

## SEROPREVALENCE OF *MYCOPLASMA PNEUMONIAE* IgG ANTIBODIES IN PATIENTS WITH RESPIRATORY INFECTION IN DIYALA GOVERNORATE

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**ABSTRACT :** *Mycoplasma pneumoniae* the common cause of a pneumonia among people, which is transmitted by aerosols or direct contact, causes both upper and lower respiratory infection (or abnormal primary pneumonia), especially in children and young people. To determine the seropositivity rate of *Mycoplasma pneumoniae* among respiratory infection patients in Diyala governorate. The present study was conducted in Baquba - Diyala governorate during the period from October / 2015 to April / 2016. The study group was consist of 91 samples were divided into two groups , healthy and patients . The mean age was (23 ± 12.327 ) years, with an age under 1 year\_ over 60 years. Demographic factors including age, residence, sex, type of disease and previous abortion were collected by interviewing. Detection of anti-chlamydia pneumonia IgG antibodies was done by Enzyme-linked Immuno sorbant Assay. Statistical analysis was performed using SAS version – H Ed (Inc, Cary, NC, USA) Chi – square test was use compare between patients and controls, P-value of < 0.05 was considered singificance. The result shows that the positivity rate of anti -*Mycoplasma pneumoniae* IgG antibodies in patients was 6.66%. The anti- *Mycoplasma pneumoniae* IgG antibodies was statistically higher in the group age under 1 year, among Rural than Urban, among patients bronchitis and insignificant between male and femal.

**Key words :** *Mycoplasma pneumoniae*, IgG, respiratory infection, Diyala.

### INTRODUCTION

*Mycoplasma pneumoniae* is one of the most serious causes of respiratory infection (Kashyap and Sarkar, 2010). The respiratory disease among children is one of the main causes of death worldwide (Selvaraj *et al*, 2014). *Mycoplasma pneumoniae* and *Chlamydia pneumoniae* are (5% to 10%) causes of the infection in upper respiratory system, including tracheobronchitis, pharyngitis, laryngitis and sinusitis (She *et al*, 2014). It was found that in cases of community-acquired pneumonia. *M. pneumniae* was isolated from 40% of samples from children in hospital (Dashti *et al*, 2010). *M. pneumoniae* infections is present in the epidemiological pattern every few years (every 3 to 7 years), but may also occur without symptomatic (Hongo, 2010).

Acute respiratory infection are the main responsible of death, and the major cause of childhood morbidity in children under five years of age . In developing countries, *pneumoniae* alone kills 3 million children every years. It a ccounts for 19% of all death of children under the age of five and 8.2% of all disabilities and premature deaths according to the modified age of disability (DALY) (Park, 2007).

Behrman in review of epidemiology of ALRTI inselected developing countries in low brith weight , malnutrition, vitamin A deficieny, lack of breastfeeding , and passive smoking as risk factors for ALRTY, those studies have been added other risk factors to the list including poor social and economic status, large family size, family history of bronchitis, advanced brith order, congention, young age, air pollution and the use of nonpathic treatment in the in the early stage of illness (Behrman, 1991).

*M. pneumoniae* is the smallest and simple and simplest self – limiting bacteria (Razin *et al*, 1998). It belong to class of *mollicutes* and mycoplasma family . Mycoplasma is characterized by bacteria due to lack of cell wall structure. The absence of cell wall structure makes these organisms not sensitive to beta-lactam anti – microbial agent, prevents them from staining by gram stain and is largely responsible for polymorphism (Jacobs, 2002).

Primary infection with *M.pneumoniae* marked by IgM, this antibody increase during the early infection especially the few weeks post acquired infection, which can last for several months from the beginning of infection, the antibody is shown to be IgG (Daxbeock *et al*, 2003;

Waites and Talkington, 2004).

## SUBJECT AND METHODS

The present study was conducted in Baquba - Diyala governorate during the period from October / 2015 to April / 2016. The study group was consist of 91 samples were divided into two groups , healthy and patients . The mean age was (23± 12.327) years with an age under 1 year over 60 years.

Demographic factors including age residence, sex, type of disease and previous abortion were collected by interviewing 4-5 ml of venous blood sample from each participant in a plastic test tube plan. The tubes were left at room temperature (15–25°C) for coagulation, the serum was separated by centrifugation at 3000 rotation / min for 5 min and stored in frozen – 20°C until use.

Detection of anti-chlamydia pneumonia IgG antibodies was done by Enzyme-linked Immno sorbant Assay (Demeditec Diagnostics GmbH, Germany). Testing producer and interpretation of the result were followed the manufacturer's instruction. Statistical analysis was performed using SAS version – H Ed (Inc, Cary, NC,USA). Chi – square test was use compare between patients and controls (P-value of < 0.05) was considered singificance.

