

Human Metapneumovirus (hMPV)-Related Pneumonia in Immunocompetent Adults: Case Report, Imaging Findings, and Comparison with RSV

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INTRODUCTION & AIM

Introduction

- hMPV is an emerging respiratory pathogen that has increasingly been recognized as a result of advancements in molecular diagnostics, thereby enhancing the detection and characterization of the agent.
- The typical population with severe disease is either paediatric/elderly or immunocompromised. hMPV-associated pneumonia in immunocompetent adults remains largely unexplored.
- This paper reviews a case of severe hMPV-associated community-acquired pneumonia in an immunocompetent adult and examines different chest-CT findings in comparison to those in respiratory syncytial virus infections.

Aim

- To characterize the **clinical and imaging features** of hMPV-related pneumonia in immunocompetent adults.
- To **compare chest CT findings** between hMPV and RSV-related pneumonia.

METHOD

Case Description:

A 68-year-old immunocompetent male with dense hMPV-associated CAP confirmed by multiplex RT-PCR.

Imaging Study: Retrospective review of CT scans from:

10 hMPV-positive patients with pulmonary symptoms.
13 patients diagnosed with RSV-related pneumonia.

Imaging Analysis: Patterns of lung involvement were assessed, including:

Ground-glass opacities (GGO)

Consolidations

Nodular opacities

Bronchial wall thickening

Symmetry and distribution of lesions.

RESULTS & DISCUSSION

- The case showed bilateral ground-glass opacities and consolidations consistent with viral pneumonia. Early molecular diagnostics allowed for precise pathogen identification, guiding appropriate treatment and reducing unnecessary antibiotic use. Retrospective analysis demonstrated that hMPV pneumonia typically exhibits asymmetric findings, including ground-glass opacities, consolidations, nodular opacities, and bronchial wall thickening. Conversely, RSV pneumonia showed more symmetric bilateral interstitial involvement. Over time, hMPV-related interstitial pneumonia transitioned into bronchitis or bronchiolitis before resolving.
- These findings highlight the need for hMPV-specific diagnostic testing and imaging in clinical workflows, which will improve management and reduce inappropriate antibiotic usage. Further research is necessary to better differentiate hMPV and RSV, guiding prevention and therapeutic strategies.

CONCLUSION

- hMPV pneumonia is often undiagnosed in immunocompetent adults, most often presenting with an asymmetric lung distribution on CT scans.
- RT-PCR based diagnostics must be a routine workup for distinguishing hMPV from RSV pneumonia.

FUTURE WORK

Further prospective studies are required:

- Define the long-term pulmonary sequelae related to hMPV infection.
- Create a standardized imaging criterion for hMPV pneumonia.
- Examine potential antiviral treatment options and prophylactic interventions.