

ECVP/ESVP Summer School in Veterinary Pathology

Summer School 2014 – Toxicological Pathology (182)

Slide 7. L-1 (80-6834/80-6804) Rat.

Description (13)

Granulomas (8)

- multifocal to coalescing nodules – early ones around airways
- mix of fibroblasts, macrophages, eosinophils, globular leukocytes
- focal lymphocyte accumulations
- silica particles – foreign body
- accumulation of macrophages surrounded by lymphocytes peribronchially.

Alveolar granular proteinaceous material free in alveoli and in macrophages, a few inflammatory cells (neutrophils and macrophages), debris, cholesterol clefts (4)

Arteriole – smooth muscle hypertrophy (1)

Morphologic Diagnosis(es) (5)

Granulomatous pneumonia (or pulmonary granulomas) and alveolar proteinosis with intralesional particulate material/foreign body (consistent with silica), multifocal to coalescing, severe (5)

Arteriolar smooth muscle hypertrophy

Etiology/Etiologic diagnosis: (1)

Silica/silicosis

Differentials: other pneumoconiosis e.g., beryllium, asbestos; fungal infection

Possible mechanism of toxicity (1)

Particulates damage macrophages during ineffective phagocytosis with release of mediators

Experimental information: Rat given 50 mg silica (quartz, 0.5 µm particles).

Rats did not appear clinically affected. Lung weight and collagen content increased, silica content decreased over time. Gross findings – lungs larger than normal with a nodular appearance and gritty on cutting. Enlarged lymph nodes. Lesions progressive over 1 year to mature silicotic nodules (acellular collagenous nodules).

Alveolar lipoproteinosis – confirmed with PAS stain.

Reiser, K. M., W. M. Haschek, T. Hesterberg, and J. A. Last. (1983) Experimental silicosis: II. Long term effects of intratracheally instilled quartz on collagen metabolism and morphologic characteristics of rat lungs. *Am. J. Path.* 110:30-40.