is located thoracally, rarely intraabdominally. The majority of cases are described in dogs and human beings, fewer cases have occurred in cats, horses and other species.

Literature:
1. Johnson R.L., Lenz, S.D., 2011: Hypertrophic osteopathy associated with a renal adenoma in a cat. J Vet Diagn Invest 23:171-175.
2. Manuel M.L., 2007: Exploring the cause of the most ancient clinical sign of medicine: finger clubbing. Semin Arthritis Rheum 36:380-385.

Material and methods:

A 9-year-old male neutered European short hair cat, which weighed 4.3 kg, was presented with episodes of coughing for several months. Lameness and bony proliferation affecting long bones appeared 6 months after beginning of clinical signs. X-rays and computed tomography of the chest, as well as endoscopy of the lung with lung puncture of the right lung and throat swab with bacteriological examination was taken. In the end the cat was euthanized because of poor general condition. After gross examination, specimens for histology were preserved, fixed in 4% formaldehyde, one cross section of right humerus was decalcified, routinely processed, embedded in paraffin wax, cut at 4 µm and stained hematoxylin-eosin (HE). Left humerus was macerated.

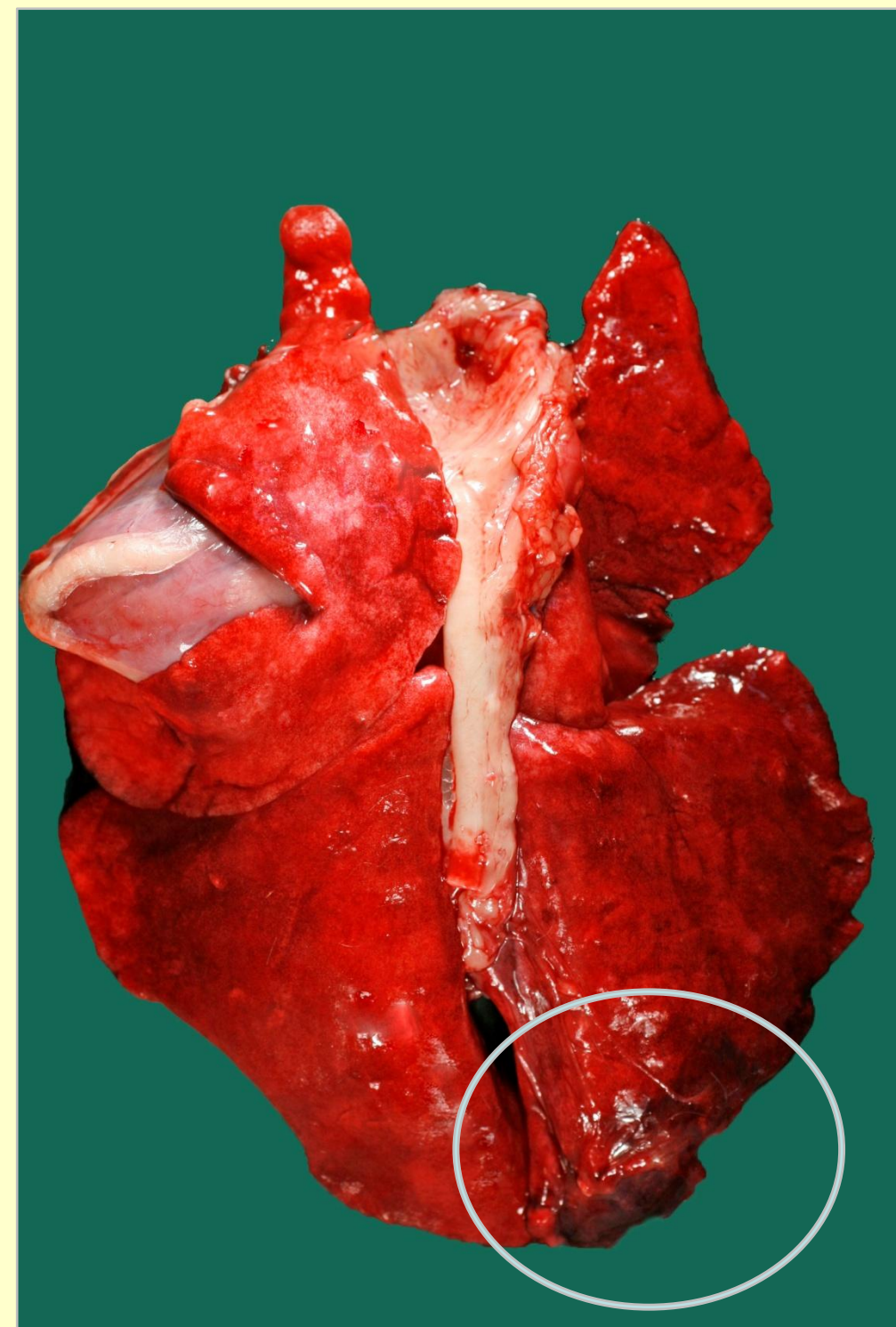


Fig. 1: Lung.
Focal dark red consolidation of the right main lobe (lobus caudalis).

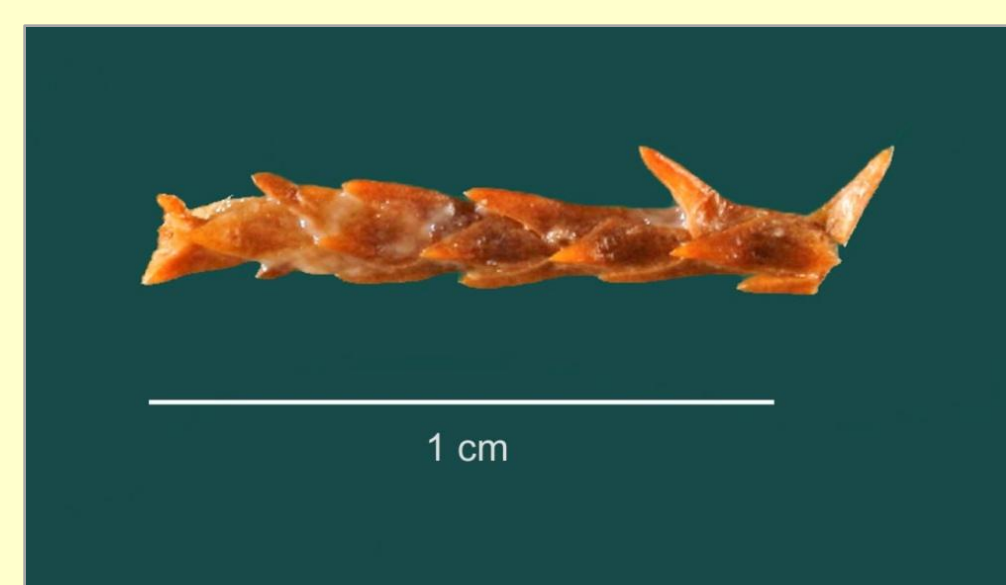


Fig. 2: Awn.
Note broad bristles which do not allow repulsion.



Fig. 3: Radiograph
left forelimb. Periosteal hyperostosis.

