WSC 2013-2014, Conference 13

Case 1. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Haired skin: Haired skin: Diffusely, the epidermis is expanded up to ten times normal thickness by hyperplasia **(1pt)** , with prominent anastamosing rete ridges, marked parakeratotic hyperkeratosis **(1pt)**, acanthosis and spongiosis of the stratum spinosum **(1pt)** with swollen keratinocytes with pale eosinophilic and vacuolated cytoplasm (intracellular edema) **(1pt)**and rare necrotic keratinocytes in this layer, and marked hyperplasia of the basal cell layer. There is a focally extensive crust composed of lamellations of keratin occasionally admixed with degenerate neutrophils, necrotic debris, serum, and colonies of basophilic 2 um in diameter cocci. Similar changes are present in the hair follicles. Multifocally, the superficial dermis is mildly expanded by edema, and contains moderate numbers of plasma cells, lymphocytes, macrophages, and aggregates of neutrophils, and dermal lymphatics are markedly dilated. **(1pt)** The follicular units within the dermis are surrounded by a layer or two of plasma cells and lymphocytes.

Liver: Nodules of remnant hepatocytes are surrounded and separated by thick bands of hepatocytes which are markedly expanded **(1pt)**by coalescing small clear vacuoles (glycogen)**(1pt)** which result up to a 500% increase in size, and result in effacement of hepatic plate architecture. Within these areas, there is moderate to marked ductular reaction (biliary hyperplasia) **(1pt)**, neovascularization, mild fibrosis, occasional aggregates of neutrophils, and small lipogranulomas **(1pt)**. Remaining hepatocellular nodules contain variable degrees of hepatocellular glycogenosis, cholestasis, and micronodular hemosiderosis, are often surrounded by a thin rim of fibrous connective tissue, and compress adjacent tissues (nodular hepatocellular regeneration) **(1pt)**. There are small aggregates of extramedullary hematopoeisis scattered throughout regenerative nodules.

MORPHOLOGIC DIAGNOSIS: 1. Haired skin: Hyperkeratosis, parakeratotic, diffuse, severe, with acanthosis, epithelial intracellular edema, basal cell hyperplasia, and mild subacute dermatitis **(3pt)**.

2. Liver, hepatocytes, portal and midzonal areas: Glycogenosis, diffuse, severe, with marked biliary hyperplasia, cholestasis, and moderate hepatocellular microvesicular lipidosis. **(2pt)**.

3. Liver: Micronodular hepatocellular regeneration, multifocal. **(2pt)**

NAME BOTH CONDITIONS: Steroid hepatopathy **(1pt)** and superficial necrolytic dermatitis **(1pt)**

O/C: **(1pt)**

WSC 2013-2014, Conference 13

Case 2. Tissue from a dog.

(Note: I am no clinicl pathologist, so take the following description with a grain of salt. However, this is a very excellent example of a wide range of changes in both erythrocytes and leukocytes, and you should give it a good look. Hopefully you will be able to tell that this is an anemic dog. Moreover, and importantly, although you don't have an absolute white count, it is important to do a WBC differential on every blood smear, because if you don't you will miss the changes in monocyte and lymphocyte numbers (which become very apparent on your differential.)

MICROSCOPIC DESCRIPTION: Peripheral blood smear: This is a good-quality, abundantly cellular well-stained smear **(1 pt.)**. Erythocyte mass is subjectively decreased. **(1 pt.)** Erythrocytes are mildly (aftifactually) crenated. There is marked polychromasia **(2 pt.)**, with decreased central pallor, and moderate anisocytosis **(1pt.)**. The following poikilocytic changes are present within erythrocytes: spherocytosis **(2 pt.)**, echinocytosis **(1 pt.)**, and rare leptocytes, schistocytes **(1 pt.)**, and keratocytes. There are moderate numbers of erythrocytes with basophilic nuclear remnants (Howell Jolly bodies)**(1 pt.)** as well as numerous nucleated erythrocytes (metarubricytes) **(2 pt.)**. There is a subjective leukocytosis, and neutrophilia with a left shift **(1 pt.)**. Neutrophils are mildly basophilic, and often have a vacuolated cytoplasm (toxic change) **(1 pt.)** and band neutrophils often light basophilic rhomboidal Cytoplasmic inclusions (Doehle bodies.) There are increased numbers of monocytes and few lymphocytes.

