| Case 1 (S12-1316) | Points (20) |
|---|---|
| **Species:** Crocodile<br>**Organ:** Kidney | 1 |
| **Description:** | |
| Approximately 80% of the normal renal architecture is disrupted by randomly | 1 |
| disseminated needle-like, slender, lightly eosinophilic to basophilic crystals | 1 |
| that are deposited in dilated tubular lumina and in the interstitium. These | 1 |
| crystals (uric acid cystals, tophi) are composed of radiating arrays and are | 1 |
| surrounded by large numbers of multinucleated giant cells of foreign body | |
| type, epithelioid macrophages, fewer neutrophils and lymphocytes. Sometimes | 4 |
| the crystals are only represented by optic empty spaces. Tubular epithelial | 1 |
| cells show hypereosinophilic cytoplasm and pyknotic nuclei (tubular epithelial | 1 |
| cell necrosis), some tubules contain cellular debris and heterophils (cellular | 1 |
| casts) or are disrupted due to the deposition of tophi (tubulorrhexis). | 1 |
| Multifocally the interstitium is distended by a slight increase in spindle-shaped | |
| cells with collagen deposition (fibrosis). | 1 |
| **Morphological diagnosis:**<br>Kidney: Granulomatous and necrotizing nephritis, severe with random urate crystal deposition | 2 |
| **Name the Disease:**<br>Renal (visceral) gout | 1 |
| **Pathogenesis:** | |
| renal insufficiency, dehydration, too much dietary protein, excess protein catabolism, urolithiasis | 1 |
| | Style: 2 |

| Case 2 (S13-0010) | Points (20) |
|---|---|
| **Species:** Dog (0.5 years)<br>**Organ:** Kidney | 1 |
| **Description:**<br>In a large number (approximately 60%) of tubules in both the cortex and medulla the lumina contain faintly yellow, birefringent, sometimes radiating or rectangular crystals (1) (calcium oxalate crystals (1)). Some crystals are surrounded by bluish to violet granular material (mineralization (1)). In these tubules tubular epithelial cells are often flattened (0.5) and seldomly sloughed (0.5). Few affected tubuli have a disrupted basement membrane (tubulorrhexis (1)). Some tubules not containing crystals reveal mild cytoplasmic vacuolation (degeneration) or contain round bluish material (mineralized concrements (1)).<br>bandlike the interstitium is expanded by pale eosinophilic, slightly fibrillar, extracellular material (collagen, interstitial fibrosis (1)) sometimes forming bands and by by few lymphocytes (0.5) and occasional plasma cells (0.5)<br>Some glomeruli, which are entrapped in the fibrotic interstitium show hypertrophy of parietal epithelial cells (1). | 1<br>2<br>2<br>1<br>1<br>1<br>1 |
| **Morphological diagnosis:**<br>Kidney: Severe calcium oxalate nephrosis with moderate interstitial fibrosis and sligth chronic interstital nephritis | 2 |
| **Etiologies**:<br>Toxic: ethylene glycol<br>Primary Hyperoxaluria-genetic | 1<br>1 |
| **Pathogenesis:**<br>Toxic:<br>Ethylene glycol: itself of low toxicity, is rapidly absorbed from the GIT-tract and most is excreted unchanged in the urine. A small percentage is oxidized by alcohol dehydrogenase in the liver to glycoaldehyde which is in turn oxidized to glycolic acid, glyoxylate, and finally oxalate. Glycoaldehyde and glyoxylate are the primary nephrotoxic metabolites – ATP depletion and membrane phospholipid and enzyme destruction.<br>Primary hyperoxalurias are a group of inherited diseases described in humans, dogs and cats. In humans two different forms of PH are described: type 1 is characterised by associated glycolic aciduria, type 2 by associated L-glyceric aciduria (Petrarulo et al 1998). | 2<br>2<br>Style: 2 |

