



ECVP/ESVP Summer School in Veterinary Pathology



Marie Curie Training Courses

Summer School 2006 – Mock Exam Case 9

9. Cytology: urine sediment from a DOG. (urine obtained by cystocentesis)

DESCRIPTION OF THE CYTOLOGICAL FINDINGS

The cell density is high (for a urinary sample). The background contains a high density of red blood cells: hematuria. A moderate proportion of nucleated cells are ill-preserved, with naked nuclei (and thus not interpretable). Among the preserved nucleated cells, more than 90% are immature (hyopsegmented) and mature neutrophils, that very often show nuclear or cytoplasmic changes:

- hypersegmentation (more than three nuclear lobes)
- pyknosis, karyorrhexis and/or fragmentation suggestive of apoptosis
- presence of one to approximately thirty cytoplasmic, anucleate, round, basophilic, one-micrometer-diameter microorganisms: bacteria, cocci.

The cocci are more abundant in extracellular location than in the cytoplasm of neutrophils. The cocci are usually grouped in small chains.

Apart from neutrophils, the other (10%) nucleated cells are: monocytes and lymphocytes; urothelial (transitional) cells (polygonal, up to 40 micrometers in diameter, with an abundant pale basophilic cytoplasm and a low nuclear:cytoplasmic ratio); and rare squamous epithelial cells (40 to 50 micrometers in diameter, with angular corners, a deeply basophilic cytoplasm and a facultative round condensed nucleus).

Note: on most smears, there is also a low proportion of neoplastic cells, as the bitch also suffered from an embryonal rhabdomyosarcoma of the urinary bladder. The neoplastic cells are oval to spindle, 30 micrometers in mean length, with a deeply basophilic cytoplasm, usually containing microvacuoles. Their nucleus is 20-25 micrometers in diameter, euchromatic, central, with a prominent nucleolus. Cell atypias are common (including nuclear gigantism and binucleated cells).

MORPHOLOGIC DIAGNOSIS/DIAGNOSES

Suppurative cystitis (or: pyuria) (2) with extracellular and intra-neutrophilic bacteria (1) (cocci).

MARKS

High cell density	1
Hematuria.....	1
Naked nuclei, high amount of ill-preserved cells	1
Hyopsegmented neutrophils, or myelocytes, or metamyelocytes.....	1
Neutrophils	1
With hypersegmented nucleus.....	1
Apoptotic / Necrotic / Pyknotic / Karyorrhectic.....	1
Bacteria	1
Size: one-micrometer-diameter	1
Shape: round / cocci	1
Locations: extracellular + within the cytoplasm of neutrophils.....	2
Chains	1
Urothelial cells.....	1
Monocytes / macrophages	1
Morphologic diagnosis.....	3
Design	2