

Cytology and cell tube block findings of a synovial fluid sample of a dog

Contributors:

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Specimen: Cytologic sediment smear of synovial fluid from the left stifle of a dog.

Signalment

Canine, 9-month-old, intact, male, Cane Corso dog breed.

History

The patient was referred to AniCura CHV Porto Hospital Veterinário for evaluation of a 3-week intermittent history of lameness of the left pelvic limb that worsened in the last few days and was non-responsive to previous anti-inflammatory therapy.

Clinical findings

Orthopaedic examination revealed pain on manipulation of the left stifle, associated with medial patellar luxation (grade III/IV) and swelling of the stifle joint. Radiographic imaging of the hip was performed under sedation and confirmed bilateral hip dysplasia, more severe on the left side. In order to evaluate correctly both stifles, a computed tomography was performed, which confirmed the presence of bilateral high-riding patella (*patella alta*), degenerative lesions on the left femoral trochlea and increased articular fluid on the left stifle (Figure 1). An aseptic collection of synovial fluid was performed for cytologic evaluation. On macroscopic examination, the collected fluid was viscous and markedly haemorrhagic (Figure 2). Cytology sediment smears of the synovial fluid were immediately obtained by the clinician (without performing a TNCC or a direct smear), stained with a routine Romanowsky staining (Hemacolor) (Figure 3-6) and a rapid-on-site evaluation was performed. A cell tube block (CTB) was prepared using the surplus sediment and routinely processed for paraffin embedding. An immunohistochemistry (IHC) panel (pan-cytokeratin, vimentin and CD18) of the CTB sections was performed (Figure 7). In the meantime, conservative treatment with NSAIDs was started, with no significant improvement. One week later, the dog developed weight-bearing lameness of the left pelvic limb. An exploratory arthrotomy was performed to evaluate the lesion. By that time, the dog presented severe synovial fluid accumulation and marked thickening of the articular capsule. A surgical treatment (trochlear

wedge resection) was performed to decrease inflammation and correct the medial patellar luxation and an articular capsule biopsy was collected for histopathologic analysis.

Questions

1. What is your description of the cytology smear?
2. What are the possible differential diagnoses for the synovial fluid cytology and CTB findings?
3. What would you suggest the clinician to do in terms of the therapeutic plan, based on the cytology and CTB findings?