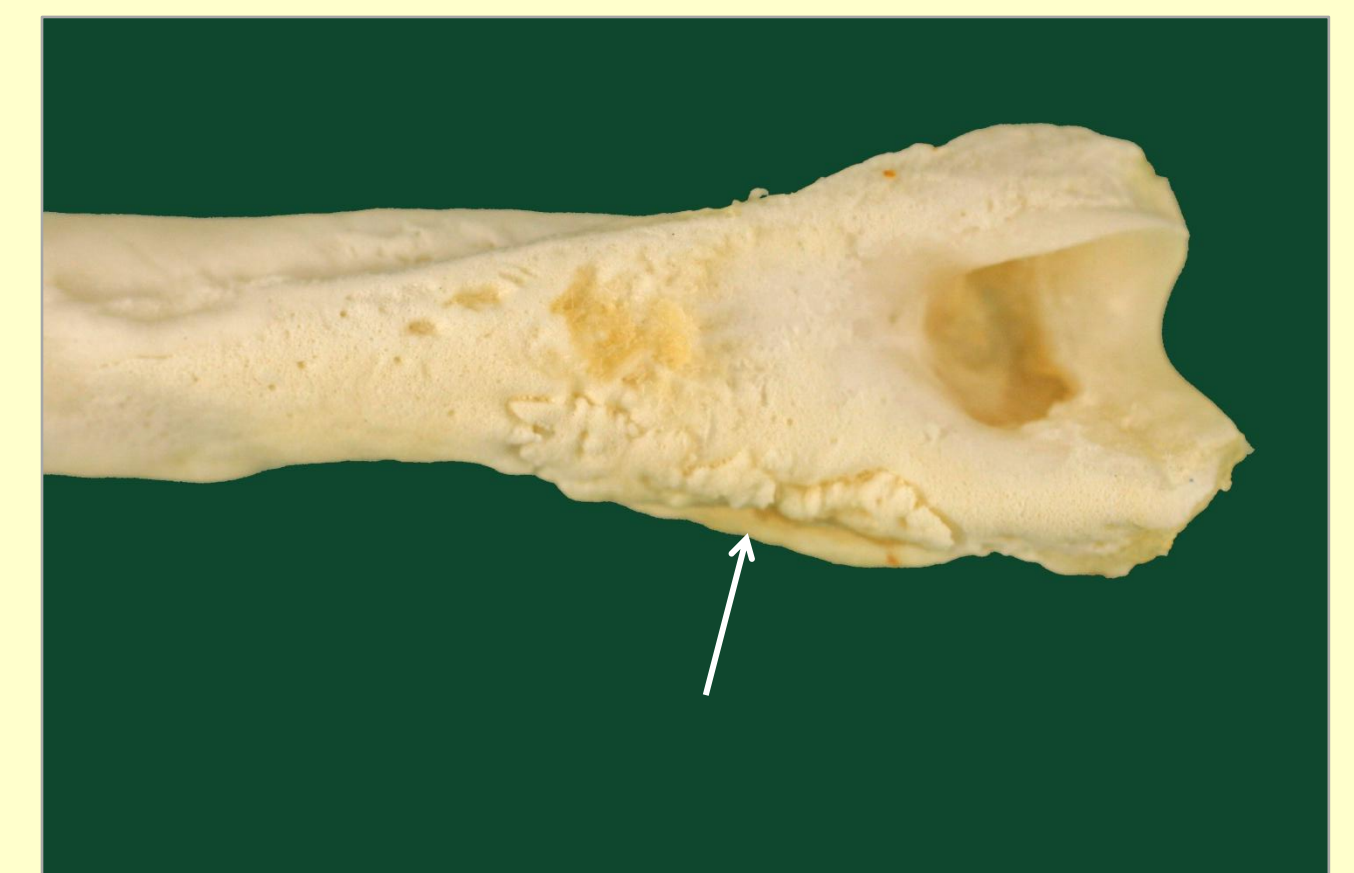


Fig. 4: Macerated left humerus.
Marked bony proliferation on crista humeri.

