 ROLE OF RESPIRATORY SYNCYTIAL VIRUS AND MYCOPLASMA PNEUMONIAE IN PEDIATRIC COMMUNITY - ACQUIRED LOWER RESPIRATORY TRACT INFECTIONS

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INTRODUCTION

- Lower respiratory tract infections (LRTIs) are standard explanation for morbidity and mortality among children.
- Diagnostic repertoire of respiratory samples that are nasopharyngeally obtained are insufficiently sensitive to identify the causative pathogens so determining the etiology of these clinical manifestations is challenging. Empirical therapy is, therefore, adopted in most cases. Viruses such as Respiratory syncytial virus (RSV) carries severity from minor upper respiratory infections, acute bronchiolitis, and bronchopneumonia to apnea in children.
- RSV infection is an evocator cause of exacerbation of underlying respiratory diseases in infancy and early childhood.
- RSV infection can be confirmed using direct fluorescent antibody detection (DFA), chromographic rapid antigen detection or detection of viral RNA using reverse-transcription polymerase chain reaction (RT-PCR).
- Serological evidence of community- acquired acute LRTI in children aged < 5 y particularly those aged< one y.

MATERIAL AND METHODS

Study Design

A prospective single center study was designed to evaluate prevalence of respiratory syncytial virus and M. pneumoniae in community-acquired lower respiratory tract infections (LRTIs) in 75 children.

Inclusion criteria:

- Children aged 1 y - 5 y, with lower respiratory tract infection defined as presence of cough and fever with breathlessness of less than 30 days duration and increased respiratory rate with or without wheeze.

Exclusion criteria:

- Hospital acquired pneumonia, or pneumonia that developed 72 h after hospitalization or within 7 days of discharge.

Enrolment & evaluation criteria:

- Written informed consent was taken from the parents or legal guardian of children before enrolling them in the study and collecting clinical specimen.
- Detailed history of the patients was noted and clinical examination performed on all the children, the details of which were noted in a pre-designed proforma.

Clinical Specimens:

- Blood specimens (1 ml) was collected from children for IgM and IgG antibodies to M. pneumoniae (acute and convalescent phase).
- Nasopharyngeal aspirates (NPA) were collected for chromatographic assay of respiratory syncytial virus (RSV) antigen, RT-PCR for M. pneumoniae, PCR for M. pneumoniae

Microbiological Assays

- Respiratory syncytial virus (RSV) antigen detection using commercial immunochromatographic assay (Binax NOW RSV Card, Ames, USA).
- Reverse transcription polymerase chain reaction for RSV

A. Demographic Profile:

Table 3. Sensitivity, specificity, positive and negative predictive values of RSV antigen immunochromatography using RT-PCR as a diagnostic standard

Table 4. Sensitivity, specificity, positive and negative predictive values of Mycoplasma pneumoniae serology using polymerase chain reaction (PCR) as a diagnostic standard

B. Clinical and radiological profile in respiratory syncytial virus and Mycoplasma pneumoniae infections in children with lower respiratory tract infections

Table 5. Radiological profile in respiratory syncytial virus and Mycoplasma pneumoniae infections in children with lower respiratory tract infections

In conclusion, our data underline the role of RSV among infants and young children and no statistical association was found between RSV positive and RSV negative etiologies for wheeze, cough, coryza, rhonchi and crepitations. Other studies have also reported no significant difference among RSV positive and RSV negative cases in LRTI.

No statistical significance between RSV vireology and sex distribution.

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Rapid antigen detection through immuno-chromatography has obvious advantages of speed and simplicity in performance, but showed limited sensitivity. In our study, 30(40%) were found positive with immunochromatography, while 30(40%) were found to be positive with RT-PCR. In one study by Patel et al., reported 18% RSV infections in children wherein other study by Vakhie et al. reported 60.5% positive RSV infections in infants.

The sensitivity of RSV was 90.89%, specificity 100%, positive predictive value 100%, and negative predictive value of 93.15.

M. pneumoniae pneumonia is significantly higher in children aged 1-7 years compared to age 2-5 y (P = 0.026). Kumar et al. reported a case of preterm pneumonia due to M. pneumoniae in a<6 week old infant.

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