Short Communication

An Unusual Respiratory Syncytial Virus Nosocomial Outbreak in an Adult Psychiatry Ward

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SUMMARY: Herein we report our experience in containing an outbreak of nosocomial respiratory syncytial virus (RSV) infection in a psychiatric ward in central Taiwan during a non-widespread RSV seasonal occurrence. A total of 8 patients and 4 healthcare workers in the psychiatric ward developed febrile illness or upper respiratory tract infection symptoms between August 23 and 29, 2005. RSV was identified by either viral culture or reverse transcriptase-polymerase chain reaction (RT-PCR) assay. RSV was isolated from a symptomatic staff member (8.3%), and was detected in 5 (42%) by RT-PCR among 12 cases. All 5 of these RSV cases detected belonged to genotype A. In our experience, single cubicle isolation of infectious patients and a cohort of nursing care are the most important factors in the successful control of an RSV outbreak.

Respiratory syncytial virus (RSV) was first identified in 1956 in a chimpanzee with coryza and was isolated from a child the next year (1). Recent studies have found that RSV infections may also be common in adults (2). RSV infections have been found to cause symptomatic disease in adults who had an underlying disease of the heart or lung, malignancy, or who lived in long-term care facilities (3). Nosocomial RSV infection was thought to be quite common in pediatric wards. It is now also recognized to be common within some families and is of particular concern for the elderly (4). An unusual outbreak of out-of-season RSV nosocomial infection was detected in the psychiatric ward of a tertiary hospital in mid-Taiwan. To our knowledge, this is the first report of RSV nosocomial outbreak in a psychiatric ward.

The infection control committee of Taichung Veterans General Hospital (TC-VGH) was informed that there was a febrile cluster in the psychiatric ward on August 28, 2005. This is a tertiary hospital in central Taiwan, and the psychiatric ward was a separate building which was 500 m away from the main hospital buildings. A total of 8 patients and 4 healthcare workers in this psychiatric ward were reported to have fever (axillary temperature more than 37.8°C) as well as cough, sore throat or rhinorrhea since 25 August. In this study, an acute upper respiratory tract infection (URTI) was determined to be the cause of the recent onset of rhinorrhea, nasal or sinus congestion, pharyngitis and/or cough by clear chest radiograph. A lower respiratory tract infection (LRTI) was only documented as ‘pneumonia’ if a chest X-ray confirmed the clinical diagnosis (5). Symptomatic RSV infection was defined as an illness with a positive viral culture, or a positive reverse transcriptase-polymerase chain reaction (RT-PCR) assay. Taking into account the incubation period of 3-5 days, Leclair et al. (6) defined an RSV infection as nosocomial if the patient became symptomatic on day 5 or later after admission. Virus isolation and identification were performed using standard procedures (7). In this study, RT-PCR assay was performed for RSV obtained from nasopharyngeal swab specimens, and a nested PCR assay was performed for RSV A and B. The RT-PCR and nested PCR assays were performed using the method described by Nijhuis et al. (8).

RSV transmission occurs by direct inhalation of contagious secretions and self-inoculation of the eyes and nose. The respiratory viral infection control policy is based on the prevention of transmission via the hands of patients and nursing staff. Our infection control measures included the placement of a patient within a single room, reinforcement of hand-washing prior to leaving the patient’s room, and barrier protection including gowns, gloves, and masks. Patients were shown how to sneeze or cough directly into a tissue and dispose of it immediately, with hand-washing thereafter. Nursing care was cohort and staff who developed URTI symptoms were screened for the respiratory virus and excluded from direct patient care.

The first patient to be diagnosed with RSV infection (Case 1) during the outbreak was an 82-year-old male, and 2 nurses (Cases 9 and 10) were suffering from URTI before the onset of this patient’s illness (Table 1). There were 4 cases in the peak incidence of the outbreak on August 29, 2005 (Figure 1). No new cases were found 2 days after the introduction of the infection control measures on August 28. The average age of these patients was 42.1 years (range 21-82 years), and the male-to-female ratio was 7:5. RSV was identified in viral culture in 8.3% (1/12) of symptomatic cases. The positive rate of RSV revealed by RT-PCR assay was 42% (5/12), and the genotype of all cases of RSV was type A. Seven cases were diagnosed as probable cases of RSV infection because the virus could not be identified. Twenty-five patients were admitted to the psychiatric ward at the same time. Among them, 32% (8/25) part of the patients in this cluster (4 cases [16%] were confirmed and 4 additional cases were diagnosed as probable cases of RSV infection). Serologic analysis and RSV quick antigen tests were not performed. The index case might be the nurse (Case 9) who had a short history of URTI beginning on August 23, but a viral test was negative. No
other respiratory virus was isolated in any of the cases. Bacterial cultures from blood and sputum in febrile patients other than staff members were uniformly negative. Nosocomial outbreak was confirmed when patients developed symptoms on day 5 or later after admission. The average fever duration was 2.3 days. The respiratory diseases of 2 patients (Cases 1 and 2) progressed to LRTI. All of the patients survived, and no one received treatment with an antiviral agent.

During the years 2003 - 2005, most Asian countries experienced outbreaks of highly pathogenic avian influenza. To combat such outbreak in Taiwan, the Centers for Disease Control established multiple surveillance systems to detect human avian flu cases and unusual clusters of influenza-like illness. In conjunction with these surveillance systems, a virology laboratory was established in TC-VGH. As Hall. (4) described, avian flu cases and unusual clusters of influenza-like illness were the most important factors in the successful control of this outbreak. The total duration of the transmission course was limited to 1 week.

In conclusion, RSV outbreaks occur not only in pediatric wards but also in closed adult wards such as psychiatric wards because staff and patients can contract the virus in a non-widespread seasonal outbreak. The clinical symptoms of RSV infection in adults without underlying disease are benign. Therefore, isolation of the patients and adherence to infection control measures are necessary to prevent viral transmission.

REFERENCES