



Case report

First detection of human Metapneumovirus, acute respiratory infection agent, in a child hospitalized of Córdoba, Argentina, during 2011

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ABSTRACT

Human Metapneumovirus was discovered by Van den Hoogen et al. (2001) in The Netherlands. It is a single-stranded, negative polarity RNA virus, belonging to the Paramyxoviridae family, subfamily Pneumovirinae. While the epidemiology of FLU, RSV, PIV and ADV is well characterized in Cordoba, Argentina, nothing is known yet about hMPV. Thus, the purpose in our Laboratory was to investigate the circulation of hMPV among 0 to 5 years old children hospitalized for low ARI and in this paper report the first detection of hMPV. The result was the detection of the first clinical case of human metapneumovirus for DIF, admitted to a private hospital in early winter (13 of July of 2011). He was a man of a month old. In conclusion, although the infectious respiratory diseases are multicausal, can be caused by bacteria, mycoplasma in biological agents and other agents involved physical or psychological, from the focus of our virological investigation, where they face 8 respiratory viral agents, the positive result is attributed to hMPV as a causative agent of this infection circulating in Córdoba. We can therefore conclude that this is the first report of detection performed at the Laboratory of respiratory infections of the Institute of Virology "J.M.Vanella" (InViV) Faculty of Medicine, National University of Cordoba, which shows the circulation of this agent in the city of Córdoba, Argentina.

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1. Introduction

Epidemiological studies in Argentina (Carballal and Oubiña, 1998) report that about 30% of acute respiratory infection (ARI) cases are of viral etiology. Of these, 20% are caused by Respiratory Syncytial Virus (RSV), 3% by Influenza (FLU), 3% by Adenovirus (ADV) and 1% by Parainfluenza.

Estacionalidad, RSV and FLU are detected mainly from June through August, and ADV from August through December, while PIV remains detectable all year round (Lozano et al., 2009; Maffey et al., 2008; Kim et al., 2010). Due to this marked pattern of circulation, the knowledge of the epidemiology of each agent is a useful tool to consider in the diagnosis of ARI (Carballal and Oubiña, 1998). However, there is only scarce information on the local circulation of other important viral respiratory pathogens, such as Coronavirus, Rhinovirus, Human Metapneumovirus (hMPV).

Human Metapneumovirus was discovered by Van den Hoogen et al. in the Netherlands. It is a single-stranded, negative polarity RNA virus, belonging to the Paramyxoviridae family, subfamily Pneumovirinae. In spite of its relatively recent discovery, there is serological evidence of infection by this virus in humans since 50 years ago (Van den Hoogen, 2001). Phylogenetic analysis has demonstrated the presence of two predominant genetic groups, known as A and B, but apparently these two groups are not associated with differences in the clinical presentation (Van den Hoogen, 2001; Boivin, 2004; Thammawat, 2008). In Buenos Aires, Argentina, Maffey et al. (2008) found 102 cases of RSV and 10 of hMPV in a total of 119 patients with ARI, reported the first evidence of the presence of hMPV in children with acute lower respiratory infections. Similar reports were found in Ushuaia (Galiano et al., 2004; Mallimacci et al., 2006). The virus has also been found in other countries such as Australia, 4 Canada, USA, France, UK, Spain and Japan and also in parts of Latin America, therefore the virus is ubiquitous in the world (Mallimacci et al., 2008; Darniot et al., 2009). Although many studies report the identification of hMPV mainly among children under 5 years of age, it has also been detected in older children and adults (Walsh et al., 2008).

In numerous studies hMPV has been found in patients whose RSV and FLU tests were negative. This is because clinical symptoms due to hMPV are similar to those found in patients with RSV. Thus, many children infected with hMPV are initially hospitalized on suspicion of RSV infection (Wilkesmann et al., 2006). The general prevalence of hMPV infections, mainly in children, ranges from 5 to 10% mainly in children, (considering single infections as well as coinfections). Respect to the circulation, it is known that hMPV produces infections all year around, peaking in the spring (from September through December). It is also known that when the incidence of RSV is decreasing (after the winter), hMPV infections start peaking (Lozano et al., 2009; Maffey et al., 2008; Kim et al., 2010). While the epidemiology of FLU, RSV, PIV and ADV is well characterized in Cordoba, Argentina, nothing is known yet about hMPV. Thus, the purpose in our Laboratory was to investigate the circulation of hMPV among 0 to 5 years old children hospitalized for low ARI and in this paper report the first detection of hMPV.

2. Case reports

The samples were nasopharyngeal secretions from patients hospitalized from 0 month to 5 years old hospitalized for respiratory diseases in public hospital in the city of Cordoba. All clinical examinations were performed to identify pictures of upper respiratory infection (rhinitis, pharyngitis, otitis, sinusitis) or low (laryngitis, bronchiolitis, pneumonia). Are also recorded, demographics (age, sex) and clinico-epidemiological (date of admission, days of prodrome, days of hospitalization, severity, oxygen requirement, treatment applied and evolution). The detection of the agent was by commercial direct immunofluorescence assay (DIF) with monoclonal antibodies to F and N viral proteins (Oxoid). The result was the detection of the first clinical case of human metapneumovirus for DIF, admitted to a private hospital in early winter (13 of July of 2011). Was an infant of one month year old, who developed cough, rhinitis, wheezing, but he not developed temperature, vomiting, neither diarrhea nor cyanosis. The hospitalization –his first- lasted 4 days. He is well nourished and lives in a healthy, comfortable environment. Complete vaccination presented, without family history of asthma. He was treated with ampicillin, without corticoids and chest radiograph showed right lung base infiltrate. This picture of upper and lower respiratory infection occurred in pneumonia with a good outcome. When doing research also faces other respiratory viruses mentioned above, negative results for all. Furthermore, this result leads to further inquire about the biological, molecular and epidemiological features this agent and expected answer this question.

3. Conclusion

In conclusion, although the infectious respiratory diseases are multicausal, can be caused by bacteria, mycoplasma in biological agents and other agents involved physical or psychological, from the focus of our virological investigation, where they face 8 respiratory viral agents, the positive result is attributed to hMPV as a causative agent of this infection circulating in Córdoba. We can therefore conclude that this is the first report of detection performed at the National University of Cordoba, which shows the circulation of this agent in the city of Cordoba, Argentina.

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Conflict of interest

All authors declare to have no conflict of interest.

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