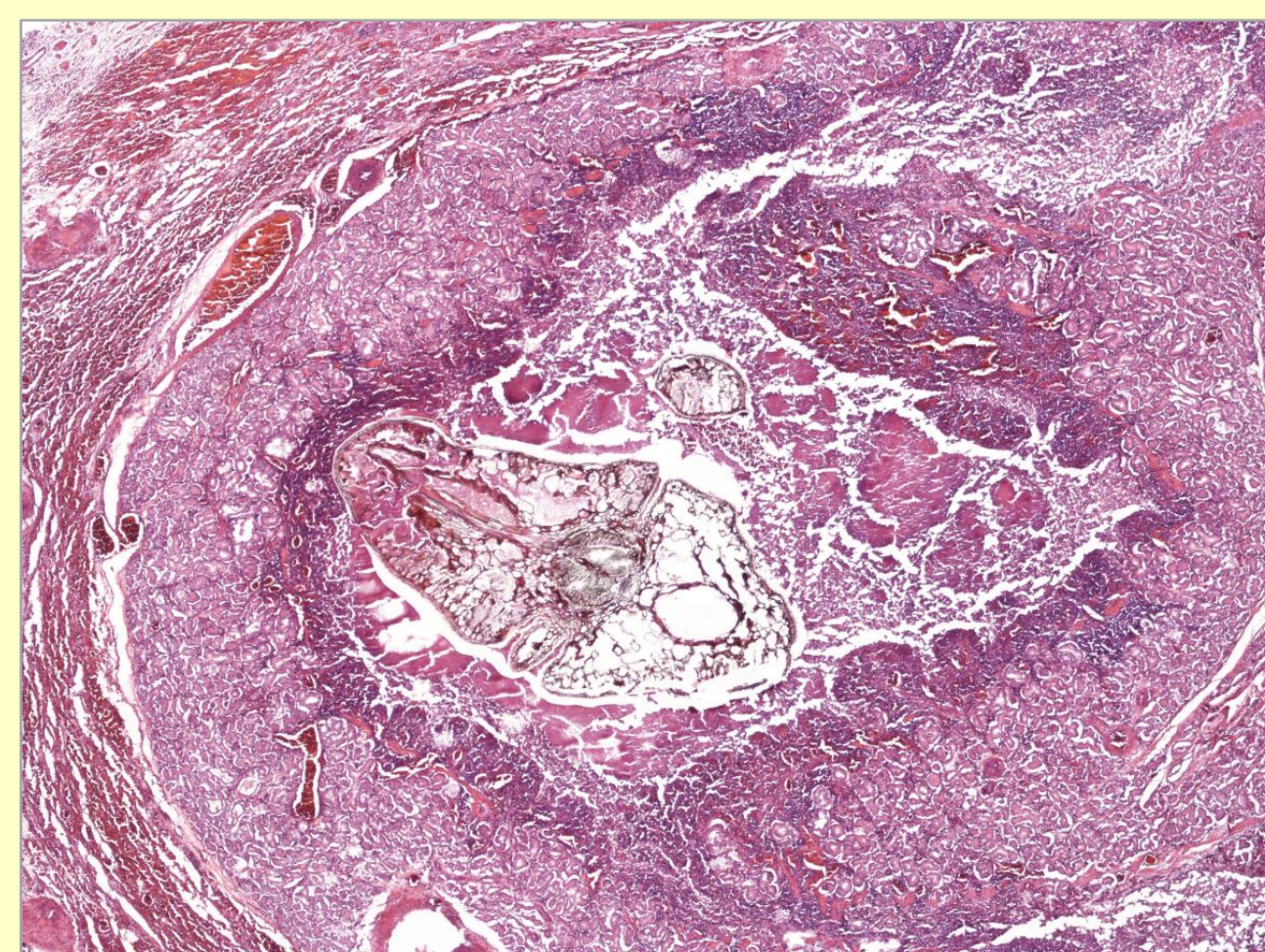


Fig. 5: Right main lung lobe: overview bronchus.
Luminally awn cross section, surrounded by mucus and inflammation, HE, 2x.

