1327. Human Rhinovirus Infection in Multiple Myeloma Patients: Effect on Morbidity and Mortality

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Session: P-74. Respiratory Infections - Viral

Background. Human Rhinovirus (hRV) causes mild, primarily upper respiratory tract symptoms in immunocompetent hosts. However, in immunocompromised patients, it often progresses to a lower respiratory tract infection. Multiple myeloma (MM) patients are immunocompromised due to inherent immunodeficiency and exposure to biologic and chemotherapeutic agents. The complications of hRV infection in MM patients are not well known. In this study, we aim to identify the morbidity and mortality associated with hRV in MM patients.

Methods. This was a retrospective study, using Arkansas Clinical Registry Database, which identified all MM patients diagnosed with hRV infection by nasopharyngeal multiplex polymerase chain reaction (PCR) in January-December 2019. Duplicates within 30 days were excluded. Patients were followed for 30 days after diagnosis. We assessed the need for hospitalization, intensive care unit (ICU) admission, oxygen administration, mechanical ventilation, and death. We collected their absolute neutrophil (ANC) and lymphocyte count (ALC) within three days of diagnosis and complete influenza vaccination (2 doses).

Results. We identified 217 MM patients with hRV. Ninety (41%) had prior autologous stem cell transplant, 148 (68%) had received chemotherapy within 30 days. Ninety (41%) had chest imaging, with 11 (12%) having infiltrates. Out of the 217, 69 (32%) were admitted, with a mean length of stay of 3 days, 13% of the admitted patients were transferred to the ICU. 65.5% of the admitted patients needed oxygen, and two required mechanical ventilation. The mean ANC and ALC for the admitted group was 3.88 cells/μl and 1.22 cells/μl, respectively, compared to 3.57 cells/μl and 1.07 cells/μl in the outpatient group, p=<0.06 and 1. The participants died.

Conclusion. Human Rhinovirus infection in MM patients was associated with significant morbidity, including hospitalization, ICU care, supplemental oxygen requirements, and even mechanical ventilation in 2 patients. Death was observed within 30 days, although rarely. The mean ANC and ALC were not predictive of the severity of the disease. Recognizing hRV effects on morbidity and mortality could lead to earlier recognition and management of complications in MM patients.

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1328. Risk Factors for Severe Influenza Outcomes Among Infants Born Between 2011 and 2019

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Session: P-74. Respiratory Infections - Viral

Background. Influenza in infancy can cause significant morbidity and mortality. This study aimed to characterize influenza outcomes in infants <12 months and identify risk factors for severe infection.

Methods. A retrospective cohort of infants ≤ 12 months born between 2011-2019 who received longitudinal ambulatory and inpatient care within a multi-facility hospital system and had laboratory-confirmed influenza were included. Perinatal, medical and illness characteristics were described. Risk factors for severe influenza (hospitalization, intensive-care unit (ICU) admission, secondary bacterial infections) were analyzed using Chi-square analysis and multivariate logistic regression.

Results. Among 421 infants with influenza, 134 (32%) were < 6 months (m), 28 (6.5%) were born prematurely (< 35 weeks gestational age), and 41(10%) had chronic medical conditions (CMC). 62 (15%) required hospital admission, 13 (21%) of which required ICU care. No deaths were reported. Secondary bacterial infections were diagnosed in 101 (24%) including acute otitis media (84%), pneumonia (15%) and sinusitis (3%). Prematurity (OR 3.6, 95%CI:1.5-8.3), age < 6m (OR 3.4, 95%CI:2.4-5.0), and sinusitis (3%) were significantly associated with hospitalization. Prematurity, age < 6m, and CMC were also associated with ICU admission. Infants > 6m (OR 2, 95%CI:1.2-3.5) were more likely to be diagnosed with a secondary bacterial infection than younger infants. Among infants >6m, complete influenza vaccination (2 doses) was associated with lower rates of antibiotic use (OR 0.5, 95% CI:0.3-0.9) compared to partial or no vaccination, but did not significantly affect hospitalization, ICU admission, or frequency of secondary bacterial infections. Adjusting for prematurity, age < 6m remained associated with hospitalization (OR 4, 95%CI: 2.1-7.3) as did presence of CMC (OR 7.9, 95% CI: 3.3-15.7). For ICU admission, age < 6m (OR 6.3, 95%CI:1.6-24.1) and CMC (OR 9.7, 95%CI:4.9-19.7) were independent risk factors.

Conclusion. Younger age and chronic medical conditions were independent risk factors for severe influenza infection. Complete influenza vaccination in eligible age groups was associated with decreased antibiotic use.

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Background. The four common human coronavirus (HCoV) types, including two alpha (NL63 and 229E) and two beta (HKU1 and OC43) coronaviruses, generally cause mild, upper respiratory illness. Common HCoV re-infection increases rapidly during the first five years of life and remains high throughout adulthood. HCoVs are known to have seasonal patterns, with variation in predominant types each year, but more defined measures of seasonality are needed.

Methods. We describe laboratory detection, percent positivity, and seasonality of the four common HCoVs during July 2014 to May 2021 in the United States reported to the National Respiratory and Enteric Virus Surveillance System (NREVSS). We also describe age, sex, and co-detection with other respiratory viruses for a subset of specimens available through the Public Health Laboratory Interspecies Project (PHILIP). We used a method previously validated for respiratory syncytial virus, characterized by a centered 5-week moving average and normalization to peak, to define seasonal inflections, including season onset, peak, and offset.

Results. Any HCoV type was detected in 96,336 (3.4%) of 2,487,736 specimens available through the Public Health Laboratory Interspecies Project (PHILIP). Predominant common HCoV types fluctuated by surveillance year (Figure 1) and were generally consistent across geographic regions. In a subset of 4,576 specimens with a common HCoV detection, those with type 229E had a higher median age compared to other HCoV types (30.8 versus 24.8 years, p < 0.001), but there were no differences by sex. Influenza was the most commonly co-detected virus. In the last six complete HCoV seasons, onset ranged from October to November, peaks from January to February, and offset from April to June; >95% of all HCoV detections occurred within these ranges. The 2020-2021 common HCoV season onset, dominated by types NL63 and OC43, was delayed by approximately two months compared to prior seasons.