EQUINE MULTINODULAR PULMONARY FIBROSIS: THE ROLE OF EHV-5 IN THE PATHOGENESIS OF AN EMERGING DISEASE

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Introduction: Equine multinodular pulmonary fibrosis (EMPF) is a recently described condition characterized by loss of functional pulmonary parenchyma due to extensive nodular to coalescing interstitial fibrosis. A strong association with equid herpesvirus 5 (EHV-5) has been established; however, the pathogenesis of the condition remains unclear.

Materials and Methods: A retrospective study of formalin-fixed, paraffin wax-embedded tissues from cases of EMPF from Europe and the USA was performed. The presence of EHV-5 DNA within lesions was demonstrated using RNA in-situ hybridization, and immunohistochemistry and electron microscopy were used to characterize the infected cells.

Results: Cases of EMPF were characterized histologically by multifocal to coalescing interstitial pulmonary fibrosis, with remaining alveoli lined by cuboidal epithelium (type II pneumocyte hyperplasia) and filled with inflammatory cells. EHV-5 antigen was identified within both type II pneumocytes and macrophages.

Conclusions: EHV-5 (a gammaherpesvirus; γHV) has been isolated from both healthy horses and those with respiratory signs, at highly variable rates. γHV in other species have an association with pulmonary fibrosis and repeated injury of type II pneumocytes and macrophages leads to production of transforming growth factor (TGF)-β, which induces fibrosis (e.g. Epstein-Barr virus in human idiopathic pulmonary fibrosis). Investigation of the role of TGF-β in EMPF is ongoing in order to further characterize the pathogenesis of EHV-5 in this emerging disease.