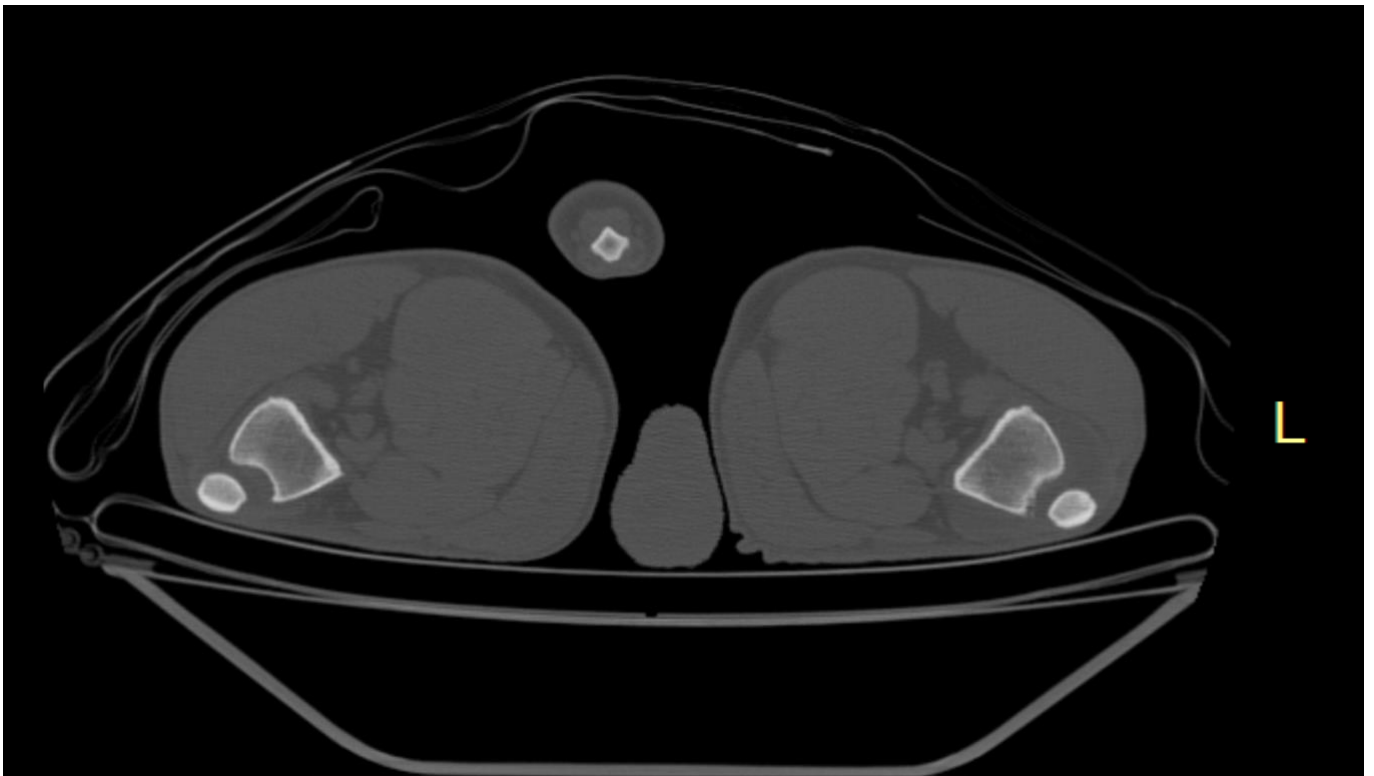


Figure 1 – Computed tomography of the pelvic limbs. Presence of degenerative lesions on the left femoral trochlea and increased articular fluid volume on the left stifle.



Figure 2 – Macroscopic appearance of the synovial fluid collected from the left stifle.

