

An unexpected guest in the joints of a puppy

Contributors

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Specimen

EDTA Synovial fluid/ Synovial fluid smear / synovial fluid analysis

Signalment

4-month-old mixed-breed (Griffon x Border Collie) male puppy

History

The puppy was referred for hyperthermia, lameness and joint pain, progressing for the past ten days. Three out of five puppies from the same litter exhibited similar clinical signs. Limited clinical information was available for the other affected puppies, as they were examined by veterinarians at different clinics.

Initial investigations by the referring veterinarian included a complete blood count (CBC), a serum biochemistry profile, and a SNAP 4Dx® test which yielded negative results. The CBC showed mild normocytic normochromic anemia, mild leukopenia due to mild neutropenia, and mild thrombocytopenia. No blood smear was performed to confirm these findings. The biochemistry profile revealed mild hyperglycemia, increased alkaline phosphatase (ALP) activity, mild hypocreatinemia, and elevated C-reactive protein concentration (CRP), compared with reference intervals in adults (Table 1).

The puppy was initially treated with oral doxycycline (10 mg/kg) and meloxicam (0.1 mg/kg). In the absence of significative clinical improvement, the puppy was then hospitalized for two days, placed on intravenous fluids, and treated with imidocarb. Doxycycline treatment was continued. PCR assays performed on blood samples for *Anaplasma*, *Babesia*, and *Ehrlichia* spp. were all negative. Serological testing for *Anaplasma phagocytophilum* (IgG ELISA), *Borrelia burgdorferi* (ELISA), and *Ehrlichia canis* (ELISA) was also negative. An abdominal ultrasound examination was performed, with no abnormalities detected. The puppy was then referred for joint taps and further management.

	Result	Reference Interval in adult
Glucose (mmol/L)	6.1	4.1 - 7.0
Urea (mmol/L)	4.0	3.2 - 10
Creatinine (μmol/L)	18.6	35.4 - 124
Total proteins (g/L)	77	50 - 72
ALT (U/L)	18	17 - 78
ALP (U/L)	121	15 - 85

Table 1: Results of blood biochemistry (FUJI DRI-CHEM NX500)

Clinical findings

Clinical examination in the referral clinic showed similar abnormalities already described. A computed tomography scan was performed and was suggestive of non-erosive polyarthrititis. Synovial fluid examination of knees, shoulders, and elbows was performed (Figure 1,2 and Table 2). Serum capillary zone electrophoresis revealed moderate hypoalbuminemia and hyper- α -globulinemia (Figure 3 and Table 3).

