



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

International Journal of Recent Scientific Research
Vol. 5, Issue, 11, pp.2000-2002, November, 2014

**International Journal
of Recent Scientific
Research**

RESEARCH ARTICLE

SEROPREVALENCE OF ANTI-CHLAMYDIA PNEUMONIA IGG IN PATIENTS WITH RESPIRATORY INFECTION IN DIYALA PROVINCE

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ARTICLE INFO

Article History:

Received 2nd, October, 2014

Received in revised form 10th, October, 2014

Accepted 4th, November, 2014

Published online 28th, November, 2014

Key words:

Chlamydia pneumoniae ,IgG ,Respiratory infection

ABSTRACT

Background: *Chlamydia pneumoniae* has recently been recognized as a common and important intercellular bacterium implicated in upper and lower respiratory tract infections in humans worldwide. *Chlamydia pneumoniae* is one of the major causes of acute respiratory illnesses, including pneumonia, bronchitis, pharyngitis and sinusitis and chronic obstructive pulmonary disease (CoPD). **Objectives:** To determine the rate of seroprevalence of *Chlamydia pneumoniae* among patients with respiratory infection in Diyala province.

Subjects and methods : The present study was conducted in Baquba-Diyala province during the period from October /2013 to April/2014. The study group was consist of 91 samples were divided in to tow groups ,healthy and patients. The mean age was 24.09 ± 13.57 years, with an age range 37 day-70 year. Certain demographic factors including age ,residence , sex, type of disease ,previous abortion were collected by personal interview. Detection of anti - *Chlamydia pneumoniae* IgG antibodies was done by Enzyme-Linked Immunosorbant Assay. The Statistical Analysis System- SAS (2012) was used to effect of different factors in study parameters. Chi-square test was used for paired comparison, and percentage value of <0.05 was considered significance

Result: The results show that the positivity rate of anti- *Chlamydia pneumoniae* IgG antibodies in patients was 17.78%. The anti- *Chlamydia pneumoniae* IgG antibodies was statistically higher in the group age more than 20 years ,among male than female , among patients bronchitis, and insignificant between urban and rural population.

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INTRODUCTION

Pneumonia is the main killer of children. It is cause of about 109 million deaths in world in children under 5 years of age (Wardlaw *et al.*,2006). Nearly of 10% cases of Pneumonia acquired in the community with *Chlamydia pneumoniae* (Grayston.,1992;Kuo *et al.*,1995) . *Chlamydia pneumoniae* is one of the major causes of acute respiratory illnesses, including pneumonia ,bronchitis, pharyngitis and sinusitis and chronic obstructive pulmonary disease (CoPD) (Von hertzen *et al.*,1997; Al-Younes.,2009;Kuvn *et al.*,1999).

A number of studies indicate that this pathogen is associated not only with respiratory disease ,such as atherosclerosis, endocarditis, asthma and arthritis (Bonnet.,2000;Wald *et al.*,2000;Salloom *et al.*,2013).

The healthy population will include individuals with serological indication of past infection ,persistent (chronic) infection and recent (acute) infection with *Chlamydia pneumoniae* (Yaakov *et al.*.,2002). That 30-50% of people have antibodies against these bacteria , few kids have had antibodies but after the age of 6-8 years .

Each person become infected pulmonary once at least during his time (Kuo *et al.*,1995).The serological diagnosis is the most sensitive technique for the diagnosis of pulmonary infection . can detect objects of IgG , IgM by use of reagent suitable . IgM show when the initial infection after 3 weeks, followed by the emergence of IgG after 6-8 weeks,the seroprevalence of antibody increases during adulthood (Khalili *et al.*,2007).

SUBJECTS AND METHODS

The present study was conducted in Baquba-Diyala province during the period from October /2013 to April/2014. The study group was consist of 91 samples were divided in to tow groups, healthy and patients. The mean age was 24.09 ± 13.57 years, with an age range (37 day-70 year).

Certain demographic factors including age ,residence , sex, type of disease ,previous abortion were collected by personal interview.4-5 milliliters of venous blood sample was collected from each participant in plan plastic test tubes.

The tubes were left in room temperature (15-25°C) to clot, sera were separated by centrifugation at 3000 rotation/minute for 5 minutes and stored frozen at -20°C until use. Detection of anti-

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Chlamydia pneumoniae IgG antibodies was done by Enzyme-Linked Immunosorbent Assay (Nova Tec Immundiagnostica GmbH, Germany Procedure and interpretation of results were followed the manufacturer's instruction.

