Respiratory Syncytial Virus Outbreak in a Veterans Affairs Long-term Care Facility


Background: Respiratory syncytial virus (RSV) is increasingly becoming an important cause of respiratory infections in adults, especially those living in long-term care facilities (LTCFs). Seasonal outbreaks peaking from October to April are common. We report an outbreak of RSV involving 2 LTCFs with total capacity of 80 beds in 2019.

Methods: Retrospective chart review of cases identified with positive RSV infection via DNA polymerase chain reaction (PCR) from January 24 to February 24, 2019, at 2 LTCF units, in close proximity to each other, at Northport Affairs Medical Center.

Results: Twenty veterans (18 men and 2 women) tested positive for RSV by rapid PCR. The median age was 73 (47–89) years, 85% are Caucasian, and 5 patients had temperature of greater than 100°F (100°F–102.4°F). All had rhinorrhea and 65% had cough. Medical history shows 45% with dementia, 30% with stroke, and 35% with diabetes; 2 patients on hemodialysis; and 2 patients with chronic obstructive pulmonary disease (COPD). Four patients required hospitalization, and 2 of them required admission to intensive care unit. Length of stay ranged from 1 to 9 days. One patient with COPD required mechanical ventilation. One patient with computed tomography finding of airway impaction had antibiotics stopped by infectious diseases consult, yet he developed Clostridium difficile diarrhea. No deaths were observed, and all patients recovered. Aggressive infection control measures were implemented.

Conclusions: Respiratory syncytial virus is highly infectious and can easily cause an outbreak in an LTCF. Polymerase chain reaction testing was contributory to identify cases rapidly. Rapid PCR results and intensified infection control measures were instrumental to halt the outbreak.

Key Words: respiratory syncytial virus, veterans, long-term care facility, polymerase chain reaction testing

Infectious Diseases in Clinical Practice • Volume 00, Number 00, Month 2020 www.infectdis.com

Copyright © 2020 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.
precautions (use of gloves/gowns) for all health care personnel assigned to each suspected or confirmed RSV case. A geographic and staff cohort was enforced, where RSV-infected patients were relocated to either private rooms or grouped in double occupancy rooms. Floating of staff was discouraged, and ill employees were requested to stay home. New admissions to CLC1/2 and group activities were temporarily halted. Visitors were required to wear masks, and infection control nurses provided education to patients and family members regarding this outbreak to ensure compliance with infection control measures.

RESULTS

Between January 24 and February 24, 2019, 20 veterans (18 men and 2 women) tested positive for RSV, and 22 tested negative. Figure 1 shows the positive and negative RSV tests in February. Figure 2 depicts the bed outline of CLC 1 and CLC 2 during the outbreak.
We investigated an outbreak of RSV respiratory viral infections in veterans living in 2 CLCs that exist in close proximity to each other. The first case of RSV was noted in January 24. New cases were identified on Saturday, February 9, with 5 new cases seen over the weekend. The incubation period for naturally occurring RSV infection is typically 2 to 8 days. By closely reviewing Figure 2, the epidemiologic analysis of this outbreak likely suggests propagated spread of RSV between patients and health care workers via exposure to symptomatic individuals and possibly to those who were asymptomatic carriers. Birger et al9 described an outbreak of RSV in a nursing home where pneumonia occurred in 55% of the affected patient, whereas Osterweil and Norman11 reported only 5% of pneumonia in their outbreak. Pneumonia, nevertheless, is the second most common cause of infection among nursing home residents, especially those with COPD and heart failure.32 In our cohort of RSV cases, COPD and heart failure were present in 10% and 15%, respectively; the case of pneumonia was observed in a patient with COPD who required mechanical ventilation. One limitation of our investigation is that no nasopharyngeal swabs were performed for health care workers with mild symptoms or no symptoms and without fever. Such workers could have chosen to continue working, thus spreading the infection in the units. Russell et al13 provided a thorough review on the human immune response to RSV infection: natural infection to RSV results in incomplete immunity allowing for recurrent infections in adults especially the elderly; however, RSV immunoglobulin G and immunoglobulin A antibodies, if they persist, are protective. It is possible that some of our residents had immunity, so they did not acquire the virus; however, we did not obtain RSV antibodies in our cohort.

In conclusion, RSV is currently considered an important respiratory pathogen in older adults and has the potential to cause serious outbreaks in nursing homes. When RSV outbreaks occur in LTCFs, swift detection by rapid PCR from nasopharyngeal swabs and implementation of strict infection control measures are pivotal for their elimination. Indeed, infection control nurses are the unsung heroes of the first line of defense, not only in the protection of vulnerable nursing home residents from RSV but also in providing valuable education of infection control measures for staff and patients’ families, thus relieving stress and anxieties that can encompass such respiratory outbreaks.

**ACKNOWLEDGMENT**

The authors would like to thank Dr Asrat Tesfa for reviewing our article.

**REFERENCES**


