Seroprevalence of *Mycoplasma pneumoniae* among Patients with Community Acquired Pneumonia in a Tertiary Care Hospital at Navi Mumbai

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**ABSTRACT**

Community-acquired pneumonia (CAP) is often clinically classified as typical or atypical. *Mycoplasma pneumoniae* is the primary causative organism responsible for atypical pneumonia, which constitutes 10 to 20% of all pneumonia cases. Although prevalence studies have been performed extensively abroad, in India, such work has been seldom carried out. The present seroprevalence study carried out with this fact has shown 12.6% IgM and 16.0% IgG prevalence of the mycoplasma antibodies in the locality. These findings will encourage in undertaking further extensive study on this self-replicating unique bacterium.

Keywords: Antibodies, *Mycoplasma pneumoniae*, Prevalence.

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**INTRODUCTION**

*Mycoplasma pneumoniae* is a unique bacterium that did not always receive attention considering the difficulties in cultivation, though it causes number of diseases and high degree of morbidity and mortality associated with it, both in children and adults. *Mycoplasma pneumoniae* represent the smallest self-replicating bacterium. Since its initial description in 1940s, an eventual elucidation as a highly evolved pathogenic bacterium, it is now recognized as an exclusively human pathogen, existing in close association with the epithelial cells of the host respiratory tract. It is known to be causing infections in humans for many decades now. Eventually, it has come up to become the second most common etiological agent of community-acquired pneumonia (CAP) after *Streptococcus pneumoniae*. Reports of disease burden from United States mention average incidence of *M. pneumoniae* as 30.6% of CAP and is responsible for more than one lac hospitalizations each year, thus, stating it as a well-recognized pulmonary pathogen in the West. Studies from India (Delhi and Chennai) mention average disease burden of 28.6% pneumonia cases. Search of published literature did not reveal any similar studies having been carried out in Navi Mumbai. The current study is undertaken to find out the seroprevalence of this bacterium in a Tertiary Care Center of Navi Mumbai.

**MATERIALS AND METHODS**

The study was conducted in a Tertiary Care Center of Navi Mumbai, Maharashtra, India. A total of 150 patients with CAP diagnosed on clinical, radiological basis, and blood counts were included.

**Sample Collection**

Using all the sterile precautions, 2 to 3 mL of venous blood sample was collected by venepuncture. Plain tubes were used to collect blood. After collection, serum was separated and transferred into sterile Eppendorf tubes. These were then stored at –80°C till further processing.

**Sample Processing**

ERION enzyme-linked immunosorbent assay (ELISA) classic *Mycoplasma pneumoniae* IgM/IgG (VIRION/ SERION, Germany), a commercial qualitative and quantitative assay for detection of *M. pneumoniae* antibodies in human serum or plasma, was used. The procedure was adopted as per manufacturer’s instructions.

**In Case of IgM Detection**

Serum samples were pretreated with rheumatoid factor absorbents prior to IgM detection. For this rheumatoid factor absorbent was diluted 1:4 by adding 200 μL of Rf-absorbent to 800 μL of dilution buffer. Patient serum was then diluted 1:101 by distributing 10 μL of serum into 1 mL of the above diluted Rf-absorbent. It was then mixed well by vortexing and incubated for 15 minutes at room temperature.
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**RESULTS**

The patients included in the study (n = 150) were screened for the presence of IgM and IgG antibodies to *M. pneumoniae*. IgM antibodies to *M. pneumoniae* were found positive in 19 out of 150 cases (12.66%), p-value 5.976E-20, i.e., <0.05 (significant). IgG antibodies to *M. pneumoniae* were found positive in 24 out of 150 cases (16%), p-value 8.204E-17, i.e., <0.05 (significant) (Graph 1).

**DISCUSSION**

The observations made in the study show that *M. pneumoniae* infections are present in this part of the country as well. The prevalence percentage found for IgM was 12.66% (19 cases) and IgG was 16% (24 cases). Thus, there is possibility of pneumonia caused by *M. pneumoniae* alone and are in combination with other pathogens. Routine screening of the organism by adopting the simple methods will help monitoring the presence of this bacterium.

The current study is in concordance with Basil et al,5 who found the seroprevalence of *M. pneumoniae* in 16 out of 100 cases (16%) in their study in Delhi, India. Chaudhry et al.6 from Delhi, India studied 134 patients, of these 26 (19%) were positive for antibodies against *M. pneumoniae* by ELISA test. This is in accordance with the present findings. Kashyap et al7 in Delhi, India found the prevalence of *M. pneumoniae* by ELISA to be 21.3% (16 out of 75 cases) whereas Sahoo et al8 in Mangaluru, India found a 37% prevalence by ELISA. This difference in the prevalence of *M. pneumoniae* infections among various workers could be due to various reasons like patient study group, age and sex distribution, and the predisposing factors. The spread of *M. pneumoniae* infections in the community is by means of droplet infections and fomites. Viability and spread of *M. pneumoniae* from one patient to another may depend on environmental and climatic conditions like temperature, humidity, and season. Lastly, the health education of the patients regarding prevention of the disease and implementation of aseptic procedures by the health care workers and doctors may be responsible for variation in the prevalence.

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**REFERENCES**