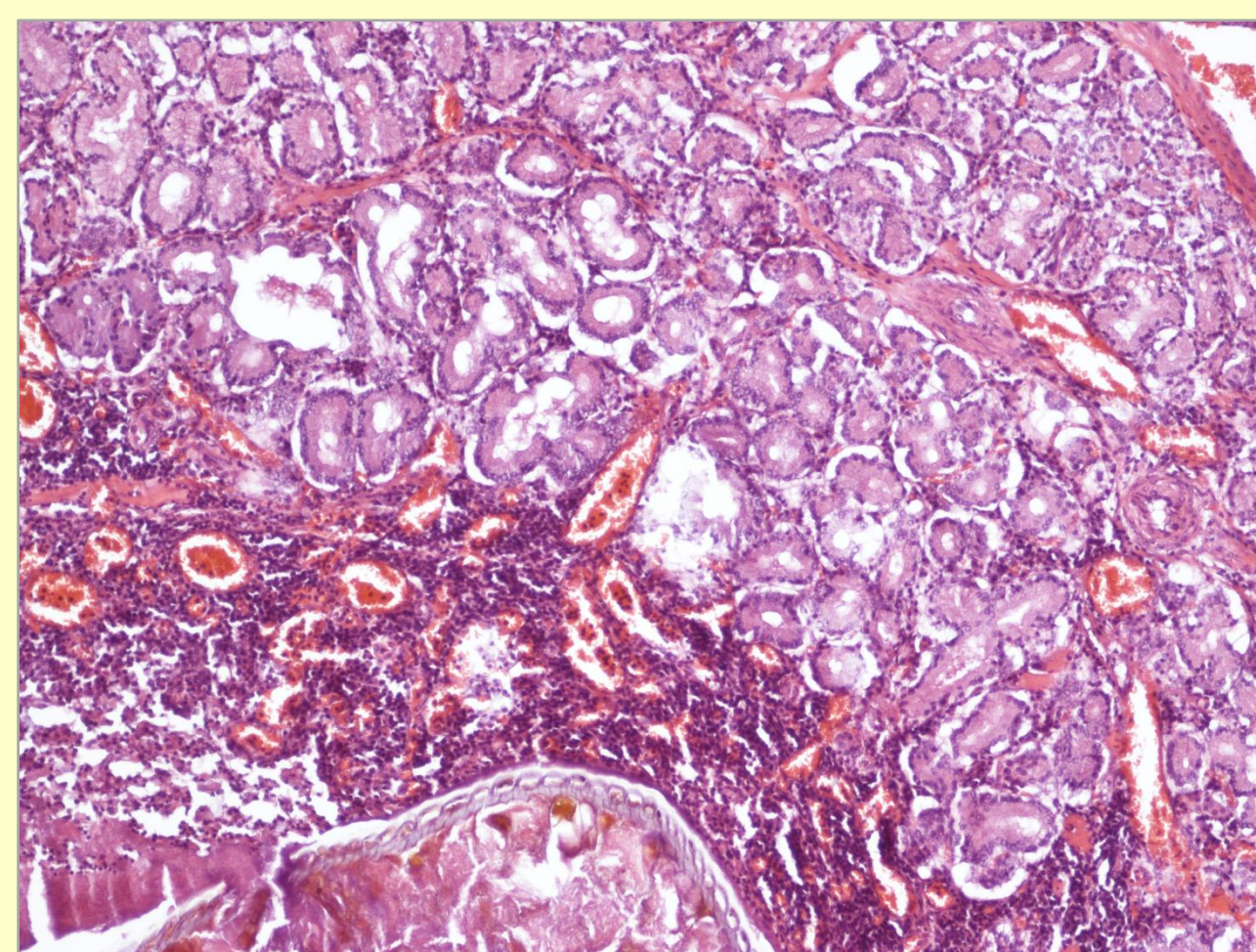


Fig. 6: Bronchus: necrotizing bronchitis, centrally awn surrounded by macrophages, neutrophils, mucus and bacteria, HE, 10x.

