A Case of a Gingival Feline Sarcoid in a Young Cat

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Introduction:
Fibroblastic proliferations induced by papillomavirus are well documented in the skin of horses. A similar lesion is described in young cats, with a median age about 12 months. These neoplasms are mainly located in the skin of the head. This case describes an unusually extensive gingival fibroblastic proliferation of the upper jaw in a young cat.

Literature:
1. Schulmann F.Y. et al., 2001: Feline cutaneous fibropapillomas: clinicopathologic findings and association with papillomavirus infection. Vet Pathol 38, 291-6.
2. Teifke J.P. et al., 2003: Detection of papillomavirus-DNA in mesenchymal tumour cells and not in hyperplastic epithelium of feline sarcoids. Vet Dermatol 14, 47-56.

Acknowledgement
We thank Gabriele Czerwinski for excellent technical support.

Material and methods:
A 9-month-old, male, european short hair cat presented clinically an extensive neoplastic proliferation hiding all molars of the upper jaw (Fig. 1). The cat fed normally and showed a good general condition. The mass was surgically removed. Specimens for histology were fixed in 4% formaldehyde, routinely processed, embedded in paraffin wax, cut at 4 µm and stained hematoxylin-eosin (HE). Further examinations included Polymerase chain reaction (PCR) analysis and in situ hybridisation (ISH) to detect and localize bovine papillomavirus. In addition an imaging mass spectrometry (IMS) experiment was performed on formalin-fixed paraffin-embedded (FFPE) tissue sections (5 µm). IMS detects the in situ distribution of molecules based on their specific molecular weights. Peptide images were obtained by digesting and measuring sections with a matrix-assisted laser desorption/ionization time-of-flight mass spectrometer (MALDI-TOF MS).

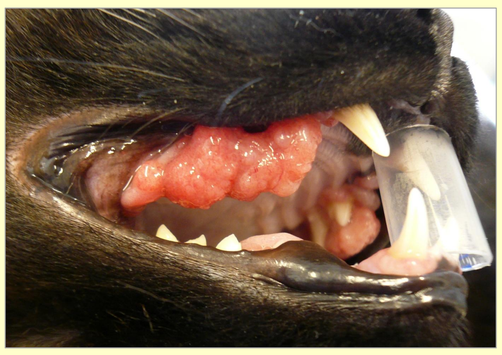

Fig. 1: Mouth of the cat. Extensive neoplastic proliferation hiding molars of the upper jaw.

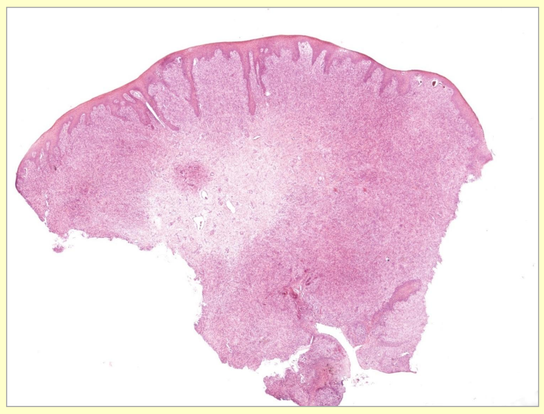

Fig. 2: Overwiew gingival mass. Note hyperplasia of mucosal epithelium and cell rich proliferation in submucosa, HE, 2x.

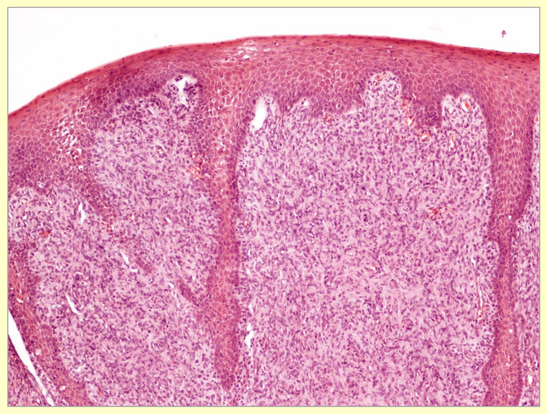

Fig. 3: Gingival mass. Dense spindle cell proliferation abut the mucosal epithelium which forms rete peg-like spikes, HE, 10x.

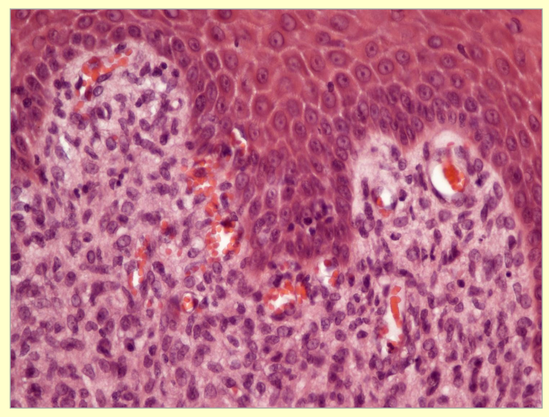

Fig. 4: Gingival mass. Haphazardly arranged spindle cells show inimate association with overlying epithelium, HE, 40x.

