



ECVP/ESVP Summer School in Veterinary Pathology



Marie Curie Training Courses

Summer School 2006 – GEMS Question 2

Question 2:

Case 06-77-539. Tissue from a knockout mouse from the breeding colony.

Description:

Mammary gland: The mammary gland is markedly thickened and most of the gland has undergone coagulative necrosis. The necrotic mammary gland is nearly uniform and consists of alveoli lined by smudgy, amphophilic epithelial cells. Most of the epithelial cells have lost their nuclei, but some contain dense, pyknotic nuclei. Lumina of many of the alveoli contain mammary secretion mixed with fat droplets. In some areas, there are myriads of bacterial rods, some free and others phagocytosed by macrophages. Many of the blood vessels are distended by fibrin and blood. Some blood vessels have necrotic walls. The interstitial septa among mammary lobules are distended by edema fluid, fibrin deposits, necrotic material, congested blood vessels, and many bacterial rods. Some of the interstitial septa contain a moderate infiltrate of neutrophils, including degenerate and necrotic forms. The necrotic mammary tissue is bordered by an area of non-necrotic mammary tissue. In that area, many bacteria-laden macrophages and neutrophils are present in the interstitial septa. Neutrophils infiltrate among the epithelial cells of the mammary alveoli and occasionally aggregate in their lumina or in the ductular lumina. Some of the mammary epithelial cells in that area are pyknotic. The underlying subcutaneous fat is markedly edematous and a dense layer of inflammatory cells and bacteria extend into the subcuticular skeletal muscle.

Diagnosis: Mastitis and cellulitis, necrotizing, with myriads of intracellular and extracellular bacterial rods

Interpretation: Mastitis of this severity is uncommon in mice. The morphology of the lesion and the presence of bacterial rods are similar to bovine coliform mastitis, and perhaps, like in the bovine disorder, contaminated bedding may be a factor. Immunodeficiency related to the knocked-out gene should be considered as a possible underlying cause.