Respiratory Viral Infections in Patients with Hematologic Malignancies

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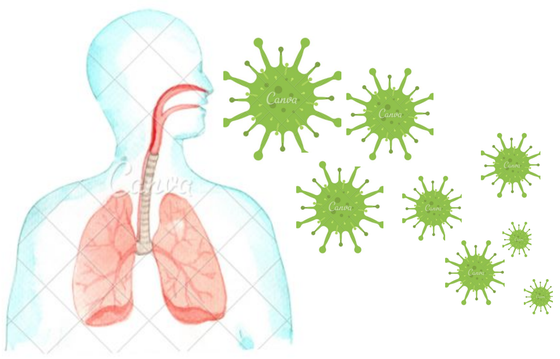
Background

- Community acquired-respiratory virus infections (CA-RVI) are an important cause of lower respiratory tract infection (LRTI) with increased risk of morbidity and mortality in patient with hematologic malignancies (HM).
- Data on respiratory viral infections other than Influenza and RSV in this population is still lacking.
- **Goal: analyze trends of CA-RVI in our HM population**



Methods

Study design:
- Retrospective cohort study
- Analyzed data from multiplex qPCR-based respiratory viral panel (RVP) samples from January 2016-May 2022
- Data collected +/- 30 days from RV diag.

Study population:
- Adult patients with HM with unique episode of CA-RVI
- Diagnosed with CA-RVI at University of Miami/Sylvester Comprehensive Cancer Center

Statistical analysis *(in progress)*
- Univariate/multivariate analysis to identify risk factors to develop LRTI and compared outcomes in patients with and without exposure to chemotherapy within 30 days prior to RVI

Virologic testing
- Nasopharyngeal and BAL specimens were tested using multiplex RT-PCR for the following respiratory viruses: Influenza A (including AH3/AH1200), Influenza B, Metapneumovirus (HMPV), Respiratory Syncytial Virus (RSV), Adenovirus, Non-SARS Coronavirus (CoV), Rhinovirus/Enterovirus (RHV/ENT), Parainfluenza (PIV 1-4)

Exclusion criteria
- Patients with concomitant stem cell transplantation
- Patients with concomitant CAR-T cell therapy
- Repeated episode of CA-RV in a singular patient

Results

Table 1. *Patient characteristics*

n= 104	
Age range (median)	23-92 (61) years
HM	**n (%)**
Non Hodgkin's Lymphoma (%)	32 (30.77%)
Acute Myelogenous Leukemia (%)	19 (18.27%)
Hodgkin's Lymphoma (%)	4 (3.85%)
Chronic Lymphocytic Leukemia (%)	7 (6.73%)
Acute Lymphoblastic Leukemia (%)	11 (10.58%)
DLBCL + Hodgkin's Lymphoma (%)	3 (2.88%)
Myelofibrosis (%)	3 (2.88%)
Aplastic Anemia (%)	2 (1.92%)
Multiple Myeloma (%)	10 (9.62%)
T cell Lymphoma/Leukemia (%)	4 (3.85%)
Chronic Myelogenous Leukemia (%)	1 (0.96%)
Myelodysplastic Syndrome (%)	5 (4.81%)
Others (%)	3 (2.88%)
RV (Etiology)	**n (%)**
RHV/ENT (%)	53 (50.96%)
PIV 1-4 (%)	6 (5.77%)
Influenza A/B (%)	17 (16.35%)
RSV A-B (%)	15 (14.42%)
ADV (%)	2 (1.92%)
CoV (%) - *Non SARS-CoV 2*	7 (6.73%)
HMPV (%)	3 (2.88%)

Other population characteristics	**n (%)**
Disease status at time of RV diagnosis	
Remission (complete/partial) (%)	28 (26.92%)
Refractory/Relapsed (%)	38 (36.54%)
Other/Not reported (%)	38 (36.54%)
Immunosuppressive agents	
Chemotherapy within 30 days (%)	80 (76.92%)
Corticosteroids within 30 days (%)	36 (36.62%)
Setting of diagnosis	
Community-acquired (%)	75 (72.12%)
Hospital-acquired (%)	29 (27.88%)
Source of PCR	
Nasal (%)	97 (93.27%)
BAL (%)	7 (6.73%)

Table 2. *Patient outcomes /* ***Table 3****. LRTI risk factors*

Outcomes	**Total**	**Exposure to chemotherapy** *(n=80)*	**No exposure to chemotherapy** *(n=24)*
LRTI (%)	31/84 (36.90%)	24 (30%)	7 (29.17%)
Requiring hospital admission within 7 days of RV diagnosis (%)	37/75 (49.33%)	28 (35%)	9 (37.5%)
Admission to ICU with respiratory failure (%)	7/37 (18.92%)	5 (6.25%)	2 (28.57%)
Requiring mec. vent. (%)	4/7 (57.14%)	3 (3.75%)	1 (14.28%)
All-cause mortality at 30 days (%)	5 (4.81%)	4 (5%)	1 (14.28%)
Risk Factors	**LRTI** *(n=31/84)*	**No LRTI** *(n=53/84)*	
Age median (range)	61 (23-92)	61 (24-82)	
Disease status RV diagn.			
Remission (c/p)	7 (22.58%)	5 (9.43%)	
Refractory/Relapsed	17 (54.84%)	3 (5.66%)	
ANC (<500 10^3 cells/uL)	12 (38.71%)	2 (3.77%)	
ALC (<1000 10^3 cells/uL)	20 (6.45%)	10 (18.87%)	
IgG (<500 mg/dL)	7/24 (29.17%)	1/2 (50%)	

Conclusions

- Symptomatic CA-RVI are a common cause of LRTI in patients with HM (36.90%)
- Remains unclear if exposure to chemotherapeutic agents within 30 days prior to RV diagnosis is associated with less favorable outcomes.
- CA-RVI showed relatively low 30-day mortality even in this vulnerable population (4.80%)
- Larger studies are needed to further characterize outcomes in patients with CA-RVI and HM.

References

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