Chlamydia pneumoniae infection in-patients with community-acquired pneumonia in Iraq

Hayfaa D. Salman * MSc

Summary:

Background: - this study was carried out to determine the prevalence of *Chlamydia pneumoniae* in community- acquired pneumonia in Iraq.

Patients and Methods: - Ninety- three patients with radiologically confirmed pneumonia admitted to the Saddam Medical City, Baghdad teaching hospital through the period extended from October 2001 till March 2002.*C. pneumoniae* infection was identified serologically by IgM antibodies using ELISA technique.

Results: - Antibodies confirming acute *C. pneumoniae* infection were identified in 20 (21.5 %) patients. *C. pneumoniae* infection occurred in all age groups, and highest prevalence of infection was (9.67 %) at age 25 – 34 years.*C. pneumoniae* infection was identified more frequently in males (13.9 %) than that of females (7.5 %). The infection also was detected more frequently among patients with chronic renal diseases and anemia.

Conclusions: - *C. pneumoniae* play an important role in community- acquired pneumonia in Iraq.

Keywords: - Chlamydia pneumoniae in community acquired pneumonia.

Introduction:-

Chlamydia pneumoniae is now well establish as a major respiratory pathogen, that causes *pneumonia* and other respiratory infections world wide (1), (2).This pathogen given as the third or fourth most frequent cause of community- acquired pneumonia (CAP) (3). *C. pneumoniae* seems to be a primary human pathogen. The mode of transmission remains uncertain but it is probably via infected respiratory secretions (4). Outbreaks of *C. pneumoniae* have occurred in enclosed populations such as military recruits and among residents of nursing homes, spread of infection has been documented among family members in the same household (5), (6).

The proportion of CAP associated with *C. pneumoniae* infection has ranged (6 % - 22 %), varying with geographical location, age group examined, and diagnostic method used, most of these studies used serology alone (7), (8), (9).This study aimed to, (1) evaluate the prevalence of *C. pneumoniae* IgM antibodies in serum of CAP patients by an ELISA method. (2) To investigate the distribution of *C. pneumoniae* infection in relation to age and gender.(3) To determine the effect of comorbid illnesses on prevalence on *C. pneumoniae* in CAP patients.

Patients and Methods

A total of 93 patients with radiologically confirmed pneumonia participated in this study. Patients were admitted to the Saddam Medical City, Baghdad teaching hospital between October 2001 and March 2002.

They were 54 (58 %) males and 39 (42 %) females.The mean age was 45 years, ranging from 15 – 86 years.

Blood samples were collected from all patients, and ELISA method was used to measure specific anti-*C. pneumoniae* IgM in serum samples.

Statistical analysis: - Chi square ($\chi2$), ANOVA test, Odds ratio and Correlation coefficient (r) were used in statistical analysis. P value of <0.05 was used as the level of significance.

Results

In this study 20 (21.5 %) patients had positive result for IgM – anti *C. pneumoniae* antibodies in serum by ELISA technique. Table (1) shows that *C. pneumoniae* infection occurred in all age groups. The highest prevalence of infection was reported among patients at age 25 – 34 years constituting (9.67 %, while the least prevalence of infection was reported among patients at age 35 – 44 years constitute (1.07 %) (P < 0.001, r = -0.297).

Table (2) shows that *C. pneumoniae* infection was identified in 13 (13.9 %) males patients, and in 7 (7.5 %) females (P = 0.478). The prevalence of *C. pneumoniae* with comorbid illnesses was (24.5 %), while the infection was detected without comorbid illness in (38.1 %).Infection with this pathogen was detected more frequently among patients with chronic renal diseases and anemia (OR = 2, 2.5 respectively).

* Dept. of Microbiology, Coll. Medicine, Univ. Baghdad

Table (1): The distribution of Chlamydia pneumoniae infection according to age groups

Age group	*C. pneumoniae*	No (%) of patients in age group	Total
15 – 24	2 (2.15 %)	21	23
25 – 34	9 (9.67 %)	16	25
35 – 44	1 (1.07 %)	8	9
45 – 54	3 (3.2 %)	13	16
55 – 64	3 (3.2 %)	16	19
? 65	2 (2.15 %)	19	21
Total	20 (21.5 %)	93	113
p and r values	P < 0.001 r = 0.297		

Table (2): Distribution of *Chlamydia pneumoniae* infection in relation to sex

Total number of patients	Sex	*C. pneumoniae*		Total
		Positive No (%)	Negative No (%)	
93	Male	13 (13.9)	41 (44)	54
	Female	7 (7.5)	32 (34.4)	39
	Total	20 (21.5)	73 (78.5)	93
		p = 0.478		

Discussion

C. pneumoniae has been described previously as a mild atypical pneumonia which can be treated on an out patient basis (10), (11). Our results indicate that *C. pneumoniae* as a single etiological agent is capable of causing pneumonia sever enough to require admission to hospital even in relatively young patients.

C. pneumoniae was identified in (21.5 %) patients. In the present study only ELISA technique used in the diagnosis, and the cut-off of assay was rigorously fixed to exclude false – positive results.This study comes in agreement with other studies (1), (12). Disagree with the higher percentage (43 %) which reported during *C. pneumoniae* epidemic in Finland [13], and the lower percentage (6 – 8 %) which reported by other studies (14), (15), (16), (17).

The differences in the results may be due to the presence or absence of epidemic cycle, or use of different serologic methods and interpretative criteria. It is clear from this study *C. pneumoniae* infection occurred in all age groups, and the highest prevalence of infection was found in patients aged 25 – 34 years. Also the prevalence of infection was decreased with advancing the age.This findings was statistically highly significant (p < 0.001). this result comes in agreement with many other studies carried out by many workers (13), (18), (19), (20), (21).

The presence of these comorbid illnesses might change a microbe from a usual pathogen to a more invasive and opportunities one.

Conclusion

In conclusions *C. pneumoniae* play an important role in patients with CAP, Young adults patients were more susceptible to infection with *C. pneumoniae* than that of elderly patients.Males were more susceptible to infection with *C. pneumoniae* than females.Comorbid factors play a contributing role that enhance the infection with *C. pneumoniae*.

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