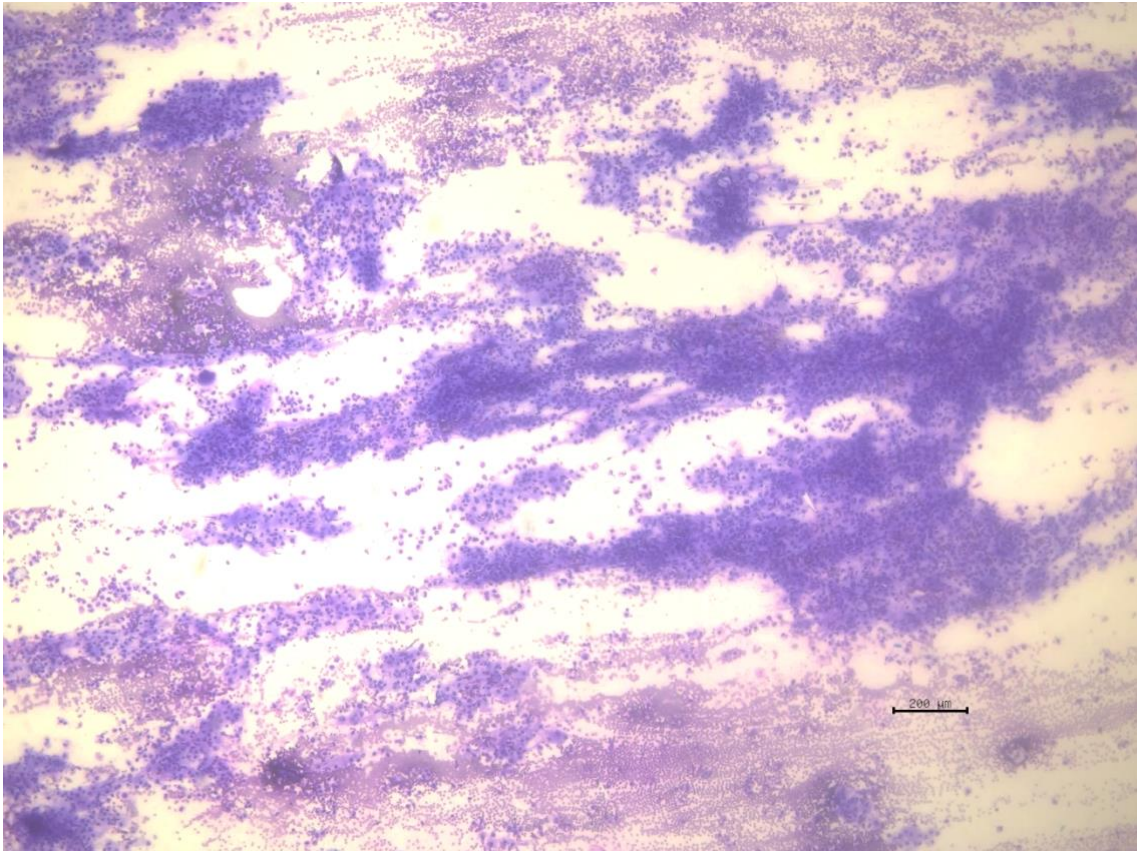


Figure 3 - Sediment smear of the synovial fluid collected from the left stifle. Hemacolor stain. 10x objective.