## RESULTS

Results are given in Tables 1-6.

**Table 1 :** The number and percentages of totals for the study.

Subscribe study	Number	Percentage
Control	46	50.54%
Patients	45	49.45%
Total	91	100%

**Table 2** Compare between patients & control in IgG.

Group	IgG	No	Percentage
Control	+	12	26.08%
	-	34	73.91
Patients	+	3	6.66%
	-	42	39.33%
P-value	—	—	≤ 0.05

**Table 3 :** Anti-*Mycoplasma pneumonia* IgG between patients according to the sex.

Gender	Study group	
	Patients	
(Male)	29	
%	64.44%	
(Female)	16	
%	35.56%	
Total	45	
P-value	≤ 0.05	

**Table 4 :** Anti-*Mycoplasma pneumonia* IgG between patients according to the age.

Age groups	Patients
Under 1 year %	15(33.33%)
1-10 year %	14(31.11%)
11-20 year %	0(0%)
21-30 year %	6(13.33%)
31-40 year %	3(6.66%)
41-50 year %	3(6.66%)
51-60 year %	0(0%)
>60 year %	4(8.86%)
Total	45
P-value	≤ 0.05**

**Table 5 :** Anti-*Mycoplasma pneumonia* IgG between patients according to residence.

Residence	Study group	
	Patients	
Rural	24	
%	53.33%	
Urban	21	
%	46.66%	
Total	45	
P-value	≤ 0.05**	

**Table 6 :** Anti-*Mycoplasma pneumonia* IgG between patients according to disease.

Disease	Patients
Pnumonits	7(15.55%)
Pneumonia	16(35.55%)
Bronchitis	22(48.88%)
Total	45
P-value	≤ 0.05**

## DISCUSSION

This pathogen is a type of mycoplasmas and is one of the important respiratory pathogens in people of all ages, which causes respiratory diseases. Activation of pharyngeal cells, induction of cytokine and the properties of super-antigens are some of the factors associated with mycoplasma disease (Razin *et al*, 1998; Waites *et al*, 2008). *Mycoplasma pneumoniae* is one of the most prevalent respiratory pathogens that causes severe diseases from moderate upper respiratory infection to uncommon pneumoniae. This pathogen is main cause of acute respiratory infection, especially, it is responsible of many clinical symptoms is responsible for the production of a spectrum of non-pulmonary manifestations such as neurological, hepatic and cardiac diseases, hemolytic anemia and multiple arthritis (Kashyap and Sarkar, 2010).

Several studies have been conducted to assess the relationship between pneumococcal infection and to assess the relative risks of this factor of respiratory

infections in the population. For this purpose, we conducted this study to identify the role of the infectious agent and its association with patients with various respiratory diseases. This study was conducted in the province of Diyala to estimate the seroprevalence of IgG for *Mycoplasma pneumoniae* among people with respiratory diseases.

Table 2 shows the overall prevalence of IgG was 6.66% in patients with 45 samples. These results are not consistent with the studies conducted in India and Iran. The prevalence of IgG was 22%-25% (Roham *et al*, 2016; Cherian *et al*, 2016). While the result was 26.08% in control samples. The high rate of IgG antibodies is the result of pre-exposure to respiratory infection and childhood infection.

In Table 3, there was no statistically significant differences between both male and female patients, with the percentage of antibodies specific to IgG for *M. pneumoniae* in males was 64.44% whereas in females it was 35.56%, and this evidence of no association between IgG for *M. pneumoniae* and sex. This result was similar with other studies (Kashyab *et al*, 2008; Youns *et al*, 2010; Cherian *et al*, 2016).

In Table 4, the prevalence of antibodies IgG to *M. Pneumoniae* in children under 1 year was 33.33%, due to the high rate of IgG antibodies is the result of pre-exposure to respiratory infection and weak immune system at that early age.

Table 5 shows significant of seroprevalence of antibodies IgG antibody for *M. pneumoniae* according to the residence, with the percentage of seroprevalence in the countryside 53.33%, while in the city 46.66%. This result may be due to the low health awareness among the rural population. In Table 6, high prevalence of IgG antibodies for pneumococcal antibodies in patients with acute bronchitis is shown by 48.88% compared to patients with other respiratory diseases, the reason for this result, bronchitis is the most common in patients under study.

## CONCLUSION

Current results support the argument of a positive association between *M. pneumoniae* and respiratory tract infections and the need for new medical visions to demonstrate the effect of *M. pneumoniae* in respiratory infections.

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