

781. Rhinovirus in Children Hospitalized with Community Acquired Pneumonia: Insights from the Centers for Disease Control and Prevention (CDC) Etiology of Pneumonia in the Community (EPIC) Study

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Background. Human rhinoviruses (HRV) are frequently detected in both children with respiratory symptoms and asymptomatic children. Thus, the relevance of HRV detection in children with pneumonia remains unclear. Some data suggest that HRV-C is associated with severe disease. We studied the association between HRV species and viral load among children hospitalized with radiographically-confirmed pneumonia and asymptomatic children (controls).

Methods. Molecular testing for HRV and 12 other respiratory viruses was performed on naso-/oro-pharyngeal swabs from children <18 years hospitalized with pneumonia (January 2010-June 2012) and a convenience sample of children without

pneumonia (February 2011-June 2012) enrolled at the Utah site of the CDC's EPIC study. HRV speciation was by amplifying and sequencing the VP4/VP2 regions of the HRV genome and comparing sequences to HRV strains in GenBank. HRV load (RNA copies/mL) was determined using standard curves from quantified HRV RNA transcripts normalized with human RNase P gene (specimen control).

Results. HRV detection was similar among children with pneumonia and controls, (166/853, 20% vs 38/226, 18%; p = 0.18). The majority of HRV detections were single detections, however co-detection with another respiratory virus was more frequent among children with pneumonia than controls (41% vs 11%; p < 0.01). HRV-C was more commonly detected in children with pneumonia than controls (Table). HRV viral load was significantly higher among children with pneumonia compared with controls (median 6.9 vs 5.9 log₁₀ copies/mL; p < 0.001). However, while median viral loads for HRV-B (7.0 vs 6.1 log₁₀ copies/mL; p = 0.5) and HRV-C (6.8 vs 6.4 log₁₀ copies/mL; p = 0.4) were similar in children with pneumonia compared with controls, HRV-A viral load was higher in children with pneumonia (7.0 vs 5.9 log₁₀ copies/mL; p < 0.001).

Conclusion. HRV was commonly detected among children with pneumonia and controls, though children with pneumonia had higher viral loads. HRV-C, but not other species, was associated with pneumonia. These data suggest that HRV species and viral load may play a role in the development of pneumonia in children.

	Children with pneumonia (n=166)	Asymptomatic children (n=38)	P
HRV-A	60 (36%)	19 (50%)	NS
HRV-B	13 (8%)	6 (16%)	NS
HRV-C	84 (51%)	9 (24%)	0.003
Non-typeable	9 (5%)	4 (10%)	NS

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