Air & Water Borne Diseases

Zaghloul, Air Water Borne Dis 2012, 1:3
http://dx.doi.org/10.4172/2167-7719.1000e108

Editorial Open Access

Human Metapneumovirus

Mona Z Zaghloul*

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

Human metapneumovirus (hMPV) is a cause of both upper and lower respiratory tract infections among children, adults and immunocompromised hosts. It was first reported in Netherlands. In 2001, van den Hoogen et al. [1] described the identification of this new human viral pathogen from respiratory samples submitted for viral culture during winter season. Human metapneumovirus has been found also in other countries worldwide such as Australia [2], Canada [3], Finland [4], France, United Kingdom, Spain [5], Japan [6] and the United states [7].

Human metapneumovirus is a negative-sense non segmented RNA virus that belongs to the *Paramyxoviridae* family [8]. Phylogenetically, respiratory syncytial virus (RSV) is the closest human virus related to hMPV [9]. It appears to have a tropism for the respiratory epithelium [10]. The patient may be asymptomatic or symptoms may range from mild upper respiratory tract complains to severe bronchiolitis and pneumonia with respiratory failure necessitating mechanical ventilation [11,12]. Serological studies showed that by the age of five years, virtually all children are exposed to human metapneumovirus and that the virus has been circulating in humans for at least 50 years [1]. Several studies have shown that hMPV is an important etiologic agent of respiratory tract infections in children and adults and can reinfect an individual later in life [13].

For laboratory diagnosis, the most definitive test is virus isolation by cell culture using the LLC-MK2 or Vero E6 cell lines [14], the growth of hMPV is slow and often requires several blind passages before any cytopathic effect (CPE) is apparent, thus molecular method such as reverse-transcription PCR (RT-PCR) has been used as the preferred test [14]. Suspected hMPV infection is preferred to be diagnosed by real time reverse transcription polymerase chain reaction (qRT-PCR) from respiratory secretions such as nasopharyngeal aspirates, nasopharyngeal swabs or bronchoalveolar lavage specimens [15] as a test of choice with the highest sensitivity [12]. Such samples are routinely examined for other common respiratory viruses first by direct fluorescent antigen (DFA) or enzyme immunoassays (EIA) or electrospray ionization mass spectrometry following broad-range reverse transcription-PCR (RT-PCR/ESI-MS) [16] considering the prevalence of hMPV disease is an urgent need for such assays [17]. Oral ribavirin was used as a treatment of of severe human metapneumovirus pneumonia (hMPV) in immune compromised child [18].

Reference

1. van den Hoogen BG, de Jong JC, Groen J, Kuiken T, de Groot R, et al. (2001) A newly discovered human pneumovirus isolated from young children with respiratory tract disease. Nat Med 7: 719-724.
2. Jartti T, van den Hoogen B, Garofalo RP, Osterhaus ADME, Ruuskanen O (2002) Metapneumovirus and acute Wheezing in children. The Lancet 360: 1393-1394.
3. Boivin G, Abed Y, Pelletier G, Ruel L, Moisan D, et al. (2002) Virological features and clinical manifestations associated with Human Metapneumovirus. A new Paramyxovirus responsible for acute respiratory tract infection in all age groups. J Infect Dis 186: 1330-1334.
4. Falsey AR, Erdman D, Anderson LJ, Walsh EE (2003) Human Metapneumovirus infections in young and elderly adults. J Infect Dis 187: 785-790.
5. Vicente D, Cilla G, Montes M, Perez TE (2003) Human Metapneumovirus as a cause of community acquired respiratory illness in children. Emerg Infect Dis 9: 602-603.
6. Ebihara T, Endo R, Kikuta H, Ishiguo N, Yoshioka M, et al. (2003) Seroprevalence of Human Metapneumovirus in Japan. J Med Virol 70: 281-283.
7. Esper F, Boucher D, WeibelC, Martinello RA, kahn JS (2003) Human Metapneumovirus infection in the United States: clinical manifestations associated with a newly emerging respiratory infection in children. Pediatrics 111: 1407-1410.
8. Greensill J, McNamara PS, Dove W, Flanagan B, Smyth RL, et al. (2003) Human Metapneumovirus in Severe Respiratory Syncytial virus bronchiolitis. Emerg Infect Dis 9: 372-375.
9. Freymouth F, Vabret A, Legrand L, Eterradossi N, Lafay- Delaire F, et al. (2003) Presence of the new Human Metapneumovirus in French children with bronchiolitis. Pediatr Infect Dis J 22: 92-94.
10. Darniot M, Petrella T, Aho S, Pothier P, Manoha C (2005) Immune response and alteration of pulmonary function after primary Human Metapneumovirus (HMPV) infection of BALB/c mice.Vaccine 23: 4473-4480.
11. Brook I, Windle ML, Barton LL, Rauch D, Steele R (2002) Human Metapneumovirus. Pediatr Infect Dis 10: 15-18.
12. Gutierrez RU (2003) Human Metapneumovirus: a new agent in the differential diagnosis of respiratory tract infection. An pediatr 59: 1-2.
13. 13. Peret TC, Boivin G, Li Y, Couillard M, Humphrey C, et al. (2002) Characterization of human metapneumoviruses isolated from patients in North America. J Infect Dis 185: 1660-1663.
14. Matsuzaki Y, Mizuta K, Takashita E, Okamoto M, Itagaki T, et al. (2010) Comparison of virus isolation using the Vero E6 cell line with real-time RT-PCR assay for the detection of human metapneumovirus. BMC Infect Dis 10: 170.
15. Kim C, Ahmed JA, Eidex RB, Nyoka R, Waiboci LW, et al. (2011) Comparison of nasopharyngeal and oropharyngeal swabs for the diagnosis of eight respiratory viruses by real-time reverse transcription-PCR assays. PLoS One 6: e21610.
16. Chen KF, Rothman RE, Ramachandran P, Blyn L, Sampath R, et al. (2011) Rapid identification viruses from nasal pharyngeal aspirates in acute viral respiratory infections by RT-PCR and electrospray ionization mass spectrometry. J Virol Methods 173: 60-66.
17. Nissen MD, Siebert DJ, Mackay IM, Sloots TP, Withers SJ (2002) Evidence of Human Metapneumovirus in Australian children. Med J Aust 176: 188.
18. Shachor-Meyouhas Y, Ben-Barak A, Kassis I (2011) Treatment with oral ribavirin and IVIG of severe human metapneumovirus pneumonia (HMPV) in immune compromised child. Pediatr Blood Cancer 57: 350-351.

***Corresponding author:** Mona Z Zaghloul, Assistant Consultant in the Microbiology Unit, Clinical Pathology Department, Ain Shams University, Cairo, Egypt, Tel: 02-24023494; E-mail: monazaki_810@hotmail.com

Received April 23, 2012; **Accepted** April 23, 2012; **Published** April 24, 2012

Citation: Zaghloul MZ (2012) Human Metapneumovirus. Air Water Borne Dis 1:e108. doi:10.4172/2167-7719.1000e108