BRIEF REPORT

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HUMAN METAPNEUMOVIRUS: UNDERSTANDING A HIDDEN RESPIRATORY CHALLENGE

Microbiology

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Are we prepared for another pandemic? I'm sure this was the universal question in everyone's mind when the news of human meta pneumo virus (HMPV) cases came in December 2024. Exactly five years down the line of the first case of COVID -19 detection, a rise in HMPV cases was reported in China, particularly among children under 14, especially in northern regions. Social media videos of overcrowded hospitals sparked concerns about a larger health crisis. Chinese officials, from the National Health Commission, attribute the rise to expected seasonal increases in respiratory diseases during winter. [1,2] An off-season outbreak of HMPV was also reported in the Netherlands following the lifting of COVID-19 lockdown measures.[3]

As of 04th February, 2025, India has reported 59 cases of HMPV and 2 deaths due to co-morbidities from January 6-29.[4] The 59 cases include 17 from Tamil Nadu, 11 from Gujarat and nine from Puducherry. The first two cases were detected by the Indian Council of Medical Research (ICMR) in Karnataka, both identified through routine surveillance for multiple respiratory viral pathogens, as part of ICMR's ongoing efforts to monitor respiratory illnesses across the country. These HMPV positive cases were from Baptist Hospital in Karnataka which included a 3 month and an 8 month old child with bronchopneumonia who recovered and were discharged.[5] The most recent case was detected on January 20, 2025, in Ahmedabad, Gujarat, involving a 69-year-old woman.[6]

But let's see what human metapneumovirus is. Is the fear and concern regarding it that many have legitimate? HMPV is a negative-sense single- stranded RNA enveloped virus belonging to the family Pneumoviridae and closely related to the Avian metapneumovirus (AMPV) subgroup C. It was isolated for the first time in 2001 from 28 young children in the Netherlands. According to one of the studies by Van den Hoogen BG et al [7], serological studies showed that by the age of five years, virtually all children in the Netherlands have been exposed to human metapneumovirus and that the virus has been circulating in humans for at least 50 years. The high risk groups particularly include infants, toddlers, individuals 65 years and above , pregnant women and immunocompromised people. The disease is highly contagious and believed to be transmitted via contaminated secretions such as saliva, droplets and large-particle aerosols.[8]

This virus is similar in many respects to respiratory syncytial virus (RSV) causing both upper and lower respiratory disease. However, it's somewhat less virulent than RSV. The reason being HMPV does not possess the non-structural genes that RSV expresses in infected cells to counteract the body's natural immune defenses, such as interferons. This virus produces a broad spectrum of respiratory illness ranging from mild symptoms to severe cough, bronchiolitis, and pneumonia. The clinical symptoms are similar to those seen with RSV infection. Bronchiolitis, with or without pneumonia, is the most common presentation of HMPV illness. Other reported syndromes have included Asthma exacerbation, otitis media, pneumonitis, flu-like illness, community acquired pneumonia and COPD exacerbation. [9]

So how do you detect HMPV? The various laboratory modalities include quantitative reverse-transcriptase polymerase chain reaction (qRT-PCR). This is the most sensitive method for diagnosis and used in research study to quantify viral load. Some other methods include ELISA, immunofluorescence test, rapid antigen test using lateral flow immunochromatography. One has to remember that it is difficult to grow in cell culture. This is one of the prime reasons for delay in recognizing HMPV despite the fact that it was in circulation for over 50 years. Imaging studies such as Chest CT scanning without contrast is the image of choice to evaluate for lower respiratory tract infection (LRTI) in combination with viral testing such as multiplex qRT-PCR. [9] One should be aware that there is no specific antiviral therapy available for HMPV infection; therefore, most treatment is supportive mainly hospitalization, supplemental oxygen, and mechanical ventilation in severe HMPV infections. In severely immunosuppressed persons, oral, inhaled or IV ribavirin can be considered. Rest and hydration, over-the-counter medications, nasal decongestants and saline sprays, humidifiers, oxygen therapy, and bronchodilators. Currently, no vaccine is available for human metapneumovirus (HMPV) infection.

Infection Control Measures such as hand hygiene, respiratory etiquette, wearing mask and social distancing must be practiced. Proper ventilation, self-isolation in case one gets infected and regular disinfecting the frequently touched surfaces plays an important role too. Strengthening the immune system through maintain a healthy lifestyle cannot be understated.

Despite fears, officials maintain the situation is not alarming and mentions that the overall situation this year is less severe than last year.[10] The viruses implicated in the seasonal surge are Influenza A H1N1 (pdm09), RSV, Adenovirus and HMPV - all usual causes of seasonal respiratory illness**.** IDSP data indicates that there has been no unusual surge in Influenza-Like Illness (ILI) or Severe Acute Respiratory Illness (SARI) cases in the country.[11] WHO is already providing timely updates regarding the situation in China to further inform ongoing measures. The recent preparedness drill which was conducted across the country has shown that India is well-equipped to deal with such situations and on-going efforts are made by ICMR to track trends in HMPV circulation throughout the year.[5] All these facts bring us to conclude that though HMPV causes respiratory illness, the situation is not alarming. And if need be, we are prepared to handle any potential increase in respiratory illnesses and public health interventions can be arranged promptly.

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Conflicts Of Interest
There are no conflicts of interest

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