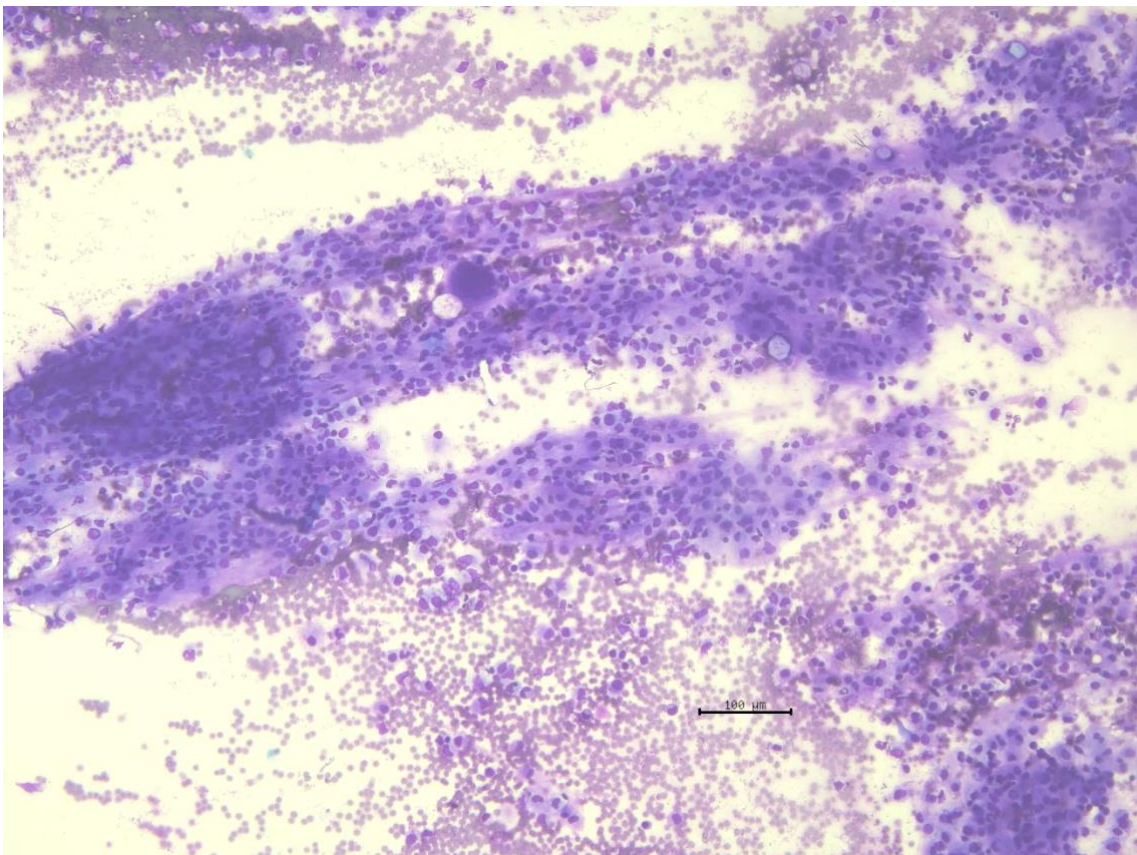


Figure 4 - Sediment smear of the synovial fluid collected from the left stifle. Hemacolor stain. 20x objective.

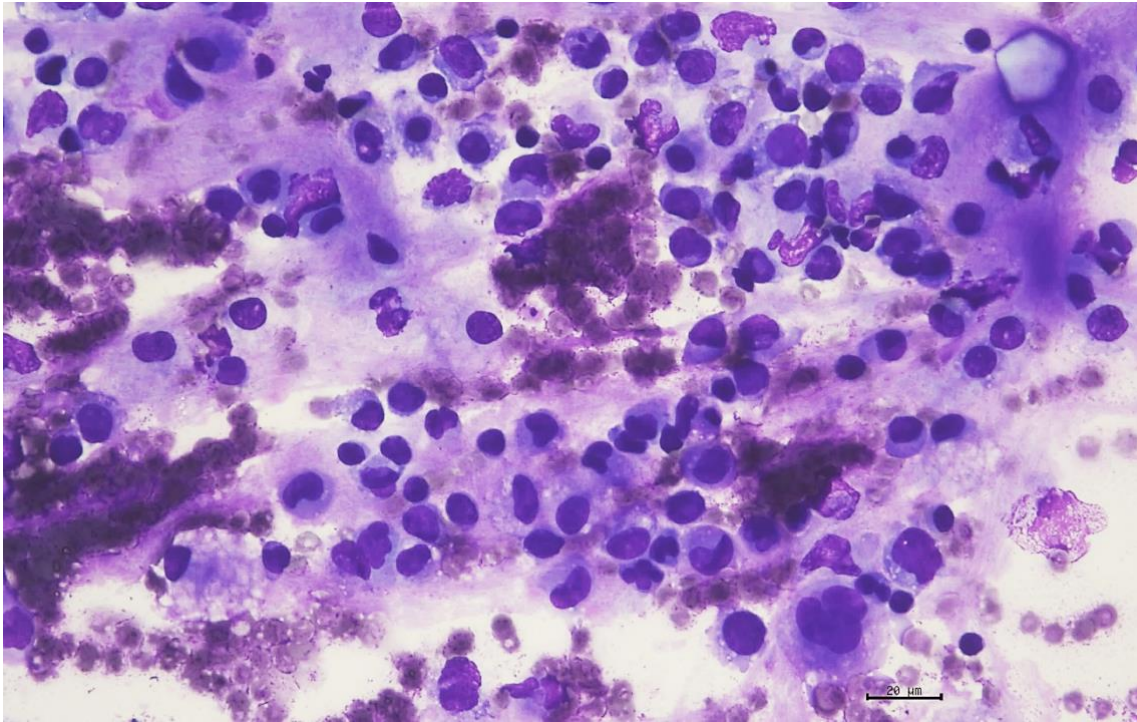


Figure 5 - Sediment smear of the synovial fluid collected from the left stifle. Hemacolor stain. 40x objective.

