FACTORS CONTRIBUTING TO AXONOPATHY AND AXONAL REGENERATION IN CANINE DISTEMPER LEUCOENCEPHALITIS

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Introduction: While demyelination in canine distemper leucoencephalitis (DL) has been explored extensively in order to serve as a spontaneous virally-induced animal model for human demyelinating diseases, aspects of axonal pathology during DL still need to be investigated. The role of axonal cytoskeletal alterations, axonal transport mechanisms and possible attempts at spontaneous axonal regeneration remain uninvestigated.

Materials and Methods: Formalin-fixed and paraffin wax-embedded cerebellar sections from healthy controls and dogs with different stages of DL were investigated morphologically and immunohistochemically using antibodies specific for phosphorylated and non-phosphorylated neurofilament (pNF, nNF), alpha-acetylated tubulin, β-tubulin III, dynein, kinesin and tau for quantification of axonal transport deficiencies. Furthermore, antibodies specific for growth-associated protein (GAP) 43, erythropoietin (EPO), EPO-receptor (R), hypoxia-inducible factor (HIF), LINGO-1 and Nogo-A, were used to detect molecules involved in axonal outgrowth and its inhibition, respectively.

Results: Significantly decreased expression of neurofilaments, microtubules and motor proteins beginning in the early phase of the disease was evident. In parallel to Nogo-A and LINGO-1, expression of EPO and HIF were up-regulated in both the acute and subacute stages. EPO-R-expression, in contrast, was decreased within the lesions. GAP43 was not expressed.

Conclusions: Persisting axonopathy during DL is characterized by an early onset of axonal cytoskeletal disturbances and altered axonal transport mechanisms. Thus, it may serve as a triggering mechanism for subsequent secondary demyelination and possibly impairs spontaneous regeneration.

OUTBREAK OF BOVINE MASTITIS CAUSED BY *MYCOPLASMA BOVIS* IN SICILY

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Introduction: *Mycoplasma bovis* has a major role in respiratory disease, but is also considered a cause of mastitis in dairy cows. This study describes an outbreak of *M. bovis* mastitis in a herd of dairy cattle in Sicily.

Materials and Methods: Laboratory investigations were carried out on milk collected from all mammary quarters of each cow. Udders and supramammary lymph nodes were collected from slaughtered animals. Tissues were processed with routine histological staining. Immunohistochemistry was performed on tissues for markers including CD3, CD79, MHC-II and S100.

Results: Mycoplasmas were seen in cultures of milk from affected cattle identified later by PCR as *M. bovis*. The identity of the isolates was confirmed by PCR/DGGE at the AHVLA (UK). Gross findings showed multifocal to coalescent grey–red areas of parenchymal contraction, mostly involving single lobules or groups of lobules. Histologically, the interstitium was fibrotic and expanded by a diffuse lymphocytic infiltration. Scant catarrhal exudate including macrophages, lymphocytes and plasma cells was observed within the alveolar lumina.

Conclusions: In the EU, *M. bovis* has been associated with a variety of diseases including pneumonia, arthritis and conjunctivitis, but is only rarely reported as a cause of mastitis, even less so in Southern Italy. The authors underline the risk of importation of dairy cows from infected countries.

DETECTION OF BOVINE PAPILLOMAVIRUS AND EFFICACY OF TREATMENT USING SAPONIN

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Introduction: Papillomas of teats and udders in cows may cause skin lesions, thelitis, mastitis and poor milking, resulting in economic losses. We describe an outbreak of bovine papillomavirus (BPV) and successful treatment with a purified extract of *Quillaja saponaria* bark (Quil-A).

Materials and Methods: Twenty cows showed classic lesions of papillomatosis of the neck, teats and udder. Diagnosis was based on clinical signs, histopathology, immunohistochemistry, polymerase chain reaction (PCR) and detection of the BPV by transmission electron microscopy. All affected cows were treated with 5 ml of Quil-A (200 μg/ml) injected subcutaneously daily for 7 days. Immunohistochemistry for CD3, Ki67, MHC-II, cytokeratin and vimentin were performed on samples collected before and after treatment with Quil-A.

Results: The lesions were characterized by epithelial hyperplasia, acanthosis, hyperkeratosis and fibroplasia of the underlying dermis. BPV was found in the epidermis by immunohistochemistry. BPV-specific DNA was also detected by PCR. $CD3^+$ lymphocytes were present in the epidermis and particularly in the dermis. Sixteen of the 20 Quil-A-treated cows showed visible regression of cutaneous lesions.

Conclusions: The immune response of cattle to BPV is poor. In the present outbreak, we believe that papilloma regression was stimulated by the subcutaneous inoculation of Quil-A, which induced a Th1 immune response and production of cytotoxic T lymphocytes against virus, leading to a satisfactory outcome.

HISTOPATHOLOGICAL AND IMMUNOHISTOCHEMICAL STUDIES OF LESIONS INDUCED BY *MYCOPLASMA MYCOIDES* SUBSPECIES *CAPRI* IN GOATS

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Introduction: *Mycoplasma mycoides* subsp. *capri (M. m. capri)* has been reported to cause caprine mastitis, pleuropneumonia, polyarthritis and septicaemia. We report three severe outbreaks of disease in goat herds caused by *M. m. capri*.

Materials and Methods: Post-mortem examination was carried out on kids that had presented with severe polyarthritis and respiratory disease. Joint fluid, conjunctival swabs, nasal swabs and milk were cultured according to standard procedures followed by biochemical tests and PCR. Tissue samples were taken for histological and immunohistochemical examination. Cells in tissue expressing *M. m. capri* antigen, MHC-II, S100, CD3 and CD79 lymphocytes were determined by immunohistochemistry.

Results: Culture revealed the presence of typical 'fried egg' colonies. Further biochemical and molecular biological tests confirmed *M. m. capri*. Histological lesions consisted of interstitial pneumonia and pericarditis, while joints were characterized by arthrosynovitis with serofibrinous exudate and infiltration of $S100^+$ dendritic cells, $MHC\text{-}II^+$ cells and $CD3^+$ lymphocytes into the synovial capsule and periarticular tissues. The lymph nodes showed a reactive hyperplastic lymphadenitis. Immunohistochemical investigations showed the presence of *M. m. capri* in lungs and joints.

Conclusions: These results further contribute to characterization of the lesions and local immune response against *M. m. capri in kids*.