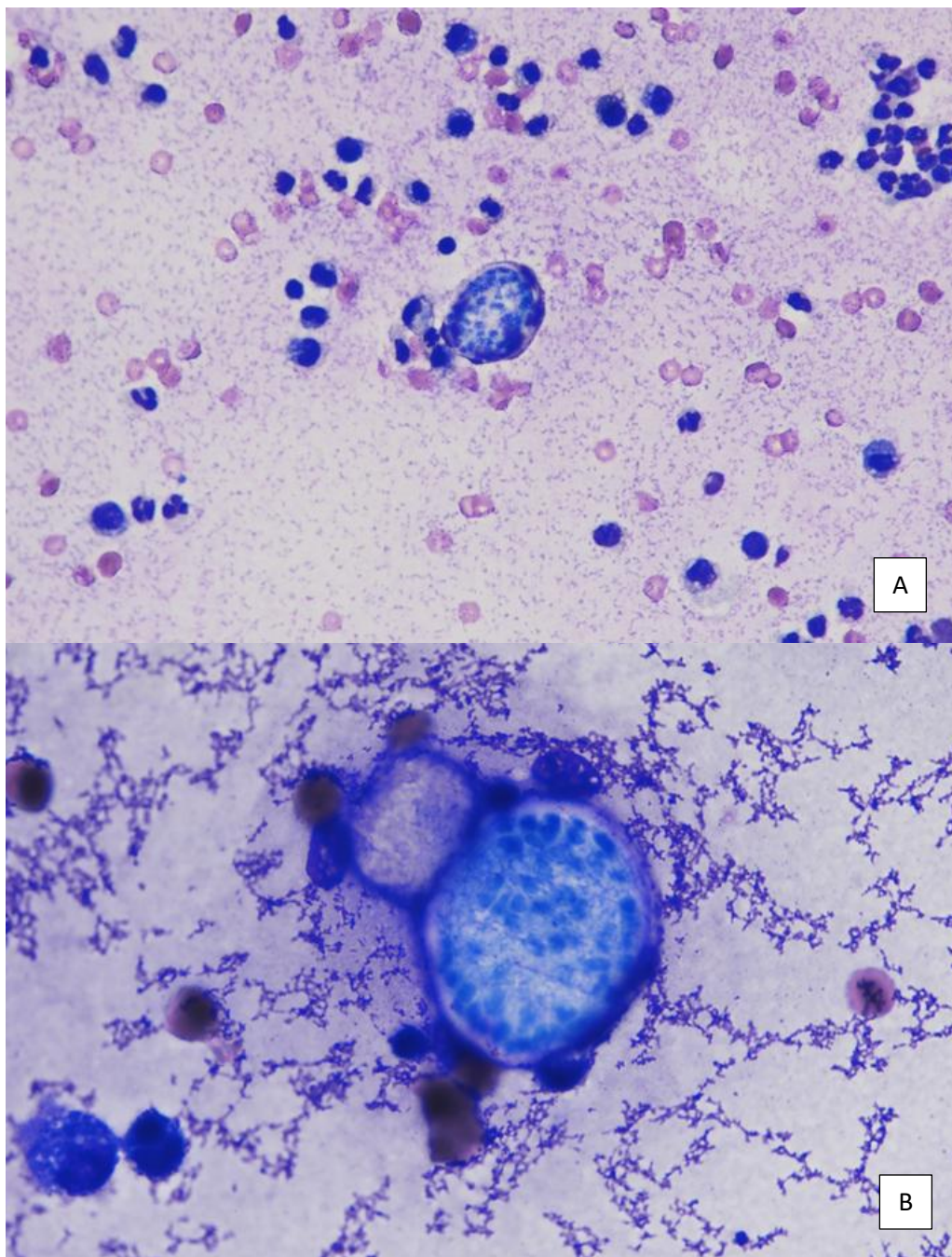


Figure 1 -A, B: Photomicrographs of synovial fluid smears of the puppy, May-Grunwald-Giemsa stain, x500 (A), x1000, oil (B)

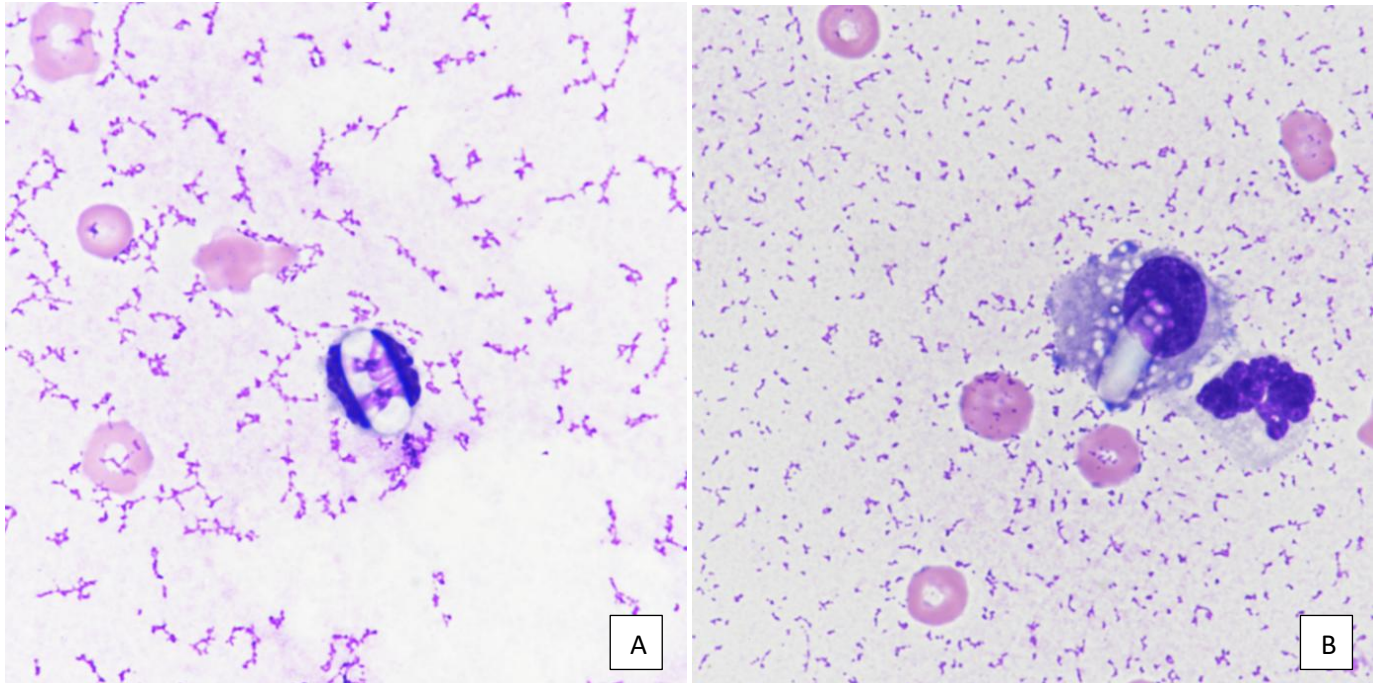


Figure 2 -A, B: Photomicrographs of synovial fluid smears of the puppy, May-Grunwald-Giemsa stain, x1000, oil

	Result	Reference Interval in adult
Proteins concentration (g/L)	62	< 30
Nucleated cell count ($10^9/L$)	48.30	< 3.00
Neutrophils (%)	51	<5
Macrophages (%)	49	>95
Red blood cell count ($10^{12}/L$)	0.20	< 0.01

Table 2: Results of synovial fluid composition. Nucleated cell count was measured using a Sysmex XN-1000V analyzer, and protein concentration was determined by refractometry.

