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Background

Focal reactive fibroplasia (nodular fasciitis) is a proliferative mesenchymal tumor-like lesion [7]. Focal Reactive Fibroplasia (FRF) in humans has often been referred to as 'pseudosarcomatous' proliferation [4,5] with a rapid proliferation of myofibroblastic cells, which develops at the expense of a muscular fascia in the subcutaneous tissue [3]. Unless there may be a history of trauma to the area, FRF involving subcutis and/or deep dermis may induce a nodular mass suspect for a neoplasm. Lesions are composed of bundles, fascicles or haphazardly arranged fibrocytes, fibroblasts and myofibroblasts admixed (or not) with variable numbers of lymphocytes and plasma cells [7]. Myofibroblasts are contractile, α -smooth muscle actin-positive cells with multiple roles in pathophysiological processes mediating for example wound contraction and their persistence in tissues is central in fibrosis development [9]. The periphery of the lesion is characterized by spiked margins [7]. Histologically, due to mitosis and infiltrative growth, the main differential diagnosis is with fibrosarcoma [7]. Cytologically, this reactive/reparative mesenchymal process may be easily confused with a sarcoma [1,6,8].

Objective

To outline the cytological and histological findings in two cases of canine FRF.

Material and Methods

Two young dogs were presented for a cutaneous nodule. In both cases fine needle aspirate (FNA) cytological specimens were obtained and stained with May-Grünwald-Giemsa (MGG). Excisional biopsy and histopathology examination were also performed.

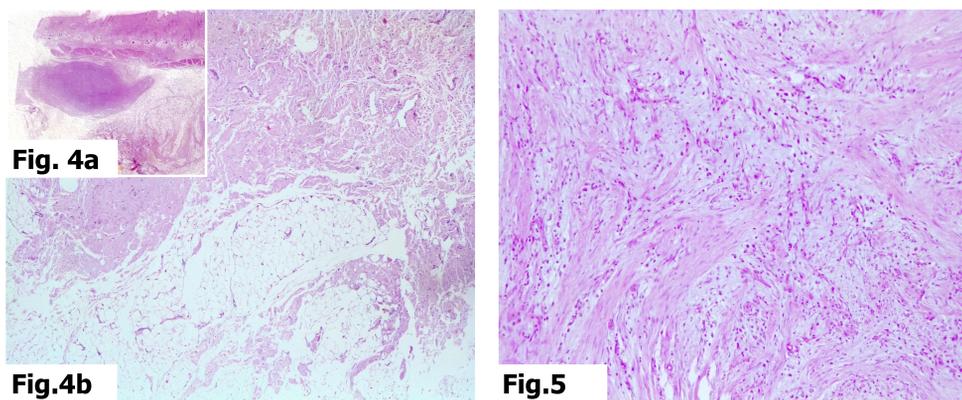


Figure legends. Fig. 4a: FCF, case #2. Typical nodular growth arising in the subcutaneous fascia. Fig. 4b: FCF, case #2. H&E, x100. Spiked margins infiltrating adipose tissue. Fig. 5: FCF case #2. H&E, x200. Bundles and fascicles of fibrocytes, fibroblasts, and myofibroblasts-like cells.

Results

In both cases, an initial false positive cytological diagnosis of sarcoma was made based on cellular atypia. Histological findings are reported in Table 1. Subsequently to the histologic diagnosis, the specimens were reviewed, and cytological findings are reported in Table 1. Histologically, the development in the subcutis, the attachment to the subcutaneous fascia, the relatively small size of the mass, the haphazard orientation of the spindle cells and spiked margins favoured the diagnosis of FRF. Cytologically, in both cases, myofibroblasts-like cells were present (Figure 1 and 2). Myofibroblast-like cells consistent in plump, spindle to stellate cells with round to oval nuclei, lacy chromatin and multiple, prominent nucleoli [2] (Figure 3).