MORPHOLOGIC DIAGNOSIS: 1. Peripheral blood smear: 1. Regenerative anemia with marked polychromasia, spherocytosis, poikilocytosis and nucleated red blood cells. **(3 pt.)**

2. Peripheral blood smear: Leukocytosis with left shift, with toxic change. **(1 pt.)**

3. Peripheral blood smear: Monocytosis and lymphopenia.

NAME THE CONDITION: Autoimmune hemolytic anemia. **(1 pt.)**

O/C: **(1 pt.)**

(My diff results: Neuts-62, Bands – 20, Monos- 14, Lymphocytes 4. 22 NRBCS)

WSC 2013-2014, Conference 13

Case 3. Tissue from an alpaca.

MICROSCOPIC DESCRIPTION: Kidney: Diffusely, glomerular basement membranes **(1pt)** and rarely Bowman's capsule, are thickened and outlined by dense granular mineral **(2pt)**, which often expands to include the entire glomerular tuft **(1pt)**. Affected glomeruli often contain low numbers of neutrophils **(1pt)** and endothelial or mesangial cells are pyknotic (necrosis) **(2pt)**. The basement membrane **(1pt)** of adjacent tubules is often expanded with mineral **(1pt)**; lining epithelium is swollen with abundant vacuolated cytoplasm (degenerate) **(1pt)** or brightly eosinophilic hyaline protein droplets, or necrotic and sloughed, with pyknotic nuclei. **(1pt)** Occasionally, tubular epithelial cells themselves are mineralized. Scattered throughout the cortex, there are numerous mildly ectatic **(1pt)** tubules contain light pink proteinaceous fluid; within the medulla **(1pt)** there are numerous markedly dilated tubules containing a variable pink to dark red protein **(1pt)**.

MORPHOLOGIC DIAGNOSIS: Kidney, glomeruli and tubules: Mineralization, diffuse, moderate to seere, with marked intratubular protein casts **(3 pts)**

CAUSE: Vitamin D toxicity **(2pt)**

O/C: **(1pt)**

WSC 2013-2014, Conference 12

Case 4. Tissue from a horse.

MICROSCOPIC DESCRIPTION: Liver: Diffusely , portal areas **(1pt)** are infiltrated and often bridged by a densely cellular, unencapsulated, well demarcated neoplasm **(2pt)**. The neoplasm is composed of round cells **(1pt)** which efface portal areas, and expand adjacent sinusoids. Neoplastic cells are round and line preexistent stroma **(1pt)**. Cells have low to moderate amounts of a brightly eosinophilic granular cytoplasm with distinct cell borders **(1pt)**. Nuclei are irregularly round, often eccentric, with coarsely clumped chromatin, and 1-3 small blue nucleoli **(1pt)**. Mitotic figures average 1 per 400HPF **(1pt)**. There is moderate anisokaryosis and anisocytosis **(1pt)**. Scattered throughout the neoplasm are moderate numbers of mature eosinophilicls and fewer band neutrophils. Adjacent to the neoplasm, hepatocytes are mildly atrophic and contain one or multiple clear discrete vacuoles **(1pt)**. Vacuoles are also present in increasing numbers within centrilobular areas **(1pt)** (degeneration) **(2pt)**. Within the neoplasm and in increasing numbers within normal hepatocyte plates, there are low to moderate numbers of macrophages which contain a brown granular pigment. **(1 pt.)** .

Bone marrow: The bone marrow is multifocally infiltrated by a similar neoplasm in solid areas. There is no apparent hematopoietic tissue in this section.

MORPHOLOGIC DIAGNOSIS: Liver: Acute myelocytic leukemia **(5 pt.)**

O/C: **(1 pt.)**