Development of an Immunofluorescent Test to Detect Measles Virus Proteins and Transgenes in Clinical Samples from Patients Treated With Oncolytic Measles Virus Strains

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Oncolytic measles virus (MV) strains can be engineered to express therapeutic transgenes and are currently undergoing clinical trials for cancer treatment. Detecting MV infection in tumor tissues is also crucial for researchers in linking local oncolytic activity to clinical effectiveness; however, existing diagnostic tools are limited. This study developed an indirect immunofluorescent test (IFT) using monoclonal antibodies (MAbs) to detect MV proteins and Helicobacter pylori neutrophil-activating protein (NAP), an immunostimulatory transgene expressed by recombinant MV. MAbs targeting MV phosphoprotein, nucleoprotein, hemagglutinin, and NAP were tested in a dual-color labeling system using fluorescently conjugated secondary antibodies and fluorescence microscopy to allow visualization of MV replication in tissue samples. Optimal detection was achieved using anti-P and anti-NAP MAbs, which generated the highest fluorescence signals at 48 hours post-infection. Unlike alternative infection detection methods, the IFT provides direct visualization of MV replication and transgene expression patterns in fixed cell samples. Future studies may apply this assay to tumor samples from patients receiving oncolytic MV therapy to evaluate viral distribution and therapeutic efficacy.

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