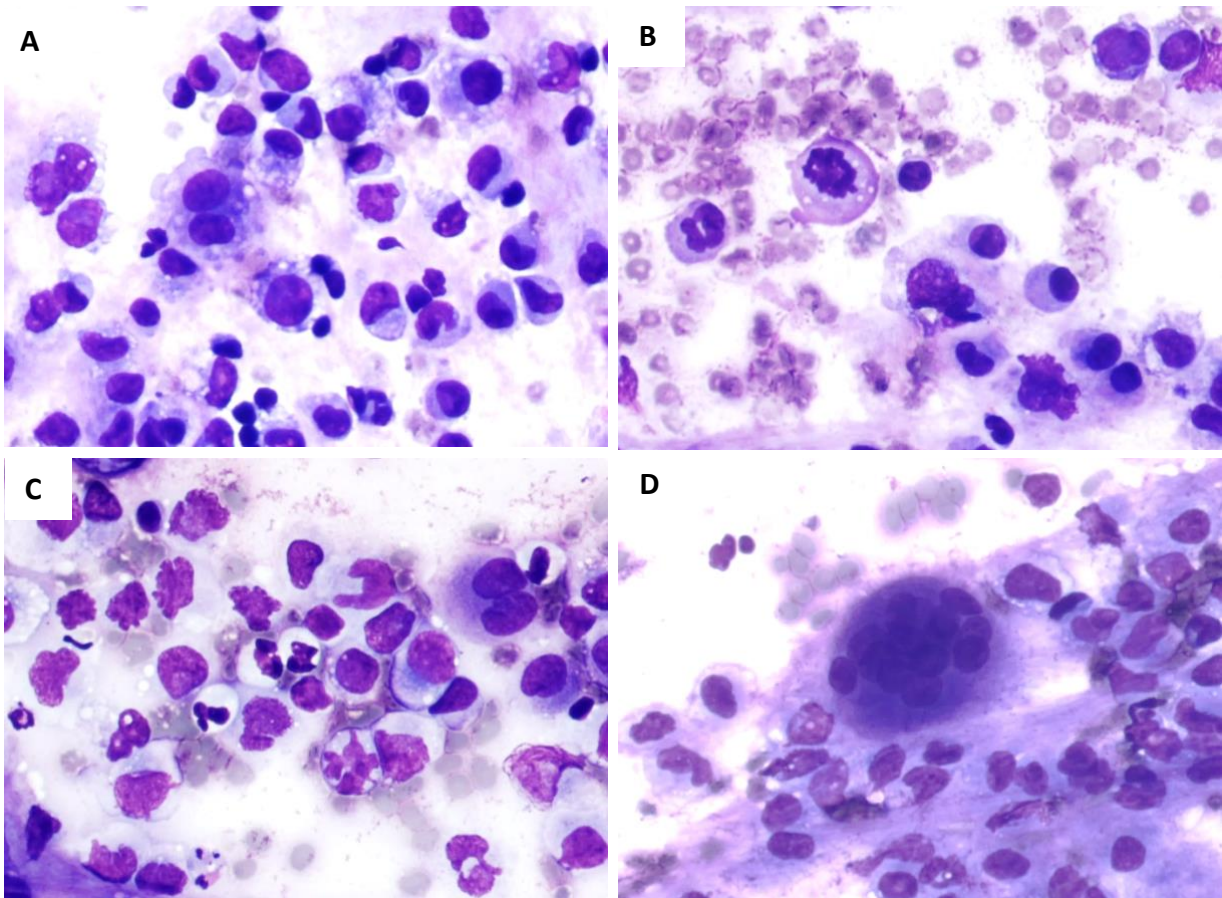


Figure 6 - Sediment smear of the synovial fluid collected from the left stifle. Hemacolor stain. 40x objective.

