

# What happens when you mix a transplant with respiratory syncytial virus?

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A nine-month-old boy underwent a cadaveric liver transplant for biliary atresia. The initial postoperative course was uneventful and he was transferred out of intensive care on day 4. The next day, he became congested with a runny nose, and a nasopharyngeal aspirate was positive for respiratory syncytial virus (RSV) by direct fluorescent antibody (DFA) testing. The child developed increasing tachypnea and respiratory distress, which required intubation on day 7 post-transplant. Ribavirin was administered for five days. Following 14 days of ventilation, he was successfully extubated. He was eventually discharged home off oxygen 24 days later. His total length of stay in hospital was 45 days. The repeat DFA test was then negative, but nucleic acid amplification testing was still positive for RSV.

## LEARNING POINTS

- RSV infection causes upper or lower respiratory tract infection in almost all children in the first two years of life, resulting in a hospitalization rate of approximately 2% (1). It can be severe in an immunocompromised host.
- The probability of severe RSV infection in children with previous transplants is not known because systematic surveillance has not been conducted and the literature may be skewed toward reporting of more severe cases (2).
- The relationship between the severity of disease and the time since the transplant is not clear, and it seems likely that RSV is most severe if it occurs during the transplant hospitalization.
- Ribavirin has fallen out of favour as a therapy for RSV because it is very expensive and, although it improves oxygenation, it does not decrease the duration of ventilation or hospitalization. However, it may still play a role in severe disease in the immunocompromised host where prolonged shedding is the norm; therefore, in theory, the benefit may be greater than in a normal host.
- Nucleic acid amplification testing (also known as molecular testing, with one common example being polymerase chain reaction) allows for detection of viral shedding for much longer than with DFA testing. The infection control implications are not clear because patients who are shedding only a small concentration of virus may no longer be contagious.
- A practical recommendation is that children be isolated until they are no longer symptomatic, with routine repeat testing being discouraged because interpretation of persistent positivity is not clear.
- Palivizumab is a monoclonal RSV antibody licensed for prophylaxis in preterm infants and in children with hemodynamically significant congenital heart disease. Efficacy is approximately 50% for the prevention of hospitalization (3).
- There have been no clinical trials of palivizumab in immunocompromised hosts. Because transplant recipients are usually heavier, the doses required are often much larger than in those for whom the drug is licensed, resulting in many intramuscular injections for the child and high drug costs for the health care system; therefore, use remains controversial (4).
- The Canadian Paediatric Surveillance Program began a surveillance study on October 1, 2010, to try to identify all children diagnosed with RSV as inpatients or outpatients within two years of a hematopoietic or solid organ transplant. Even mild infections should be reported if laboratory testing by any method confirms RSV.

## REFERENCES

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*The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and the Public Health Agency of Canada, which undertakes the surveillance of rare diseases and conditions in children and youth. For more information, visit our website at [www.cps.ca/cpsp](http://www.cps.ca/cpsp).*

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