| Case 3 (S13-0668) | Points |
|---|---|
| **Species:** Dog<br>**Organ:** Urinary bladder | 1 |
| **Description:**<br>The lamina propria, submucosa and tunica muscularis are distended by a highly infiltrative growing (0.5), poorly demarcated (0.5), unencapsulated (0.5), multinodular (0.5) highly cellular mass extending to the cut borders. | 2 |
| The tumor cells are arranged in nests (0.5), packets (0.5) and cords (0.5) sometimes forming tubuli (0.5) and papilliform (0.5) structures and are surrounded by moderate amounts of fine to coarse fibrovascuar stroma (0.5). | 2.5<br>1 |
| The tumor cells are cuboidal to polygonal (0.5), of variable size up to 40 micrometer in diameter (0.5), have indistinct cell borders (0.5) and moderate to large amounts of eosinophilic homogenous cytoplasm (0.5) (anisocytosis (0.5)). | 2 |
| Nuclei are round to pleomorphic (0.5) sometimes indented, mostly centrally located (0.5), of varying size (0.5) (anisokaryose (0.5)) and the chromatin is finely stippled (0.5). Sometimes double nucleated cells (0.5) and one to two eosinophilic nucleoli of different size are visible (0.5) (ansonucleolosis (0.5)). Mitotic figures (0.5) can be seen but are uncommon (0-1 per HPF (0.5)). Multifocally there is vascular invasion (0.5) by the tumour cells. | 2.5<br>4 |
| Variably sized areas of necrosis (0.5) can be seen with cellular debris admixed with cells showing karyorrhexis (0.5) and karyopyknosis (0.5). In the necrotic areas bluish granular material (dytrophic calcifications 0.5) can be found. Large portions of the surface epithelium are ulcerated or eroded and the superficial lamina propria reveals a bandlike infiltrate of lymphocytes (0.5) and fewer plasmacells (0.5) Smaller numbers of lymphocytes and plasma cells infiltrate the tumour. Multifocally on the surface of the ulcerated urothelium mineralized material (concrements (0.5)) can be found. | 1<br>2 |
| **Morphological diagnosis:**<br>Urinary bladder: adenocarcinoma (with vascular invasion) | 1<br>Style: 1 |

| Case 4 (S13-1175) | Points |
|---|---|
| **Species:** Horse<br>**Organ:** Kidney | 1 |
| **Description:**<br>In the deep medulla and papilla there is focally-extensive interstitial oedema (1) and blood vessels are moderately dilated and filled with erythrocytes (hyperaemia (1)) associated with focally-extensive ulceration of pelvic epithelium (1). Some of these vessels show endothelial activation (1). In several collecting ducts epithelial cells are flattened (1) while others are sloughed (1) and pyknotic with karyorrhectic nucleus (1) and hypereosinophilic cytoplasm (1) (coagulative necrosis (1)). Some of the ducts show intraluminal, intramural and periductal deposition of pale basophilic granular material (dystrophic mineralization (1)). Collecting ducts are sometimes dilated and contain pale basophilic material (proteinaceous casts (1)). | 2<br>2<br>3<br>2<br>1<br>1 |
| **Morphological diagnosis:**<br>Kidney: papillary necrosis, focally-extensive with focally-extensive ulceration of pelvic epithelium | 2 |
| **Pathogenesis:**<br>Renal medullary necrosis: Prostaglandin synthetase, which occurs in the kidney primarily in the medulla, may be inhibited by nonsteroidal antiinflammatory drugs such as aspirin, or phenylbutazone resulting in decreased production of PGE2 and loss of vasodilatatory effect on arterioles of juxtamedullary nephrons-papillary necrosis-"analgesic nephropathy"<br>Other causes: urinary obstruction or pyelonephritis, dehydration and electrolyte imbalance in neonatal animals | 4 |
| | Style: 2 |

| Case 5 (S03-2154.1) | Points (20) |
|---|---|
| **Species:** Cat<br>**Organ:** Kidney | 1 |
| **Description:**<br><br>Effacing 80% of the cortical and medullary parenchyma (1), separating and compressing tubular and glomerular structures (0.5), a locally-extensive (0.5) to multifocal (0.5) unencapsulated (1), well circumscribed (1), infiltrative growing (1), nodular (0.5), densely cellular (0.5) neoplastic proliferation is visible. The tumor consists of sheets of round cells (1) with no fibrovascular stroma formation (0.5). The tumor cells are round to polygonal (0.5), 12 to 14 micrometer (0.5), with distinct cell borders (0.5) and a moderate amount of homogenous amphophil to basophil cytoplasm (0.5). Mostly a centrally located round to pleomorphic nucleus (0.5) of intermediate size (0.5) with finely to coarsely stippled chromatin (0.5) and one big nucleolus (0.5) can be seen. The tumor cell show sligth to moderate anisokaryosis (1), anisonucleolosis (1) and anisocytosis (1). Only few mitotic figures (0.5) are present. Entrapped and adjacent glomeruli and tubuli show severe thickening of basement membranes (0.5). Some glomeruli display synechiae and sclerosis (1). | 10<br><br>7 |
| **Morphological diagnosis:**<br><br>Kidney: lymphoma | 1 |
| | Style: 1 |