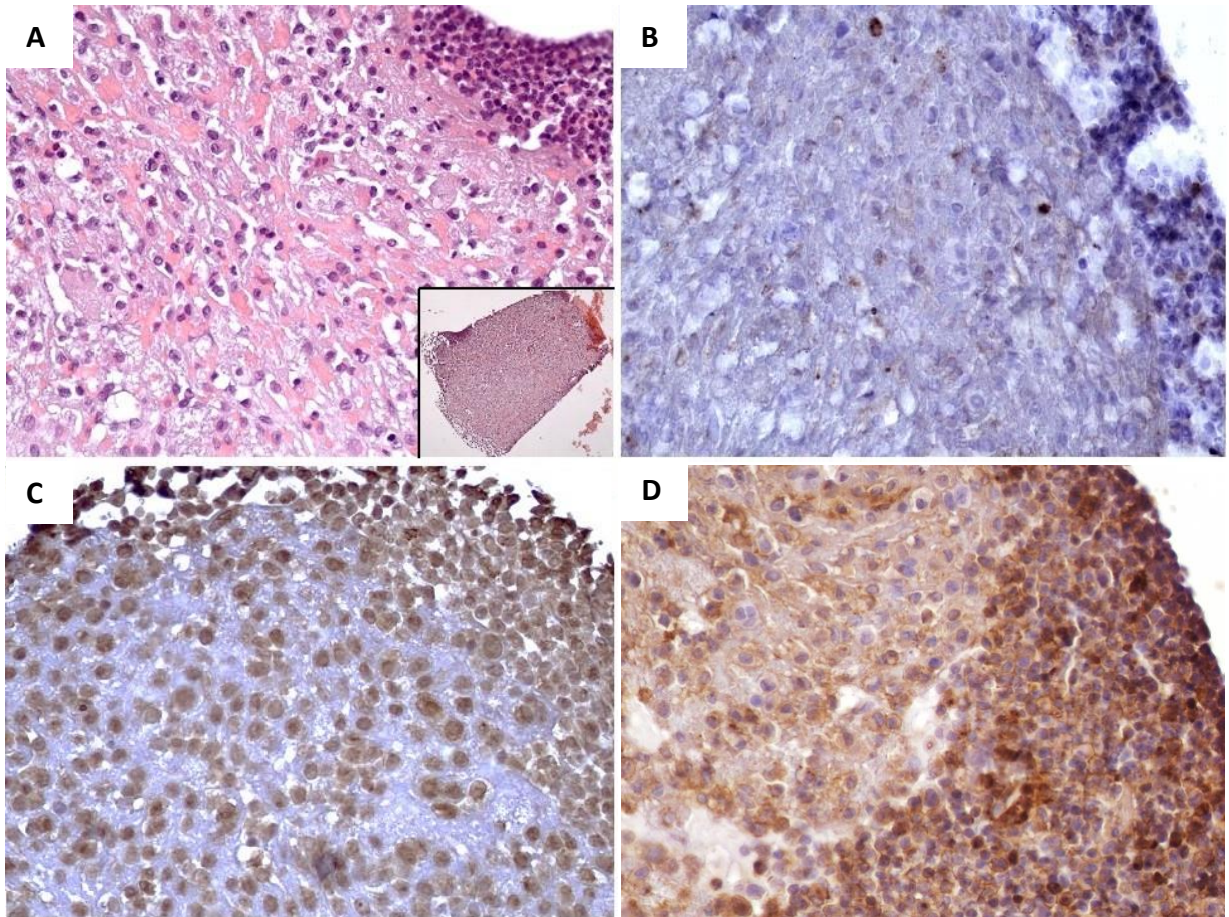


Figure 7 - Cell tube block of the synovial fluid. A: H&E stain (*inset*; whole section of the cell tube block, showing that nucleated cells are separated from the blood elements); B-D: Immunohistochemistry for pan-cytokeratins (AE1/AE3), vimentin and CD18, respectively; Diaminobenzidine chromogen, Haematoxylin counterstain. 40x objective.