



ECVP/ESVP Summer School in Veterinary Pathology



Marie Curie Training Courses

Summer School 2006 – GEMS Question 1

Question 1:

Case 04-29-1-1. Tissue from a male knockout mouse from the breeding colony. (circled tissue only)

Description:

Lung: In patchy, random areas of all lobes, alveoli contain swollen alveolar macrophages, and the alveolar septa are thickened and hypercellular. In some areas, the alveoli contain dense aggregates of free eosinophilic, proteinaceous material mixed with alveolar macrophages. Occasional alveoli contain multinucleate giant cells. The macrophages and multinucleate giant cells generally have ingested deeply eosinophilic smudgy material, brightly eosinophilic crystals, and occasional brightly eosinophilic droplets. Other intraalveolar crystals are extracellular, are free within the alveolar lumina, and may be mixed with the intraalveolar proteinaceous material. The crystals are generally rectangular with either straight or frayed edges. Some have blunt ends; others are pointed. In the alveolar septa lining the affected alveoli, many of the cells (presumably alveolar type II cells, but possibly alveolar macrophages still in the septa) are enlarged, cuboidal, and have prominent nuclei. Some alveolar septa are thickened by eosinophilic proteinaceous material (possibly fibrin). Some of the alveolar septal capillaries are mildly congested. Pulmonary blood vessels in affected areas are lined by enlarged, swollen endothelial cells. Bronchioles and bronchi are less affected, although occasional free crystals and crystal-filled macrophages insert among the bronchiolar epithelial cells. Some of the bronchial mucosal epithelial cells contain either the crystals or brightly eosinophilic droplets. A few of the affected areas are bordered by numerous lymphocytes. BALF is unaffected except for occasional macrophages that contain hemosiderin. The pleura is generally unaffected, although it is thickened where it directly overlies affected foci. Other tissues in the section include brown fat, esophagus, and aorta; these are unaffected.

Diagnosis: Pneumonia, eosinophilic, granulomatous, crystalline, chronic, multifocal, moderate, lung.

Likely composition of crystals: YM1 chitinase

Interpretation: This is an occasional background finding in mice. It is especially common in certain strains, such as 129S4/SvJae.