| Case 6 (S13-1339) | Points |
|---|---|
| **Species:** Dog<br>**Organ:** Kidney | 1 |
| **Description:**<br>The kidney shows an irregular surface. There is a segmental expansion of both cortical and medullary interstitium by a moderate amount of loosely arranged slightly basophilic mesenchymal tissue composed of spindle-shaped cells forming collagen bundles (immature mesenchymal tissue or primitive mesenchyme). Throughout the kidney, mostly in the outer cortex, some glomeruli are small, have indistinct capillary loops and a peripheral rim of hyperchromatic epithelial cells (immature fetal glomeruli interpreted as persistent metanephric ducts). In the interstitial mesenchymal tissue few dilated tubuli or epithelial cords without a lumen (immature tubuli) are visible, the dilated tubuli showing cuboidal to sometimes attenuated epithelium. In some areas, which are radially arranged and where less mesenchymal tissue can be observed, glomeruli are mostly normal in size and mature tubuli are moderately dilated, few immature dilated tubuli are also visible.<br>A small number of tubular lumina are filled with highly eosinophilic homogenous to slightly granular material (protein casts interpreted as proteinuria), sloughed epithelial cells and cellular debris or mineralized concrements and oxalate crystalls. The tubular lumina near the papillary crest and in the subcapsular area are dilated and filled with moderate amounts of degenerated neutrophils and few macrophages. Some glomeruli show mineralization and concrements (metastatic calcification and concrements). Few machrophages with brownish cytoplasm (hemosiderin) can be found in the medullary mesenchymal tissue and few lymphocytes and seldom plasma cells in the pelvic area. | 2<br>1<br>1.5<br>1<br>1<br>1<br>1<br>1<br>1<br>0.5 |
| **Morphological diagnosis: Kidney:** renal dysplasia, mild chronic pyelitis and concrement and oxalate crystal deposition | 2 |
| **Other possible histological changes seen:**<br>Metaplasia to cartilage and bone, suppurative pyelits | 1 |
| **Name of condition:**<br>Progressive juvenile glomerulonephropathy | 1 |
| **Affected breeds:**<br>Golden Retriever, Llhasa Apso, Shi Tsu, Standard Poodle, Alaskan Malamute | Style: 2 |

| Case 7 (S13-1411) | Points |
|---|---|
| **Species:** Guinea pig<br>**Organ:** Kidney | 1 |
| **Description:** | |
| The kidney has an irregular undulating surface and there are radiating bands of chronic inflammation extending from the renal pelvis to the cortex. The inflammation is composed of moderate numbers of lymphocytes and plasma cells together with few heterophils. In these areas, there is also mild deposition of moderately cellular fibrous tissue (fibrosis) and multifocal loss of nephrons. Tubuli and glomeruli immediately adjacent to the areas of chronic inflammation show thickened and hyalinized basement membranes and Bowman's capsules while some glomeruli have adhesions of their tufts with the Bowman's capsule (synechiae) and some glomeruli in the inflamed areas are shrunken and hyalinized (sclerosis). In less inflamed areas, some glomeruli are enlarged or vary in size and show segmental to global mild to moderate thickening of capillary loops due to the by deposition of pale eosinophilic, extracellular, amorphous material (amyloid). The same material is found multifocally in the interstitium of the inner cortex and medulla. Tubuli in the medulla including collecting ducts are often dilated and rarely contain granular basophilic material (mineralized concrements). In the pelvis, there is a mild multifocal lymphocytic and plasmacellular inflammation in the subepithelial tissue (pyelitis). | 2<br>1.5<br>2<br>1<br>1<br>2<br>1<br>0.5<br>1 |
| **Morphological diagnosis:** | |
| Kidney:<br>-Segmental lymphoplasmacytic interstitial nephritis with loss of nephrons, sclerosis and fibrosis, moderate chronic<br>-Diffuse segmental to global glomerular amyloidosis, moderate<br>-Diffuse interstitial amyloidosis, severe<br>-Diffuse lymphoplasmacytic pyelitis, slight | 3 |
| **Other organs possibly involved:** | |
| Liver, spleen | 1 |
| **Special stains:** | |
| Kongo, thioflavin | 1 |
| | Style: 2 |

