



ECVP/ESVP Summer School in Veterinary Pathology



Summer School 2009 – Clinical Pathology 297/09

History: 6 yr spayed female cat, indoor, which was lost for one week. During this week she has been captured and kept in a rescue shelter, where a femoral luxation was diagnosed and treated (manual positioning, external bandage, steroids and wide spectrum antibiotics). Two weeks after her return to home, the cat developed a thoracic effusion and was normothermic, depressed, anorexic and showed PU/PD.

Biochemistry is reported below:

glucosio (mg/dl)	159	73-134	ALT (GPT) (U/l)	35	6-83	CK (U/l)	7,2-28,2
prot. totali (g/dl)	6,27	5,4-7,8	AST (GOT) (U/l)		26-43		
albumine (g/dl)	2,93	2,1-3,3	GGT (U/l)	4,2	<5,1	acido urico (mg/d)	0-1
urea (mg/dl)	156,8	20-60	ALP (U/l)	318	25-93	calcio (mg/dl)	8,52 6,2-10,2
creatinina (mg/dl)	7,65	<1,8	LDH (U/l)		63-273	fosforo (mg/dl)	9,86 4,5-8,1
bilirubina totale (mg/dl)		<0,5	amilasi (U/l)		700-940	sodio (mmol/l)	158 147-156
colesterolo (mg/dl)	192	95-130	lipasi (U/l)		0-83	potassio (mmol/l)	6,5 4-4,5
trigliceridi (mg/dl)	106	10-114	CK (U/l)		7,2-28,2	cloro (mmol/l)	110-123

Physico-chemical analysis of the effusion: uncoloured, transparent, total proteins = 3,3 g/dL, SG = 1025; cells = $1,0 \times 10^3/\square$ l ; creatinine = 4,7 mg/dL, Na = 173 mmol/L; K = 3,7 mmol/L

Cytological description:

Sample of moderate cellularity, slightly hemodiluted and characterized by several naked nuclei or smudged cells.

A mixed cell population is present.

The prevalent population is composed by small round mature lymphocytes with no morphological abnormalities.

A large number of neutrophils, mostly none degenerated, but also with signs of degeneration basically represented by karyolysis and karyorhexis. Both degenerated and non degenerated neutrophils often contain phagocytized bacteria (cocci and bacilli).

Occasional reactive macrophages, which often have a foamy cytoplasm, and moderately activated mesothelial cells are also present.

Cytological diagnosis:

Reactive / inflammatory effusion

Comment:

The presence of phagocytised bacteria is consistent with septic effusion, although this finding is not consistent with the clinical presentation. The possibility of a sampling / storage artefact (i.e. in vitro phagocytosis) is supported by the relative low number of degenerated neutrophils, by the heterogeneous bacterial population and by the site of the effusion. This possibility should be excluded by repeating the sampling. Bacteriology is strongly recommended.



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Even in the case of a “non septic” condition, the effusion can be classified as an exudate, based on its physicochemical properties and the possible inflammatory agent should be identified with other investigations. Nevertheless the abundant lymphocyte population and the presence of foamy macrophages could support also the suspicion of a chylous effusion, especially based on its thoracic localization. Chylous effusions and exudates share most physico-chemical properties, including a high cellularity. Protein content of chylous is usually lower than in transudates but the presence of lipids in the fluid can lead to artefactual overestimation of protein content by refractometric analysis. Chylous effusion is usually milky coloured, but it was not the case of this cat, and contain large amount of tryglycerides (which have not been measured in this effusion). In this case creatinine and K have been measured based on biochemical findings consistent with post-renal azotemia and since the veterinarian suspected a traumatic events that lead to breakdown of urinary bladder and to diaphragmatic hernia (which was strongly suspected on the basis of diagnostic imaging), but uroperitoneum can be excluded on the basis of biochemical tests on the effusion, whilst the hypothesis that the traumatic events damaged lymphatic vessels leading to a chylous effusion is consistent with cytological features.

In the case repeated samplings would confirm the presence of a mixed population of bacteria, the possibility of an intestinal rupture / permeabilization, associated with the possible diaphragmatic hernia, should be considered.

SCORING:

Evaluation of cellularity:	0,5pts
Prevalent population: lymphocytes	1 pt
Additional cell population: neutrophils	1 pt
Degeneration	1 pt
Phagocytized bacteria	1 pt
Description of bacteria	0,5
Other cell populations (foamy macrophages)	1 pt
Cytological diagnosis	1 pt
Comments:	
Possibly septic	0,5 pt
Not consistent with clinical presentation (artefact)?	0,5 pt
Additional test (repeated sampling and bacteriology)	1pt
Possible chylous effusion	1 pt
Possible intestinal perforation	1 pt
TOTAL	11 pts