MORPHOLOGICAL CHANGES IN *BOMBYX MORI* SILK GLAND AND GUT, IN ASSOCIATION WITH THE FEEDING OF IRON OXIDE NANOPARTICLES

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Introduction: The *Bombyx mori* silkworm is very important economically and is a model for several studies. The larval life of silkworms is divided into five instars. The 5th instar is the longest, where the larvae show maximum food consumption and growth. The silk is produced in a paired gland composed of glandular epithelium and a lumen. Food digestion occurs in the midgut, represented by a folded columnar monolayered epithelium, which includes goblet cells and stem cells in a basal lamina. We aimed to investigate the influence of concentrations of iron oxide nanoparticles (IONPs) in food on the silk gland and midgut morphology.

Materials and Methods: *B. mori* were fed daily with diets containing 0.3 wt%, 1.5 wt% and 3 wt% IONPs. The animals were fixed in 10% neutral buffered formalin and stained with haematoxylin and eosin, Prussian blue and periodic acid–Schiff.

Results: The group fed with 0.3 wt% IONPs showed normal silk gland with protein-filled lumina; the groups with 1.5 wt% and 3 wt% IONPs showed increased intercellular epithelial spaces, eosinophilic granular cytoplasm and heterogeneous secretion into lumina. The midgut also revealed morphological alterations: the group with 0.3 wt% IONPs had denser content of goblet cells and loss of nuclear polarity; the group with 1.5 wt% IONPs showed pseudostratified epithelium and loss of goblet cells; the group with 3 wt% IONPs had irregular distribution of epithelial cells, apoptosis and increasing intercellular spaces.

Discussion: IONPs lead to morphological alterations and in higher concentrations severely damage the silk gland and midgut structures of the silkworms.

DIAGNOSTIC CHALLENGE – POORLY DIFFERENTIATED, MALIGNANT INTRAVENTRICULAR NEOPLASIA IN A YORKSHIRE TERRIER

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Introduction: Canine intraventricular tumours can occur as primary central nervous system (CNS) tumours or secondary neoplasms. Here we report a diagnostically challenging case of an intraventricular neoplasm in a dog.

Materials and Methods: An 8-year-old male Yorkshire terrier was admitted with a 1-week history of progressive vestibular signs. Ultimately, the dog was humanely destroyed due to poor prognosis. Neurological examination, magnetic resonance imaging (MRI), as well as full necropsy examination, histopathology and immunohistochemistry (IHC) were performed.

Results: Neurological examination showed clinical signs compatible with central vestibular localization. MRI revealed multifocal, choroid plexus-associated masses in all four ventricles with a mild mass effect on the brainstem and cerebellum. At necropsy examination, neoplastic growths were exclusively located in the ventricular spaces. Histologically, a monomorphic, densely cellular round cell tumour, infiltrating the adjacent white matter, was observed. Single cell necrosis and a few haemorrhages were noted. Immunohistochemically, the neoplastic cells partially expressed microtubule-associated protein 2 (MAP2) and labelled intensely positive for neuron-specific enolase (NSE). Ki67 labelling index was high (up to 20% of cells).The cells were negative for CD3, CD79a, melan A, PNL2, GFAP, pan-cytokeratin, S100 protein, neurofilament, NeuN, CNPase, EMA and synaptophysin.

Discussion: Clinical examination and MRI initially suggested an inflammatory process, while histopathology and IHC revealed a high-grade malignancy, possibly of poorly differentiated neuroectodermal origin. Initial differential diagnoses for this case of a plexus-associated neoplasm included primary CNS tumours (e.g. ependymoma, meningioma or choroid plexus neoplasia) and secondary neoplasms (e.g. lymphoma, melanoma), but these were ruled out by IHC.