| Case 8 (S13-1479) | Points |
|---|---|
| **Species:** Cat<br>**Organ:** Kidney | 1 |
| **Description:**<br>Multifocal to coalescing and effacing 30% of the kidney parenchyma inflammatory foci are visible consisting of centrally located necrotic areas with cellular debris and karyorrhectic and karyopyknotic neutrophils surrounded by large amounts of macrophages, lymphocytes and moderate amounts of plasma cells (pyogranulomatous inflammation). The tubules in areas of inflammation are destroyed while adjacent tubular epithelial cells display hypereosinophilic cytoplasm and sometimes pyknotic nuclei (tubular degeneration and necrosis). Some tubuli have big vesicular nuclei (tubular epithelial cell activation). A big subcapsular stellate vein is filled with hypereosinophilic fibrillar to homogenous material (fibrin) admixed with moderate amount of neutrophils, macrophages, lymphocytes and only seldom plasma cells (venous thrombosis). In the thrombus centrally blueish granular material is visible (dystrophic calcification). Smaller subcapsular venules and parenchymal venules are hyperemic, inflitrated by inflammatory cells or thrombosed. In the pelvic adipose tissue a focal-extensive necrotic area admixed with degenerating neutophils and surrounded by small amount of macrophages and lymphocytes can be seen (steatitis). Multifocally hyperemic areas are visible. | 3<br>1<br>1<br>3<br>1<br>2 |
| **Morphological diagnosis:**<br>Kidney: Severe multifocal to coalescing pyogranulomatous nephritis, phlebitis (vasculitis) and slight steatitis | 2 |
| **Etiology**:<br>Feline Infectious Peritonitis Virus | 1 |
| **Associated lesions:**<br>Effusion in thoracal or abdominal cavitiy, iridocyclitis, pyogranulomas on serosal surfaces | 2 |
| **Name of the disease:**<br>Feline Infectious Peritonitis | 1 |
| | Style: 2 |

| Case 9 (H13-2545) | Points (20 points) |
|---|---|
| **Species:** Dog<br>**Organ:** Kidney<br><br>**Description:**<br>Replacing most of the kidney parenchyma reaching under the capsule and expanding over three cut borders a multinodular (0.5), well-demarcated (0.5), 3x1.5cm large (0.5), infiltrative growing (0.5) mass with a thin fibrous capsule (0.5) is visible. The mass is highly cellular (0.5) with epithelial cells (0.5) forming nests and islets (1) and occassionally tubular and papillary structures (1), surrounded by fine fibrovascular stroma (0.5). Tumor cells are large (15 to 20 micrometer) (0.5), round to polymorph (0.5) and they have indistinct cell borders (0.5). Abundant clear to slightly vacuolated clear eosinophilic cytoplasm (0.5), a slightly eccentrically located large nucleus (0.5) with vesicular chromatin (0.5) and a centrally located eosinophil nucleolus (0.5) is visible. The tumor cells show moderate anisocytosis (0.5) and prominent anisokaryosis (0.5) and slight anisonucleolosis (0.5) . In 10 HPF only 3 regular mitotic figures (0.5) can be seen. Multifocally necrotic areas with cellular debris (0.5) are visible. Tubular structures are sometimes embedded in eosinophilic extracellular matrix (0.5). In the necrotic areas and sometimes in the tumor blueish granular material can be found (dystrophic and metastatic calcifications (1)). Adjacent to the mass, numerous markedly dilated blood and lymph vessels (1) are present while the interstitium is severly edematous (0.5), infiltrated by small numbers of lymphocytes and plasma cells (1) and contains some globally sclerotic glomeruli (1)).<br><br>**Morphological diagnosis:**<br>Kidney: renal clear cell carcinoma | 2<br>4<br>5<br>6<br>1<br>Style: 2 |

