Q&A QUESTIONS AND ANSWERS FOR CLINICAL INSIGHTS

(See page 284 for data.)

1. *What other diagnostic tests or procedures should be performed?*

Enzyme-linked immunosorbent assay (ELISA) or enzyme immunoassay (EIA) rapid diagnostic kits are considered sensitive and simple to perform and have become a widely used test method. These tests are specifically designed to detect respiratory syncytial virus (RSV) antigen from the epithelial cells obtained from the nasopharyngeal area by aspiration or wash. Specimens should be carefully protected from changes in temperature to avoid jeopardizing the accuracy of testing (Filippell & Rearick, 1993).

2. *What are the common clinical manifestations of RSV infections?*

RSV is the most common cause of serious respiratory infection in infants and children in North America. Two major groups and nine subgroups of the virus have been identified thus far. The estimate is that, in the United States, 100,000 hospitalizations yearly, costing over $300 million, are due to RSV (Marks, 1992).

RSV infection typically is seen with rhinorrhea, pharyngitis, cough, wheezing, diffuse rhonchi, fever, and/or otitis media. Progression of the disease may involve the lower respiratory tract and results in increased coughing and wheezing, hyperinflation, tachypnea, retractions, cyanosis, and hypoxia. In its advanced stages, RSV infection may cause listlessness, severe hypoxemia, apnea, and very poor air exchange, with breath sounds that are almost undetectable to auscultation. Apnea occurs in 16% to 20% of infected infants and is usually short-lived and nonobstructive. Neonates with RSV disease often have atypical manifestations, including nonspecific symptoms as lethargy, poor feeding, and irritability (Filippell & Rearick, 1993).

Clinical response to a primary RSV infection is influenced by age, immunologic status, and possibly, viral inoculum at the time of exposure. Bronchiolitis and pneumonia are common manifestations when RSV occurs during the first year of life. The virulence of RSV in infants may be partially attributable to its ability to infect terminal airways, where the diameter is quite small. In previously healthy infants the duration of hospitalization and the severity of the disease are inversely proportional to the patient's age (Filippell & Rearick, 1993).

3. *What is the treatment and general course of the illness?*

In otherwise healthy children infected with RSV, treatment is focused on adequate hydration and sufficient oxygenation. Steroids have not been found to be beneficial, and antibiotics are generally not indicated unless a secondary bacterial infection also exists (Filippell & Rearick, 1993).

Ribavirin, a broad spectrum antiviral agent, was approved by the Food and Drug Administration in 1985. The American Academy of Pediatrics Committee on Infectious Diseases recommends that ribavirin therapy be considered for the following categories of patients with RSV infections:

a. Infants at risk for severe or complicated RSV infection. This refers to infants with underlying disorders such as congenital heart disease or bronchopulmonary dysplasia or to children with disorders such as immunodeficiency.

b. Severely ill infants who have been hospitalized with an RSV infection. Infants with an arterial oxygen level less than 65 mm Hg (that is, oximetry reading less than 90%) and increasing CO_2 levels are in this category.

c. Hospitalized infants who have the potential of progressing to a more complicated course. This category includes infants less than 6 weeks of age and/or infants for whom a prolonged illness could be particularly detrimental. These include children with preexisting conditions such as congenital anomalies or neurologic or metabolic diseases (American Academy of Pediatrics Committee on Infectious Diseases, 1991). Ribavirin is administered by small-particle aerosol and breathed along with the required concentration of oxygen for 12 to 18 hours a day for 3 to 7 days. Use is recommended to begin within 3 days of the onset of an RSV infection (Filippell & Rearick, 1993).

Rhinorrhea usually persists throughout the course of the illness, with intermittent fever. If the illness progresses, coughing, and wheezing generally increase, and air hunger and evidence of hyperexpansion of the chest and of intercostal and subcostal retraction occur. Tachypnea increases, and cyanosis occurs. Signs of severe, life-threatening illness are central cyanosis, tachypnea over 70/minute, listlessness, and apneic spells. In some infants the course of the illness may be more like that of pneumonia. In such cases, the prodromal rhinorrhea and cough are followed by dyspnea, poor feeding, and listlessness, with a minimum of wheezing and hyperexpansion. In some infants the cough may be so severe and paroxysmal that the illness may mimic pertussis. Most infections, however, are mild and self-limited (Marks, 1992).

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4. *What about transmission and prevention measures?*

Nosocomial RSV has been responsible for significant morbidity and mortality rates in pediatric patients. Transmission of this disease within the hospital setting occurs through direct or indirect contact with respiratory secretions containing the virus or contaminated fomites. Infected health care workers play a significant role in disseminating RSV in the hospital setting.

RSV is a major viral respiratory pathogen responsible for worldwide seasonal epidemics that infect essentially all children before the age of 3 years. It is responsible for causing 45% to 90% of bronchiolitis and 5% to 40% of all cases of pneumonia in young children. In addition, RSV disease with lower-respiratory tract involvement has been associated with chronic pulmonary changes for several years after an infection (Filippel & Rearick, 1993).

Reinfection can occur in older children and young adults because previous infection does not confer immunity. RSV has been implicated in many outbreaks of nosocomial and community-acquired infections. Although it usually targets the pediatric population and their health care workers, RSV is also a significant pathogen among elderly people (Filippell & Rearick, 1993).

The incubation period for RSV is generally 4 to 6 days, and viral shedding usually lasts 3 to 8 days. The duration and quantity of viral shedding appears to be correlated to age, lower-respiratory tract involvement, immune status, and administration of steroid and chemotherapy (Filippell & Rearick, 1993).

Handwashing is well acknowledged to be the single most effective means of interrupting the spread of RSV. Unfortunately, poor compliance with this simple procedure is well known. Isolation measures are recommended in hospital settings. The importance of the environmental impact of RSV needs to be explained to all care-givers. The survival of RSV on inanimate objects for long periods necessitates environmental cleaning policies in the home, day care setting, and hospital.

Prospects for an RSV vaccine are promising, but none have been approved to date.

G.C. was hospitalized for 3 days. She received oxygen by mist tent and nebulized mist treatments with albuterol. After being given intravenous fluids for 36 hours, she began taking oral fluids well, so the intravenous fluids were discontinued. Although she continued to have mild wheezing at the time of discharge, she was otherwise greatly improved. She continued to have a mild cough for 3 weeks, but her chest was clear to auscultation at her follow-up visit 1 week after hospital discharge.

REFERENCES

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