Background. RSV is the most frequent etiology of pediatric lower respiratory tract infection. Most children hospitalized for RSV are previously healthy without known risk factors. Children with mild disease managed as outpatients (OP) have higher viral loads than those hospitalized with severe disease. OP children have higher concentrations of the monocyte interleukin (IFN), IFNγ/2, and IFN-γ, but no differences in IFNα1. We examined how RSV replication impacts cytokine production kinetics in the nasal mucosa.

Methods. Primary human nasal epithelial (hNE) cells were collected from nasopharyngeal swabs and cultured on an air-liquid interface. Cultures were infected with 0.1 or 0.001 multiplicity of infection (MOI) of RSV-A, or mock infected. Concentrations of IFN-related (IFNα2, IFNγ, IFN-γ, and IFN-α) and inflammatory (IL-1β, IL-6, and TNFα) cytokines secreted to the apical and basolateral surfaces were quantified using immunoassay. Kinetics according to viral inocula were compared to ANOVA with Dunn post-hoc testing of the area under the curve (AUC) for each cytokine. Peak concentrations were compared according to MOI and secretion surface by 2-way ANOVA.

Results. AUC of IFNα in both surfaces of RSV infected cells were significantly higher than those of mock infected. The 0.1 MOI RSV inoculum resulted in significantly higher AUCs for all INF cytokines on both surfaces than the 0.001 MOI. Peak IFNα concentrations were higher on the apical than basolateral side; peak IFNα2 concentrations were higher on the basolateral side than apical. AUCs of inflammatory cytokines in RSV infection were significantly higher on the basolateral, but not apical, surfaces than mock; all basolateral inflammatory cytokines were higher in the 0.1 MOI than the 0.001 MOI.

Conclusion. Higher RSV inoculum induces higher concentrations of IFN-related cytokines on both sides of epithelial cells, and higher concentrations of inflammatory cytokines on the basolateral side. Differential secretion of IFNα and IFNα2 to the apical and basolateral surfaces suggests they may play different roles in immune response during RSV infection. These data support viral replication as an important factor influencing RSV pathogenesis and severity through cytokine production.

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1187. Neurodevelopmental Outcomes of Children with Congenital Cytomegalovirus (cCMV) Infection: Does Antiviral Treatment Matter?

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Background. cCMV infection is a major contributor to childhood neurologic and cognitive disabilities including sensorineural hearing loss (SNHL). Neonatal treatment with ganciclovir/valganciclovir improves hearing outcomes, but its impact on neurodevelopmental outcomes is unknown. The purpose of this study was to classify functional motor impairment. Neurodevelopmental outcomes were compared to antenatal preventive strategies and vaccine development.

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