| Case 10 (H13-3048) | Points |
|---|---|
| **Species:** Dog<br>**Organ:** Kidney | 1 |
| **Description:**<br>The glomeruli vary mildly in size and show mild multifocal hypercellularity due to mesangial cell proliferation and diffuse (global) marked thickening of the glomerular basement membranes and expansion of the mesangium due to the deposition of a amorphous eosinophilic material. In the mesangium few neutrophils are visible. Mesangium cells show sometimes large vesicular nuclei (hypertrophy). Glomerular loops are adhered multifocally to Bowman's capsule often forming broad synechiae. The parietal epithelial cells are sometimes activated and there is granular to coarsely clumped bluish material (metastatic mineralization) in several Bowman's capsules, glomerular basement membranes and tubular basement membranes most often in proximal tubuli and the tubuli at the cortico-medullary junction The kidney interstitium is multifocally infiltrated by a low number of lymphocytes and plasma cells. Few distal and collecting ducts contain dark basophilic granular material (mineralized concrements). | 2<br>2<br>1<br>1<br>2<br>2<br>1 |
| **Morphological diagnosis:**<br>Kidney: Severe generalized and diffuse (global) membranoproliferative glomerulonephritis (glomerulonephropathy with marked distension of glomerular basement membranes and mesangial expansion and synechiae) with severe metastatic calcifications of Bowman's capsule, glomerular basement membranes and tubular membranes, moderate, multifocal | 2 |
| Other macroscopical lesions:<br>Metastatic and dystrophic calcifications on the ventral side of the tongue, pleural metastatic calcification, calcification of the stomach mucosa, (fibrinoid degeneration of vessel walls in the stomach and intestine with bleeding), hyperplasia of the parathyroid, osteodystophia fibrosa, uremic gastritis and enteritis | 4 |
| | Style: 2 |

| Case 11 (S14-0062) | Points |
|---|---|
| **Species:** Dog<br>**Organ:** Kidney | 1 |
| **Description:**<br>Most glomeruli are normocellular although in some glomeruli there is minimal focal hypercellularity due to the proliferation of mesangial cells. | 1 |
| Approximately 30% of the glomeruli are shrunken and reveal global hyalinization (glomerulosclerosis). | 1 |
| In the remaining glomeruli there is mild to moderate diffuse thickening of the glomerular basement membranes and minimal to mild mesangial expansion. | 2 |
| In approximately 20% of these glomeruli there is also focal and segmental sclerosis associated with obliteration of capillary lumens (focal and segmental glomerulosclerosis) and | 1 |
| adhesions between the glomeruli and the Bowmann' capsule (synechiae) often in areas of sclerosis. | 1 |
| Multifocally, Bowman's capsule is mildly and asymmetrically thickened and in some glomeruli there is multifocal hypertrophy of parietal epithelial cells. | 1 |
| In few glomeruli Bowman's space is dilated and filled with fibrillar to homogenous material (protein) and in some glomerular spaces blueish granular material is visible (metastatic mineralization). | 1<br>1 |
| Proximal tubuli are multifocally dilated (ectasia) and filled with homogenous proteinaceous material (proteinaceous casts) or show vacuolation (vacuolar degeneration). | 1<br>1 |
| Some tubular epithelial (mostly proximal) show blueish material in the cytopasm (mineralization), others show yellowish-brownish pigment (hemosiderin). | 1<br>1 |
| Few basement membranes of tubuli are also thickened. Multifocally in the interstitium moderate amounts of lymphocytes and plasma cells can be seen. Concrements in the tubuli and basal membrane calcification (metastatic mineralization) are mostly visible in the cortico-medullary junction. | 1 |
| **Morphological diagnosis:**<br>Kidney: Mild to moderate generalized and global membranous glomerulonephritis (glomerulonephropathy characterised by glomerular basement membrane thickening morphologically suggestive for membranous glomerulonephropathy (MGN)).<br>Kidney: focal and segmental glomerulosclerosis and global sclerosis<br>Kidney: lymphoplasmacellular interstitial nephritis, tubular ectasia and mieralization as well as concrement formation | 3 |
| | Style: 2 |

| Case 12 (S14-0293) | Points |
|---|---|
| **Species:** Goat<br>**Organ:** Urethra | 1 |
| **Description:**<br>The urothelium reveals focally-extensive ulceration while the exposed lamina propria is covered by a layer of red blood cells (hemorrhage) admixed with moderate amounts of degenerating neutrophils and fibrillar eosinophilic material (fibrin) and sloughed epithelial cells and few sperm cells. This exudate partially fills the lumen of the urethra. The underlying lamina propria and muscle layers are distended and effaced by infiltrations of neutrophils, some lymphocytes, few plasma cells and hemosiderin-laden macrophages and by proliferating fibroblasts and capillaries that often run in a perpendicular fashion (fibrovascular granulation tissue). Neutrophils frequently show karyorrhexis and karyopyknosis (degenerated neutrophils). Muscle fibers in and surrounded by the granulation tissue are degenerating, showing centralisation of nuclei, loss of cross-striation and hypereosinophilic cytoplasm (muscular degeneration). The granulation tissue is transmurally arranged and involving the serosa. Multifocally in the muscle layer necrotic areas with degenerating neutrophils can be seen. | 1<br>2<br>6<br>2<br>1 |
| **Morphological diagnosis:**<br>Urethra: Severe locally-extensive ulcerative transmural suppurative and fibrino-necrotic urethritis with extensive granulation tissue formation and muscular degeneration | 2 |
| **Pathogenesis:**<br>Urolithiasis with subsequent obstruction | |
| **Secondary lesions:**<br>Rupture of the urinary bladder with uroabdomen, dilation of the kidney pelvis | 1 |
| **Predisposing factors:**<br>Male and adipose animal | 1 |
| **Predilection sites**:<br>Procesus urethralis, flexura simoidea | 1 |
| | Style: 2 |