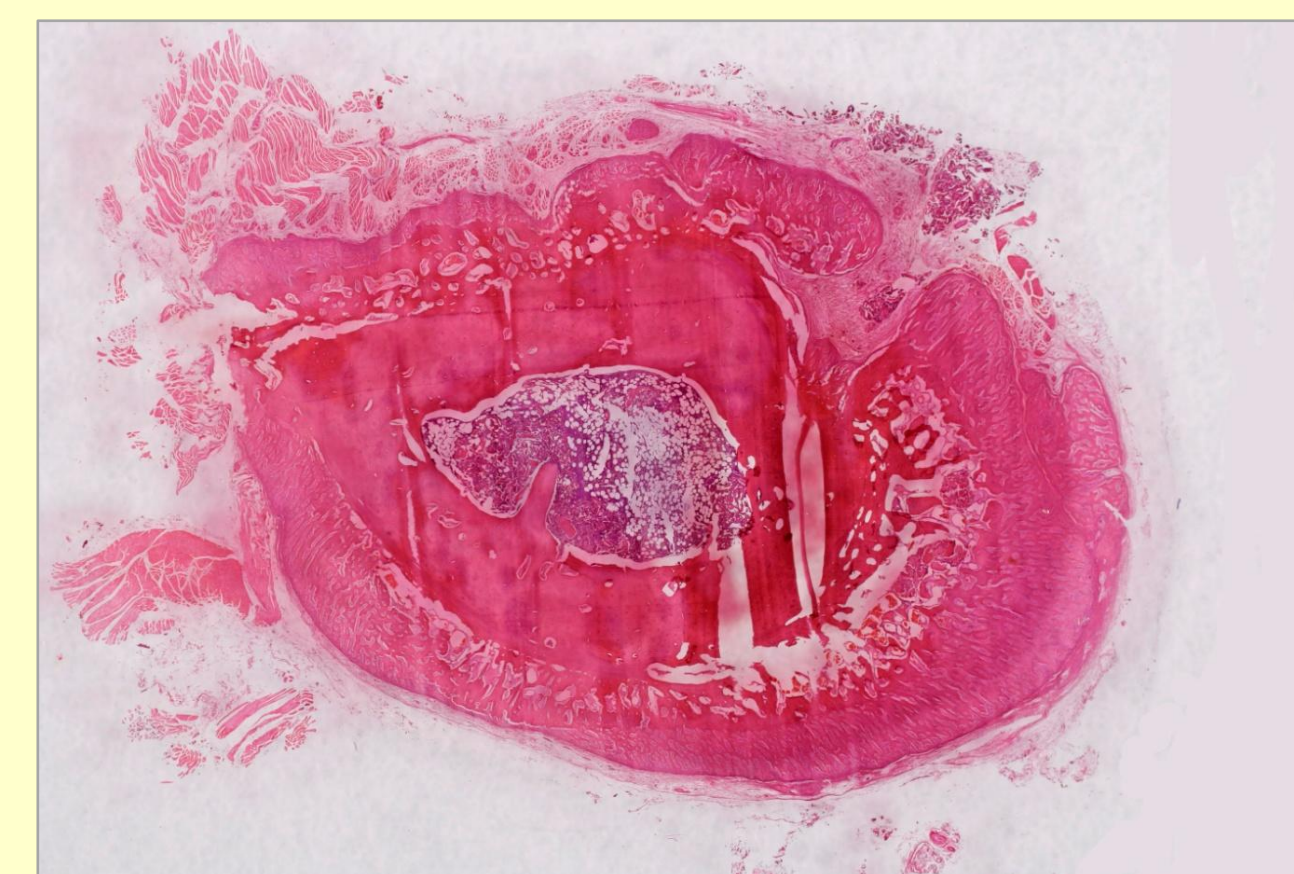


Fig. 7: Right humerus cross section.
Centrally bone marrow, surrounded by normal compact lamellar bone and peripherally proliferated woven bone trabeculae, HE.

