



ECVP/ESVP Summer School in Veterinary Pathology



Summer School 2009 – Urinary Tract

Species: Sheep

Organ: Kidney

Description:

Throughout the kidney, multifocally to coalescing, involving 90% of the section, tubular epithelial cells are hypereosinophilic, show pyknotic nuclei and sometimes karyorrhexis and loss of cellular detail (severe degeneration and necrosis). A large number of tubular epithelial cells are detached from the basement membrane, rounded and sloughed into the tubular lumen. In the cytoplasm of a large amount of tubular cells highly eosinophilic to orange, homogenous, dropletforming material can be found (reabsorption of protein and hemoglobin). The same proteinaceous material is visible in some Bowmann's spaces or in abundance in dilated tubuli (severe hemoglobin- and proteinuria/cast formation). Some tubular epithelial cells have big nuclei and are activated, seldom two nuclei are visible (regeneration).

Most glomerula (generalized) show increase of the number of mesangial cells, which are activated.

In the interstitium multifocally homogenous eosinophilic to orange material is visible admixed with cells undergoing karyorrhexis and karyopyknosis (interstitial accumulation of hemoglobin and protein with beginning necrosis).

In the pelvic area multifocally moderate amounts of lymphocytes, few plasma cells, eosinophils and single neutrophils are present.

Diagnosis:

Severe, diffuse acute tubulonephrosis with prominent hemoglobinuria and moderate proteinuria (hemoglobinuric nephrosis)

Slight generalized membranoproliferative glomerulonephritis

Etiology:

Copper intoxication

Associated lesions:

jaundice, acute periacinar hepatic necrosis, hemoglobinuric nephrosis

Pathogenesis:

Copper intoxication-lysosomal membranes loose integrity-hydrolases damage the rest-blood cooper concentration rises-damage to erythrocytes-intravascular hemolysis-hemoglobinuric nephrosis

Special stains:

Rhodanine