| Case 13 (H14-0293) | Points |
|---|---|
| **Species:** Horse<br>**Organ:** Urinary bladder | 1 |
| **Description:**<br>The mucosa (or epithelial layer) is diffusely thickened due to an exophytic, cauliflower-like, non-encapsulated, large, moderately cellular mass extending over 2 cut borders. The mass is composed of papillary fronds covered with up to 10 layers of well differentiated urothelial cells supported by loose fibrovascular stroma rich in mucinous extracellular matrix. The neoplastic urothelial cells are round to polygonal, of variable size (smaller basal cells, larger apical cells), have distinct cell borders and large amounts of clear cytoplasm. The nucleus is round, of moderate size, centrally located and has finely stippled chromatin and a mostly indistinct nucleolus. Anisocytosis and anisokaryosis are mild. Mitotic figures are rare and confined to the basal cell layer. In connection with the overlying urothelium, multifocal tubular structures lined by a pseudostratified epithelium and filled with pale eosinophilic material (mucus) reach into the superficial stroma. The superficial stroma is multifocally infiltrated by moderate numbers of lymphocytes and plasma cells together with few neutrophils. The tips of the papillae are sometimes ulcerated and the stroma is hyperemic to hemorrhagic. | 2<br>2<br>2<br>4.5<br>1<br>1.5<br>2 |
| **Morphological diagnosis:**<br>Urinary bladder: papillary urothelial adenoma | 2 |
| | Style: 2 |

| Case 14 (S14-0504) | Points (20) |
|---|---|
| **Species:** Dog<br>**Organ:** Kidney | |
| **Description:** | |
| Most glomeruli show increased lobulation, mild to moderate global thickening of the glomerular basement membranes and mild focal hypercellularity due to the proliferation of mesangial cells. | 2 |
| Few glomeruli show adhesions between glomerular loops and the Bowmann's capsule (synechiae). | 1 |
| Bowmann's capsules in several glomeruli reveal mild asymmetric thickening due to deposition of collagen fibers (fibrosis). | 1 |
| Few glomeruli are shrunken and the glomerular tufts are hyalinized due to replacement by connective tissue (global sclerosis). | 1 |
| In the interstitium a multifocal moderate inflammation is visible induced by a large amount of plasma cells and lesser numbers of lymphocytes and macrophages as well as the deposition of collagen fibers (fibrosis). | 2 |
| In the cytoplasm of some macrophages there are multiple, round, 2 micrometer roundish protozoal organisms containing a kinetoplast and a nucleus (Leishmania amastigotes). | 3 |
| Some tubuli show homogenous, eosinophilic material in the lumen (proteinaceous casts interpreted as proteinuria). | 1 |
| In few tubular lumina, mostly in the medullary region, finely stippled or granular to compact dark blue material is found (mineralization). | |
| In the pelvic area under the urothelium multifocally moderate amounts of plasma cells and lymphocytes (pyelitis) can be seen. | 1 |
| The cytoplasm of some tubular epithelial cells is foamy and show vacuoles (fat storage). | |
| **Morphological diagnosis:** | |
| Kidney: | |
| -Diffuse global thickening of glomerular capillary membranes and increased lobulation of glomeruli morphologically suggestive for immune-mediated glomerulonephritis (membranoproliferative glomerulonephritis) | |
| -Slight multifocal chronic pyelits | |
| -Moderate, multifocal plasmacellular interstitial nephritis with interstitial fibrosis and intrahistiocytic protozoal organisms morphologically consistent with Leishmania amastigotes | 3 |
| **Etiology**: | |
| Leishmania sp. | |
| Leishmania donovani/infantum | 1 |
| Leishmania chagasi (South America) | |
| **Associated lesions:** | |
| **Skin**: Dermatitis, plasmacellular and histiocytic. Alopecia around the eyes. | |
| **Kidney:** Chronic renal failure | 1 |
| | Style: 2 |