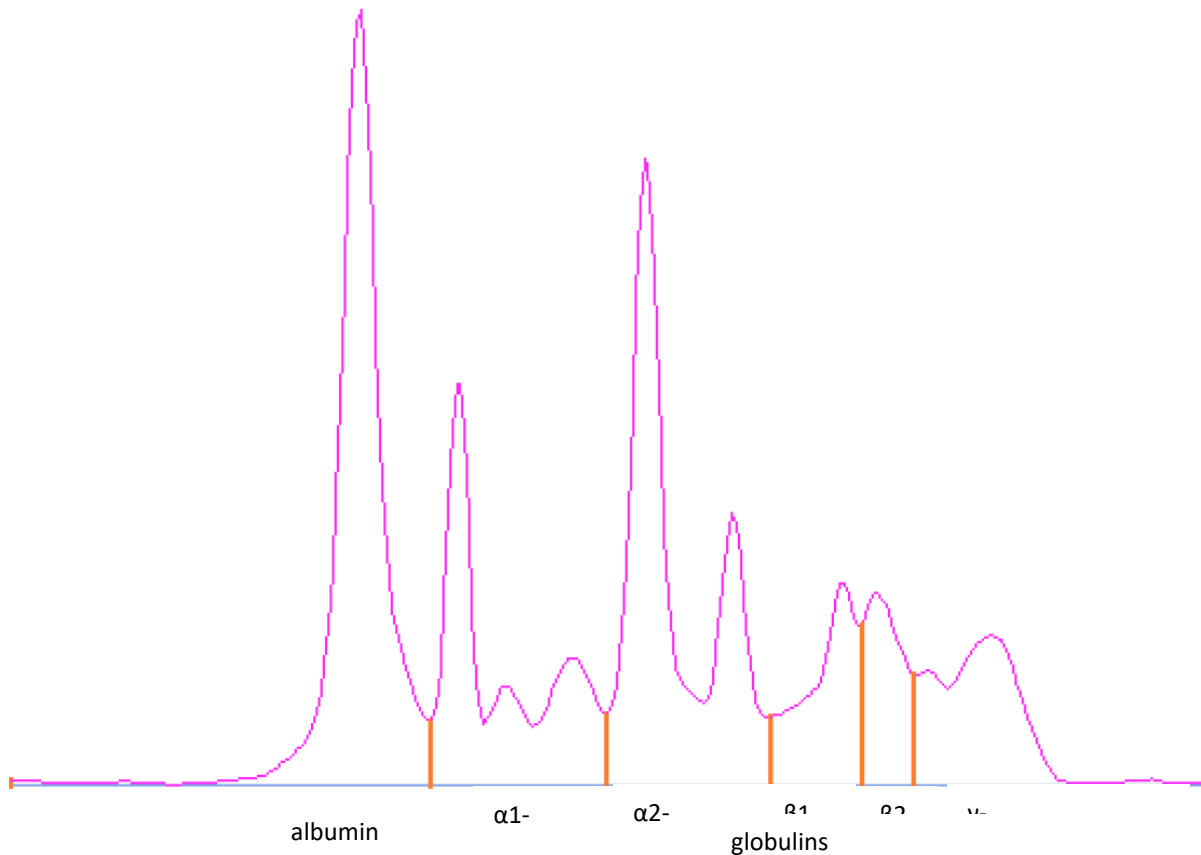


Figure 3: Serum capillary zone electrophoresis profile

	Result	Reference interval in adult
Albumin (g/dL)	1.56	2.86-4.36
α -globulins (g/dL)	2.34	0.63-1.21
α 1-globulins (g/dL)	0.92	0.25-0.47
α 2-globulins (g/dL)	1.42	0.33-0.83
β -globulins (g/dL)	0.79	0.75-1.52
β 1-globulins (g/dL)	0.45	0.31-0.92
β 2-globulins (g/dL)	0.34	0.34-0.81
γ -globulins (g/dL)	0.60	0.3-1.2

Table 3: Quantitative composition of serum proteins fractions by serum capillary zone electrophoresis (Sebia CAPILLARYS)

Questions

- 1) What is your description of the cytological specimens?
- 2) Based on the clinical and pathological findings, what is your main diagnosis?
- 3) What additional tests would you use for confirming a diagnosis and further characterize it?