The Burden of Respiratory Viral Illness in HIV - Infected Patients

Subhashini A. Sellers[1], Kenton L. Dover[2], David A. Wohl[3], Melissa B. Miller[4], Dirk P. Dittmer[5], William A. Fischer[1]

[1]Division of Pulmonary and Critical Care, University of North Carolina, Chapel Hill, NC; [2]Department of Medicine, University of North Carolina, Chapel Hill, NC; [3]Division of Infectious Diseases, University of North Carolina, Chapel Hill, NC; [4]Department of Pathology and Laboratory Medicine, University of North Carolina, Chapel Hill, NC; [5]Department of Microbiology and Immunology, University of North Carolina, Chapel Hill, NC

UNC SCHOOL OF MEDICINE Pulmonary and Critical Care

BACKGROUND

- Pulmonary infectious diseases are a leading cause of morbidity and mortality in HIV-infected patients
- Bacterial and fungal infections have been well-characterized
- The role of respiratory viruses remains poorly understood
- Data emerging from primarily resource-constrained environments demonstrate increased rates of hospitalization, longer length of stay and greater mortality due to viral infection in HIV-infected patients compared to uninfected

OBJECTIVE

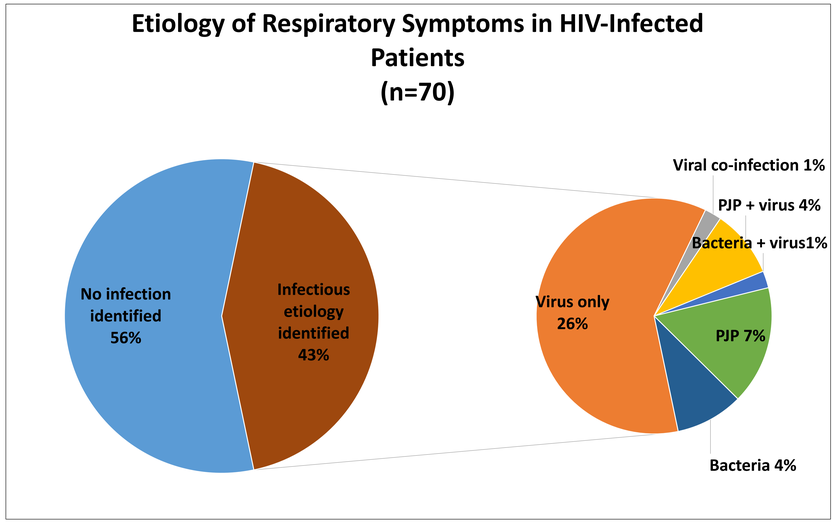
To characterize the burden of respiratory viral illness in HIV-infected patients admitted to our tertiary care center

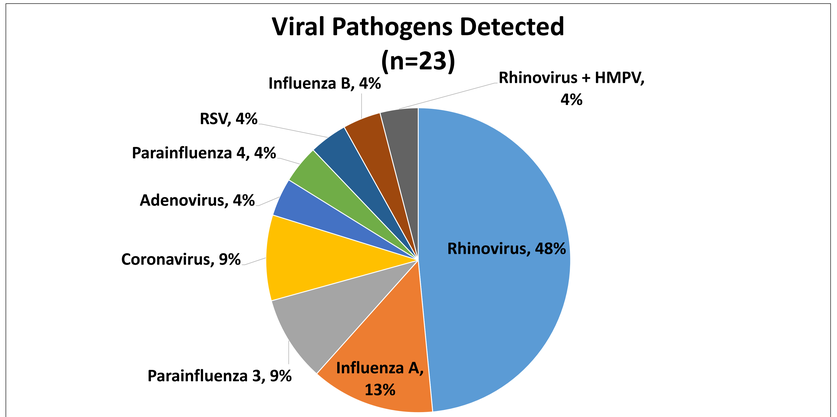
METHODS

- 80 HIV-infected patients admitted between 8/2015 and 3/2018 with a respiratory complaint (cough, dyspnea, rhinorrhea, sore throat, wheezing or stridor) were enrolled; 70 have undergone complete analysis thus far
- Nasopharyngeal swabs were collected
- Excess bronchoalveolar lavage (BAL) fluid was collected if the patient underwent a clinically indicated bronchoscopy
- Multiplex PCR testing was performed on all respiratory samples to identify 11 respiratory viruses
  - Adenovirus, influenza A, influenza B, human metapneumovirus, parainfluenza 1-4, respiratory syncytial virus, rhinovirus, and coronavirus
- Demographic data and clinical information on presentation and outcomes was recorded for each subject based on chart review

Questions/comments: Please contact Subhashini.sellers@unchealth.unc.edu

RESULTS





Characteristic	Total subjects (n=70)	Subjects positive for a respiratory virus (n=23)	Subjects negative for a respiratory virus (n=47)
Male sex	44 (63%)	13 (56%)	31 (66%)
Age, mean	49	51	48
BMI, mean (range)	26.3	28.7	25.2
Influenza vaccination received in last season	31 (44%)	10 (43%)	21 (45%)
Current smoker	27 (39%)	13 (57%)	14 (30%)
On ART	49 (70%)	16 (70%)	33 (70%)
CD4 count, mean (cells/uL)	262	337	225
HIV viral load, mean (copies/mL)	60,385	80,377	50,389

RESULTS

Outcome	Total subjects (n=70)	Subjects positive for a respiratory virus (n=23)	Subjects negative for a respiratory virus (n=47)
ICU required	28 (40%)	10 (44%)	18 (38%)
Mechanical ventilation	16 (23%)	5 (22%)	11 (23%)
Mean number of days	7.9	10.4	6.7
Vasopressors required	8 (11%)	3 (13%)	5 (11%)
Mean number of days	10.6	15.3	7.8
Discharged to higher level of care	8 (11%)	4 (18%)	4 (9%)
Death	7 (10%)	3 (13%)	4 (9%)
Length of stay, mean days	11.5	14.1	10.2

LIMITATIONS

- Single academic center
- PCR-based diagnostics are primer-dependent
- No comparison to HIV-uninfected cohort

CONCLUSIONS

- Respiratory viruses represent a substantial disease burden and demonstrate significant disease severity in HIV-infected individuals
- Expanded respiratory viral testing should be considered routinely in all patients with HIV infection, as three patients had a respiratory virus that was not detected at the time of hospitalization, but only identified during research testing
- The low influenza vaccination rate among enrolled patients (45%) highlight an opportunity to improve HIV care such as increasing influenza vaccination
- The mechanisms underlying the predisposition of HIV-infected individuals to respiratory viral infection is unclear as most patients were on ART
- These findings suggest the need for future studies to better understand the effect of HIV on the antiviral defense against respiratory viral infection

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