ECVP/ESVP Summer School in Veterinary Pathology

Summer School 2015 – Histology

Case 1
DOG
HD: Lung

Substitution of 60-70% of the pulmonary parenchyma by fibrosis associate with misshapen bronchi, and severe multifocal emphysema of residual alveolar spaces.
Locally extensive areas of pulmonary parenchyma are replaced by elevated numbers of spindle shaped cells with indistinct cell margins and elongated, oval to twisted hyperchromatic nuclei organized in rows (fibrocytes) in association with lesser numbers of spindle shaped to stellate cells with plump nuclei (fibroblasts) embedded in abundant finely fibrillary to homogeneous, lightly eosinophilic matrix (collagen), changes interpreted as fibrosis/scarring. Fibrosis expands also the subpleural areas. Embedded in the fibrous tissue there are moderate numbers of small to medium sized thin walled newly formed vessels (angiogenesis) containing abundant luminal erythrocytes (hyperemia). In these areas, perivascular accumulation of low numbers of small mature lymphocytes and lesser numbers of mature plasma cells is evident. Multifocally, in the fibrous tissue extravasated erythrocytes (hemorrhages) can be seen in conjunction with large groups of foamy reactive macrophages containing abundant granular brown to gold pigment (haemosiderin, haemosiderophages).
Irregularly dilated or misshapen bronchi and bronchioles with variably irregular profiles are present in the residual parenchyma or are embedded in the fibrosis. Bronchi of all calibers are characterized by partial to complete absence of smooth muscle lining, cartilage (in the larger airways) and bronchial glands (interpreted as bronchial hypoplasia). Epithelial lining of bronchi and bronchioles is columnar ciliated to flat and multifocally characterized by cytoplasmic vacuoles (hydropic degeneration) or lost (erosion/ulceration). A small percentage of airways contain luminal red blood cells (bronchial hemorrhages), amorphous lightly eosinophilic material (edema) and occasional foamy reactive macrophages.
Multifocally, alveolar spaces are severely enlarged/dilated, in association with alveolar wall destruction (bullous emphysema). Focal areas of alveolar collapse are evident (atelectasis). The interstitium is characterized by fibrosis, hyperemia and accumulation of occasional mature plasma cells, small mature lymphocytes and foamy rare reactive macrophages.
Subpleural parenchyma is fibrotic or characterized by hyperemia, hemorrhages and accumulation of hemosiderin laden macrophages.

MD: Lung**:** severe, chronic, locally extensive pulmonary fibrosis with congenital bronchial hypoplasia and severe bullous emphysema

Name the Disease: "Congenital lobar emphysema"

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Histologic Description	*Points*
Style	1
Substitution of 60-70% (1) of the pulmonary parenchyma by fibrosis (1) with misshapen bronchi (1) and severe diffuse emphysema (0,5) of the residual alveoli	3,5
Lung	
Spindle shaped cells with indistinct cell margins and elongated, oval to twisted hyperchromatic nuclei 0, 5 (fibrocytes 0,5)	1
spindle shaped to stellate cells with plump nuclei (fibroblasts 0, 5)	0,5
abundant finely fibrillary lightly eosinophilic matrix (collagen)	0,5
changes interpreted as fibrosis/scarring	0,5
elevated numbers of small vessels containing abundant luminal erythrocytes (angiogenesis)	0,5
Perivascular small mature lymphocytes	0,5
Perivascular lesser numbers of plasma cells	0,5
Extravasated erythrocytes (hemorrhages)	0,5
Foamy reactive macrophages containing abundant granular brown to golden pigment 0,5 (haemosiderin, haemosiderophages 0,5)	1
Airways	
Misshapen bronchi and bronchiole profiles	0,5
Partial to complete absence of smooth muscle lining	0,5
Partial to complete absence of bronchial glands	0,5
Absence of cartilage in larger airways	0,5
Interpreted as bronchial hypoplasia	1
Alveolar changes	
Alveolar spaces are severely expanded	0,5
Alveolar septa disrupted	0,5
Interpreted as bullous emphysema	0,5
Alveolar collapse (atelectasis)	0,5
Subpleural changes	
Subpleural hyperhaemia, hemorrhages, hemosiderophages (either gets 0,5)	0,5
Subpleural fibrosis	0,5
MD/MDs severe, chronic, locally extensive (0,5) pulmonary fibrosis (1) with congenital (0,5) bronchial hypoplasia (0,5) and severe bullous emphysema (0,5)	*3*
ND Congenital lobar emphysema	1
	20

“Congenital lobar emphysema is rare in dogs, usually results from aplasia or hypoplasia of bronchial cartilage"

References:

- JKP, vol 2, page 544
- Congenital lobar emphysema and tension pneumothorax in a dog. Gopalakrishnan G, Stevenson GW. J Vet Diagn Invest. 2007 May;19(3):322-5.

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Congenital lobar emphysema caused by aplasia of bronchial cartilage in a Pekingese puppy.
Voorhout G, Goedegebuure SA, Nap RC. Vet Pathol. 1986 Jan;23(1