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Palivizumab

A Viewpoint by Siva Subramanian

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Respiratory syncytial virus (RSV) infection is a common lower respiratory tract infection in infants. Recently, a polyclonal RSV-enriched immunoglobulin (RSV IGIV) was approved for passive prophylaxis against RSV infections in infants. However, RSV IGIV requires intravenous administration in a relatively large volume, and thus, attempts were directed at developing a monoclonal antibody.

Palivizumab is a mouse-human chimaeric monoclonal antibody to the F protein of RSV and is broadly active against both RSV subtype A and B. It inhibits viral replication *in vitro*, and in the lungs of animals and humans. In an animal model, mean serum concentrations of palivizumab above 40 mg/L resulted in a reduction in pulmonary virus titre of >99% in all animals. A pharmacokinetic study established the safety of intravenous palivizumab 15 mg/kg in premature infants.[1] In a large multicentre double-blind randomised clinical trial, palivizumab given as monthly doses of 15 mg/kg during the RSV season resulted in a 55% reduction in hospitalisation[2] and a 5.8% attributable risk reduction in preterm infants (≤35 weeks of gestation) ≤6 months of age and infants with bronchopulmonary dysplasia (BPD) ≤24 months of age.

The use of a smaller volume and intramuscular administration in outpatient settings with palivizumab will facilitate better compliance and a reduction in cost. The numbers needed to treat varies, depending on the assumptions, from 6 to 17 patients to prevent one RSV related hospitalisation. Further pharmacoeconomic analysis, including all costs and benefits, is needed.[3]

The availability of both intravenous RSV IGIV and intramuscular palivizumab for passive prophylaxis is encouraging and will lead to better prophylaxis for this potentially serious infection in preterm infants and infants with BPD. The usefulness of palivizumab in infants with immunodeficiences and cardiac problems is still to be studied. ▲

References

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