

## Respiratory Syncytial Virus Infection in Children

Dr.Mona Z Zaghloul\*

Microbiology Unit, Department of Clinical Pathology, Ain Shams University Hospitals, Cairo, Egypt

Respiratory Syncytial Virus (RSV) is considered the most common viral agent of lower respiratory tract infections in infants and young children. It is commonly involved in bronchiolitis and pneumonia in infants [1,2]. The virus infects the ciliated epithelial cells lining the airways, and their rapid destruction results in the symptoms characteristic of the infection, such as fever, rhinorrhea, cough and wheezing [3]. The highest morbidity rates are observed in infants, elderly and immuno compromised patients [4]. The virus classified within Pneumovirus genus of the Paramyxoviridae [5]. There are two major antigenic groups of RSV, A and B with antigenic differences on the N, F and G proteins [6]. Early diagnosis of RSV infections is necessary for monitoring of the infected infants, for prevention of nosocomial spread and in some cases to guide the choice of a possible adapted antiviral therapy [7]. Diagnosis of RSV can be made by virus isolation, detection of viral antigen, detection of viral RNA and demonstration of a rise in serum antibodies [8].

Viral isolation in cell cultures such as (HEp-2 cells and ATCC CCL-23) [9] is considered the (gold standard) method for diagnosis of RSV infection, it requires specimens to be transported and stored under ideal conditions and the prolonged turnaround time required to obtain results further diminishes its usefulness in patient management [10]. It has been demonstrated that RSV is a very labile virus and it loses its viability in transit [11]. To overcome this limitation, rapid techniques based on antigen detection by Direct Immuno Fluorescence (DIF) employing monoclonal antibodies is widely used for the diagnosis and subgroup of RSV into A and B [12]. Also Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) has been used increasingly to detect the virus in clinical samples [13]. The sensitivity of RT-PCR can equal or exceed that of cell culture or antigen-based assays [14]. Genotyping of RSV group A into (GA2, GA5 and GA7) by means of a novel method based on PCR, FRET (Fluorescence Resonance Energy Transfer) detection and two - dimensional melting curve analysis was carried out by Rafiefard et al. [15]. In recent years, viral metagenomic sequencing has become an established method both for finding novel viruses and for detecting the presence of known viruses in new environments [16]. There was no vaccine currently approved for paramyxovirus-induced respiratory diseases in humans, Le Bayon et al. [17] reviewed the immunogenicity (increase in neutralizing antibody titres) and the protection conferred by the most promising recombinant vectored vaccines against human respiratory syncytial virus, human metapneumovirus and human parainfluenza viruses types 1 to 3, which are significant causes of upper and lower tract respiratory diseases.

### References

1. Cintra OA, Owa MA, Machado AA, Cervi MC, Figueiredo LT, et al. (2001) Occurrence and severity of infections caused by subgroup A and B respiratory syncytial virus in children in southeast Brazil. *J Med Virol* 65: 408-412.
2. Diniz EM, Vieira RA, Cecon ME, Ishida MA, Vaz FA (2005) Incidence of respiratory viruses in preterm infants submitted to mechanical ventilation. *Rev Inst Med Trop Sao Paulo* 47: 37-44.
3. Oliveira TF, Freitas GR, Ribeiro LZ, Yokosawa J, Siqueira MM, et al. (2008) Prevalence and clinical aspects of respiratory syncytial virus A and B groups in children seen at Hospital de Clínicas of Uberlândia, MG, Brazil. *Mem Inst Oswaldo Cruz* 103: 417-422.
4. Falsey AR, Walsh EE (2005) Respiratory syncytial virus infection in elderly adults. *Drugs Aging* 22: 577-587.
5. Eugene-Ruellan G, Freymuth F, Bahloul C, Badrane H, et al. (1988) Detection of Respiratory Syncytial Virus A and B and Parainfluenzavirus 3 Sequences in Respiratory Tracts of Infants by a Single PCR with Primers Targeted to the L-Polymerase Gene and Differential Hybridization. *J Clin Microbiol* 36: 796-801.
6. Freymuth F, Petitjean J, Pothier P, Brouard J, Norby E (1991) Prevalence of respiratory syncytial virus subgroups A and B in France from 1982 to 1990. *J Clin Microbiol* 29: 653-655.
7. Hall CB, McBride JT, Gala CL, Hildreth SW, Schnabel KC (1985) Ribavirin treatment of respiratory syncytial viral infection in infants with underlying cardiopulmonary disease. *JAMA* 254: 3047-3051.
8. Peter G (1997) Report of the committee on infectious diseases, 24th ed, Elk Grove Village, IL-American Academy of Pediatrics: 443.
9. Queiróz DA, Durigon EL, Botosso VF, Ejzemberg B, Vieira SE, et al. (2002) Immune response to respiratory syncytial virus in young Brazilian children. *Braz J Med Biol Res* 35: 1183-1193.
10. Reina J, Ros MJ, Del Valle JM, Blanco I, Munar M (1995) Evaluation of direct immunofluorescence, dot-blot enzyme immunoassay, and shell-vial culture for detection of respiratory syncytial virus in patients with bronchiolitis. *Eur J Clin Microbiol Infect Dis* 14: 1018-1020.
11. Dickison L and Tilton R C (1987) Respiratory syncytial virus: cell culture and newer identification methods. *Lab Manage* 27-30.
12. Waner JL, Whitehurst NJ, Todd SJ, Shalaby H, Wall LV (1990) Comparison of directigen RSV with viral isolation and direct immunofluorescence for the identification of respiratory syncytial virus. *J Clin Microbiol* 28: 480-483.
13. Reis AD, Fink MC, Machado C.M, et al. (2008) Comparison of direct immune fluorescence, conventional cell culture and polymerase chain reaction techniques for detecting respiratory syncytial virus in nasopharyngeal aspirates from infants. *Rev Inst Med Trop S Paulo* 50: 37-40.
14. Collins PL and Crowe JE (2007) Respiratory syncytial virus and metapneumovirus. In: Fields Virology, Knipe D M and Howley, P M (5 ed) Lippincott, Williams and Wilkins, Philadelphia, USA.
15. Rafiefard F, Orvell C, Bondeson K (2008) Genotyping of respiratory syncytial virus (RSV) group A in Stockholm, Sweden, using PCR and two-dimensional melting curve analysis. *APMIS* 116: 317-322.
16. Lysholm F, Wetterbom A, Lindau C, Darban H, Bjerkner A, et al. (2012) Characterization of the viral microbiome in patients with severe lower respiratory tract infections, using metagenomic sequencing. *PLoS One* 7: e30875.
17. Le Bayon JC, Lina B, Rosa-Calatrava M, Boivin G (2013) Recent developments with live-attenuated recombinant paramyxovirus vaccines. *Rev Med Virol* 23: 15-34.

\*Corresponding author: Dr.Mona Z Zaghloul, Microbiology Unit, Department of Clinical Pathology, Ain Shams University Hospitals, Cairo, Egypt, Tel: 02-24023494; Email: [monazaki\\_810@hotmail.com](mailto:monazaki_810@hotmail.com)

Received October 14, 2013; Accepted October 15, 2013; Published October 22, 2013

Citation: Zaghloul MZ (2013) Respiratory Syncytial Virus Infection in Children. *Air Water Borne Diseases* 2: e122. doi:[10.4172/2167-7719.1000e122](http://dx.doi.org/10.4172/2167-7719.1000e122)

Copyright: © 2013 Zaghloul MZ. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.