Positive or negative cases were determined by comparing the absorbance value of each sample in this study with that of the cut-off value, samples with an absorbance value less than the cut-off value were considered as negative ; samples with a value above the cut-off value were considered positive. The Statistical Analysis System- SAS (2012) was used to effect of different factors in study parameters. Chi-square test was used for paired comparison, and percentage value of <0.05 was considered significance.

Results

Table 1 The number and percentages of totals for the study

Subscribers study	Number	percentage
healthy	46	50.54%
patients	45	49.45%
total	91	100%

Table 2 Compare between patients & control in IgG

Group	IgG	No.	Percentage (%)
Patient	+	8	17.78
	-	37	82.22
Control	+	29	63.04
	-	17	36.96
P-value	---	---	0.05

Table 3 Anti- *Chlamydia pneumoniae* IgG according to the sex

Group	Sex	IgG= -No. (%)	IgG= +No. (%)
Patients	Male	23 (79.31%)	6 (20.69%)
	Female	14 (87.50%)	2 (12.50%)
Control	Male	20 (64.52%)	11 (35.48%)
	Female	9 (60.00%)	6 (40.00%)
P-value	---	0.05	0.05

Table 4 Anti- *Chlamydia pneumoniae* IgG according to the age

Group	Age group	IgG= -No. (%)	IgG= +No. (%)
Patients	Less than one year	22 (95.65%)	1 (4.35%)
	1-20	5 (83.33%)	1 (16.67%)
	More than 20	10 (62.50%)	6 (37.50%)
Control	Less than one year	0 (0.00%)	0 (0.00%)
	1-20	3 (60.00%)	2 (40.00%)
	More than 20	26 (63.41%)	15 (36.59 %)
P-value	---	0.05	0.05

Table 6 Anti- *Chlamydia pneumoniae* IgG according to the resi

Group	Resi	IgG= -No. (%)	IgG= +No. (%)
Patients	urban	20 (83.33%)	4 (16.67%)
	rural	17 (80.95%)	4 (19.05%)
Control	urban	9 (45.00%)	11 (55.00%)
	rural	20 (76.92%)	6 (23.08%)
P-value	---	0.05	0.05

Table 5 Anti- *Chlamydia pneumoniae* IgG according to the disease

Group	Type	IgG= -No. (%)	IgG= +No. (%)
Patients	Numonitis	7 (100.0%)	0 (0.00%)
	Neumononia	15 (93.75%)	1 (6.25%)
	Bronchitis	15 (68.18%)	7 (31.82 %)
P-value	---	0.05	0.05

DISCUSSION

Chlamydia pneumoniae has recently been recognized as a common and important intercellular bacterium implicated in upper and lower respiratory tract infections in humans worldwide (Yaakov. , 2002; Kuvini *et al.* ,1999). This study

was conducted in the province of Diyala to estimated the seroprevalence of IgG for *Chlamydia pneumoniae* among people with respiratory diseases.

Table (2) show the overall prevalence of antibody IgG was 17.78% in patients of 45 sample , These result are consistent with studies conducted in Korea , Israel and Jordan , where the proportion ranged seroprevalence for IgG 16.6%-20% (Pandey *et al.*,2005;Younes,2009;Yaakov *et al.*,2002;Choi *et al.*,1998). While the result was 63.04% in control samples. Attributed the cause of the high rate of antibodies specific IgG is the result of prior exposure to respiratory infection and the acquisition of infection during childhood. Table (3) shows significant differences between each of the male and female patients ,with the percentage of specific antibodies IgG for *C.pneumoniae* in male 69.20%, while in female was 12.50%. This result was similar with study was done by Yamada(1995) which showed that infection of *Chlamydia* was higher in males than females, this result may be attributed to that males are more prone to respiratory infections . In the table (4) ,the prevalence rate of IgG antibody to *C pneumoniae* in adults more than 20 years was 37.50% , Thus it is likely that most individuals acquired infection during the second and third decades of life . The progressively increasing antibody prevalence with age is similar to that described by others (Al-Younes,2009;Sadaka *et al.*,2012) .Table(5) shows the high seroprevalence of IgG for *Chlamydia pneumoniae* in patients with acute bronchitis by 31.82% compared with patients with other respiratory diseases,the reason for this result is due to the disease, bronchitis is the most common in patients under study. The table (6) shows insignificant of seroprevalence of antibodies IgG for *C.pneumoniae* according to the residence ,with the percentage of seroprevalence in the countryside 19.05%, while in the city 16.67%. Perhaps the reason for this result is due to increased health awareness among rural population .

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