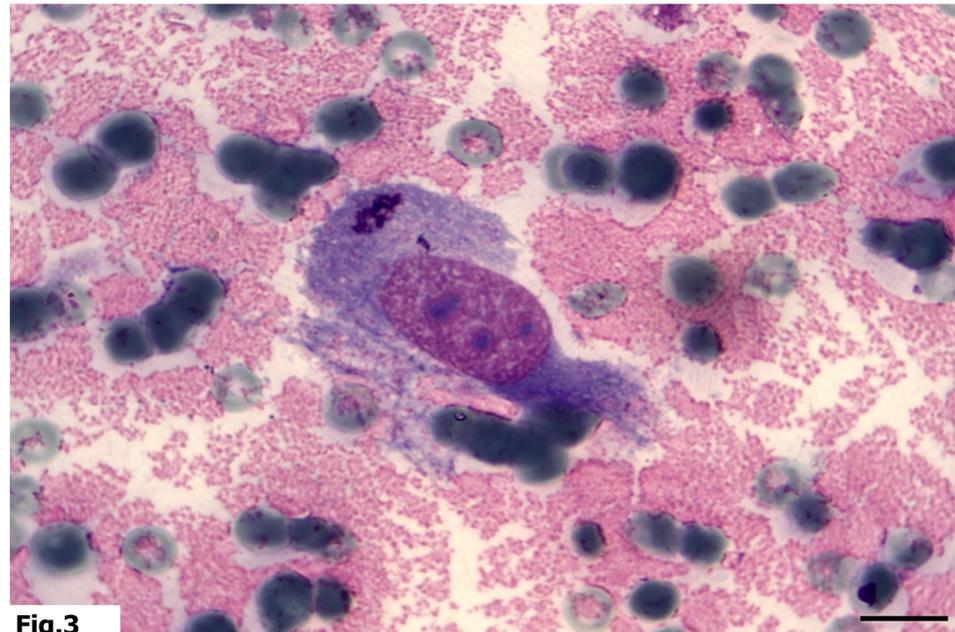
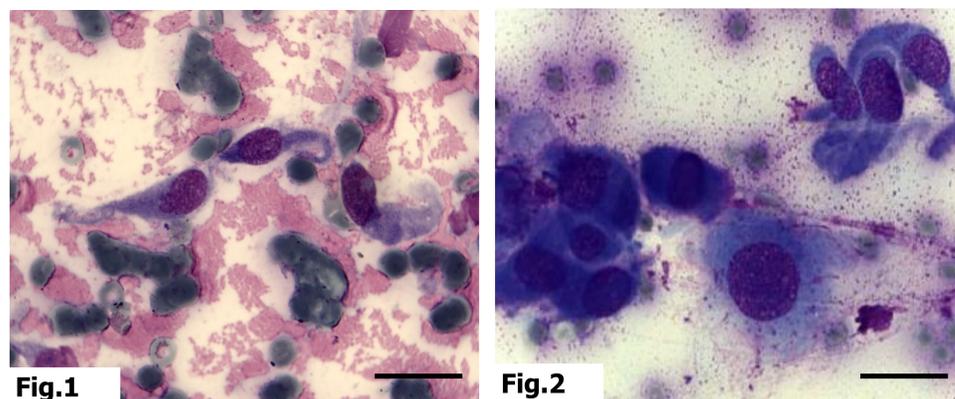


Figure legends. Fig. 1 and 2: FNA subcutaneous nodule case #1. MGG, Bar = 25 μ m. Moderate cellularity, mixed population with prevalence of myofibroblasts-like cells dispersed in myxoid stroma. Fig. 3: FNA subcutaneous nodule case #2. MGG, Bar = 15 μ m. Plump myofibroblasts-like cells with oval nucleus, lacy chromatin and small nucleoli.

Table 1: Cytological and histological findings of two cases of focal reactive fibroplasia (nodular fasciitis)

CASE	SIGNALMENT	REPORTED LOCATIONS	CYTOLOGICAL FEATURES	HISTOLOGICAL FEATURES
1	Dog, German Shepherd, Male, 6 yrs	Subcutaneous dorsal mass 1 cm diameter	<ul style="list-style-type: none"> Moderate cellularity Myxoid background and stromal fragments Dispersed or clusters of polymorphic (e.g. spindle-shaped, stellate) myofibroblasts-like cells Lack of significant hyperchromasia Inflammatory cells (small lymphocytes) Multinucleated cells 	<ul style="list-style-type: none"> Spiked margins Development in fascia Moderate quantity of collagen Fibroblasts Lack of significant hyperchromasia Inflammatory cells (small lymphocytes) Hemosiderophages
2	Dog, Doberman, Female, 2 yrs	Subcutaneous chest mass 2 cm diameter	<ul style="list-style-type: none"> Moderate cellularity Scant myxoid background Dispersed polymorphic myofibroblasts-like cells Lack of significant hyperchromasia Inflammatory cells (neutrophils) Binucleated cells 	<ul style="list-style-type: none"> Spiked margins (Figure 4) Development in fascia Moderate quantity of collagen Fibroblasts and myofibroblasts-like cells (Figure 5) Lack of significant hyperchromasia Inflammatory cells (neutrophils) Hemosiderophages

Conclusions

The key to the correct cytological diagnosis is the correlation of clinical information (relatively small size of the lesion, a history of trauma in a young dog) with the cytological findings. In particular, the presence of myofibroblasts-like cells and myxoid stroma. Similar to nodular fasciitis in human, simultaneously with lesion progression to healing, the myofibroblasts become fibroblasts with less cytoplasm, inconspicuous nucleoli and associated myxoid stroma collagenized [2]. Thus, the FNA cytological findings may dependent on the age of the lesion, because such reactive processes histologically change as they evolve through different developmental stages [4].

References

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