CD8+/PERFORIN+/WC1- GAMMADELTA T, CD4+/PERFORIN- ALPHABETA T, AND B LYMPHOCYTES INFILTRATE VASCULITIS LESIONS OF AMERICAN BISON WITH EXPERIMENTALLY-INDUCED SHEEP-ASSOCIATED MALIGNANT CATARRHAL FEVER

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Sheep-associated malignant catarrhal fever (SA-MCF) caused by ovine herpesvirus-2 (OvHV-2) is a fatal disease associated with lymphoproliferation, lymphocytic vasculitis, and mucosal ulceration in susceptible species, and American bison (*Bison bison)* are particularly susceptible. The pathogenesis of MCF is poorly understood.

Six captive bison were infected by nasal aerosolization with OvHV-2. Leukocytes in vascular lesions were phenotyped by indirect polychromatic immunofluorescence on cryosections of urinary bladder, kidney, and liver. Vascular lesions were localized using von Willebrand's factor, an endothelial marker, and a single leukocyte marker (CD2, CD3, CD4, CD8α, CD25, CD79a, CD335/NKp46, WC1, CD14, calprotectin, or TCR1-N24 delta chain) determined which immune cell subtypes were consistently present. Concurrent detection of three lymphoid cell markers allowed further phenotyping.

CD8+/perforin+ gammadelta T cells, CD4+/perforin- alphabeta T cells, and B cells consistently infiltrated vascular lesions in the urinary bladder, kidney, and liver of all six bison. CD2+ cells labeled with either CD4 or delta chain, indicating that all cytotoxic lymphoid populations were identified. CD8+ alphabeta T cells, NK cells, macrophages, and WC1+ gammadelta T cell cells were not consistently identified.

Previously, detection of CD8+ cells in the vascular lesions of cattle and bison was interpreted as cytotoxic alphabeta T cells since WC1+ cells were not identified. However, this study identified CD8+/perforin+/WC1- gammadelta T cells and CD4+/perforin- alphabeta T cells within vascular lesions of bison. These cell types have the potential for cytotoxicity and/or regulatory function, and both may contribute to the pathogenesis of MCF.