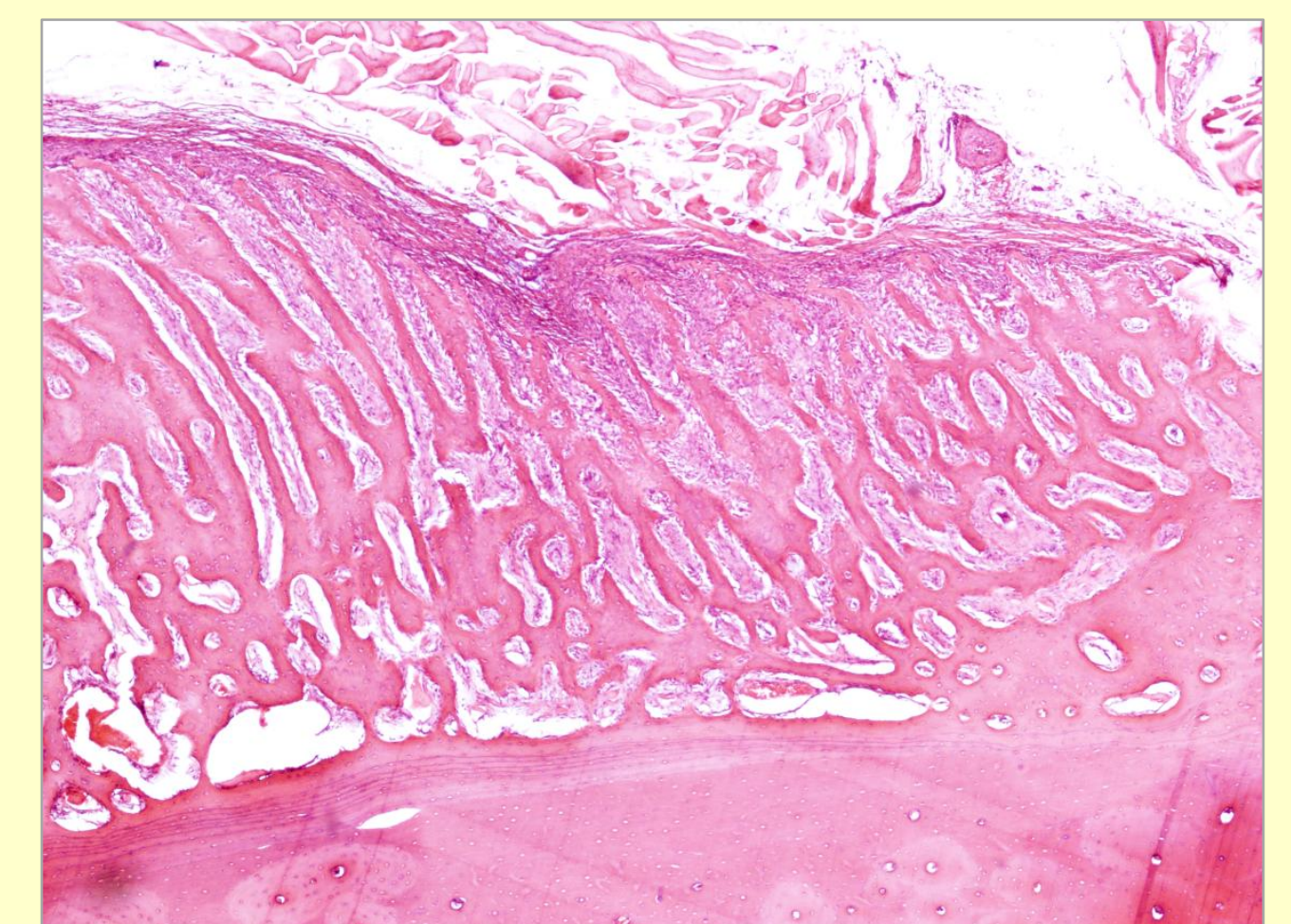


Fig. 8: Right humerus. Proliferating woven bone trabeculae, lifting the periosteum, HE, 4x.

Results:

Radiographic finding of the chest was a focal consolidation of the right lung. At necropsy this area was characterized by a focal reddish consolidation of the right main lobe (Fig. 1). A 2 cm long awn was extracted from a dilated bronchus of the affected area (Fig. 2). Pathohistologically a severe, focal, suppurative and necrotizing bronchitis and pneumonia surrounding the awn was diagnosed (Fig. 5, 6). Radiographic examination and necropsy revealed bony proliferations of the long bones. Thereby humerus and femur showed moderate to severe lesions, whereas other bones were not affected or showed only mild changes (Fig. 3, 4). The axial skeleton was not affected. Histologically hyperostotic lesions consisted in radiating trabeculae of woven bone with displacement of periosteum (Fig. 7, 8).

Discussion:

A case of hypertrophic osteopathy in a cat caused by bronchitis/ pneumonia due to incidental inhalation of an awn is presented. The awn could not be detected by clinical methods but only by necropsy. Vascular endothelial growth factor (VEGF) and platelet-derived growth factor (PDGF) might play a main role in pathogenesis. One possible mechanism could be vascular shunting allowing megakaryocyte and platelet clumps to bypass small lung capillary beds and lodge in distal vascular beds with production of VEGF and PDGF in peripheral limbs. The prognosis for hypertrophic osteopathy is dependent from the underlying cause. A removal of diseased tissue results in a spontaneous resolution of hyperostosis.