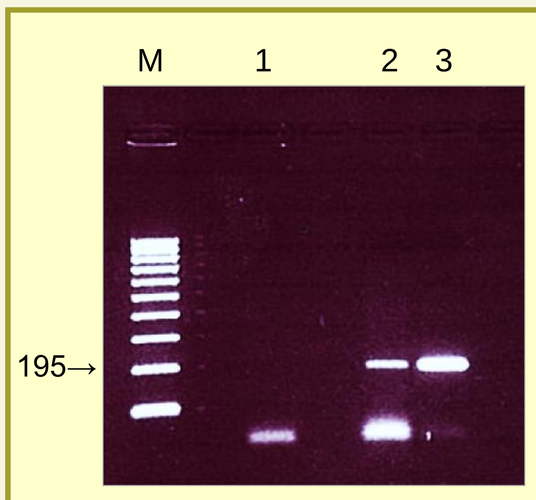

Fig. 5: Agarose gel electrophoresis. PCR of amplified BovPV-DNA for 195 bp. Lane 1 water, lane 2 tumour sample, lane 3 positive control bovine papillomavirus.

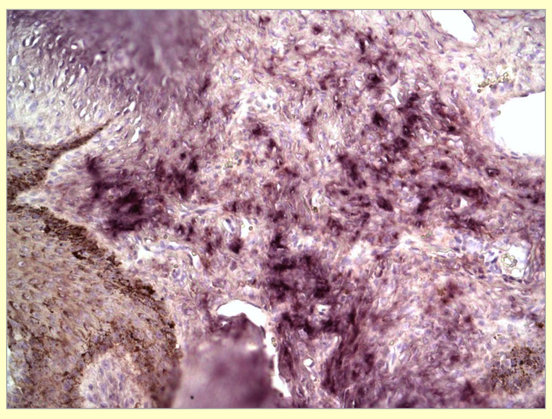

Fig. 6: In situ hybridisation. Nucleus associated hybridisation signals specific for BovPV- DNA in submucosal spindle cells, 10x.

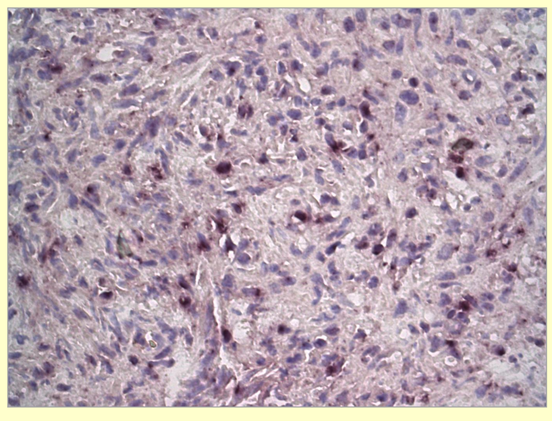

Fig. 7: In situ hybridisation. Higher magnification of nucleus associated hybridisation signals in submucosal tumour cells, 40x.

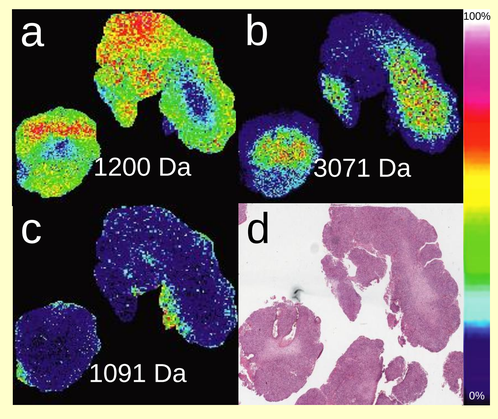

Fig. 8: IMS experiment with FFPE tissue sections. Spectra were recorded from spots at distances of 75 µm in a mass range of 700 to 3500 Dalton. a. Mass 1200 Da presumably corresponding to sarcoid cells. b. Mass 3071 Da is located within the stroma. c. Mass 1091 Da is confined to the epithelium. d. H.E. stain. The intensity scale, on the right, maps the maximum peak intensity of a mass from black (0 %) to white (100 %).

Results:
Histopathology revealed a nonencapsulated, poorly demarcated neoplastic mass composed of spindle cells arranged in whorls which abut upon the hyperplastic mucosal epithelium. The overlying mucosa was hyperplastic with rete ridges formation (Fig. 2, 3, 4). Bovine Papillomavirus was detected by PCR and located by in situ hybridisation within neoplastic spindle cells (Fig. 5, 6, 7). The IMS experiments indicated 3 masses (1220 Da, 3071 Da and 1091 Da) with region specific distribution. These masses were consistently detected within the feline sarcoid investigated (Fig. 8). These results were also reproducible with samples of two additional cutaneous feline sarcoids (data not shown).

Discussion:
On base of pathohistological features, PCR and ISH results a feline sarcoid was diagnosed. Other inflammatory or neoplastic lesions were excluded by pathohistological examination. The cat showed a relapse 4 months after first surgical removement. The recurrent tumour will be surgically excised again and an autovaccine treatment will be initiated.
The presumed sarcoid-cell specific mass, 1200 Da, should be verified in further IMS experiments of additional feline sarcoids. Further molecular identification is needed to get insights into its provenience and pathogenetic function.

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