An Estimation for the Association between the C–RP Tests and RF Tests of Rheumatoid Condition Patients with their Demographic Data. In Maysan Province, Iraq

Mustafa AdnanAl-Norri[1], Rashid Rahaim Hateet[2], Mohammed Jasim Qasim[3]

[1]M.Sc. Microbiology, [2]Assist. Prof., Microbiology, [3]M.Sc. Microbiology,
Basic Medical Science Department, Nursing

Abstract

The present study aims to achieve the following objectives to assessment rheumatic arthritis patients in Maysan Governorate, an influence of the gender and age on the rheumatic arthritis and an effectiveness of the geographical areas (urban,rural) on the incidence of rheumatic. The data were collected between the (January to August 2016)Al-Sadder Teaching hospital in Maysan province and the total number of serum samples were (314).The study's data were analyzed through the use of Statistical processing, with program SPSS 20.0, Sigma Stat 2.03, Sigma Plot 2000, Med Calc and Excel 2010 and the blood samples were collected from patients aged (13–61years) (for both genders) and also from different areas in Maysan governorate, all blood samples were collected from people suspected having arthritis due to they had symptoms of diseases with pain,the rheumatic factor and C–reactive protein (CRP)were evaluated by latex agglutination test. The data analysis revealed that the majority of the patients about 27.4% in the study samples at age group (31-40 year. The chi-squared distribution is applied in hypothesis testing and to a minimum range for confidence intervals for population difference when the underlying distribution is normal.

Keywords: *C-reactive protein (CRP), Rheumatoid factors (RF) and chi-squared distribution.*

Introduction

Rheumatoid arthritis (RA) is an autoimmune disease in which the immune system of body which generally protects its health by attacking bacteria and viruses and others as foreign substances, attacks the joints viamistakenly . This creates inflammation that causes the tissue that lines theinto of joints (the synovium) to be thicken, resulting in pain and swelling around the joints. The lubrication joints and helping them move smoothly by synovium makes a fluid[2,4,1]. The elastic tissue that covers the ends of bones in a joint, as well as the bones themselves have damage when the inflammation goes unchecked. Moreover,there is loss of cartilage and the joint spacing among bones may become smaller, joints can become painful, stable and lose their ability to move Joint distortion also can occur,the damage of the joint none reversed, doctors recommend early diagnosis and aggressive treatment to control RA because it can occur early[3,8]. Clinical aspects of Rheumatoid arthritis

differ, ordinarily reflecting the severity and stage of the disease. Joint pain,erythema,warmth, swelling, and lack of function are classic[9]. Palpation of the joints appears spongy or boggy tissue. Often fluid can be aspirated from the inflamed joint[2]. Peculiarly, the pattern of joint participation initiate with the small joints in the hands, wrists, and feet. The Rheumatoid arthritis can influence the body beyond the joint, such as blood anemia, blood vessels,eyes, skin, and lungs,the outer lining of the heart muscle (myocardium) and the heart (pericardium), also People with RA are more proneto risk of myocardial infraction (heart attack), atherosclerosis and stroke is markedly increased[5]. The risk factors for RA are inclusive genetic agents which (donate 50% to 60% of the risk of progressing rheumatoid arthritis[10]. Age and gender, the rheumatoid arthritis is far more prevalent in women than in men, the female-to-male ratio being (3:1)[4]. Nevertheless, the mechanism by which gender effects the vulnerability to rheumatoid arthritis remains

unclear, infections; several microorganisms have been involved in the expansion of RA based higher titers of the related antibodies in patients with rheumatoid arthritis. One prospect is that these microorganisms excite the expansion of rheumatoid arthritis in persons who carry genetic vulnerability agents to the disease[5], lifestyle, environmental agents, health and social outcomes[4, 5]. Rheumatoid factor (RF) is the autoantibody that was first set up in rheumatoid arthritis(RA). It is clarifying as an antibody opposed to the Fc portion of IgG and different rheumatoid factors can recognize various portions of the IgG-Fc. RF and IgG join to shape immune complexes that donate to the disease process[6].Rheumatoid factor can be either monoclonal IgM to polyclonal IgG (type 2) or polyclonal IgM to polyclonal IgG (type 3) .Although essentially encountered as IgM, rheumatoid factor (RF) may form of any isotype of immunoglobulins [7, 6].Rheumatoid factor (RF) isfrequently estimated in individual suspected of having any shape of arthritis even though positive outcomes can be due to other reasons, and negative outcomes do not cancel disease. But, in integration with signs and symptoms, it can play a function in both diagnosis and disease prognosis [4].It is part of the usual disease gauge of rheumatoid arthritis (RF). The presence of (RF) in serum can also mark the appearance of doubtful autoimmune activity detached to rheumatoid arthritis, such as that related with tissue or organ refusal [7] .In such cases, RF can avail as one of diverse serological signs for autoimmunity[11]. RFs may also be a marker of other autoimmune diseases, such as, definite infections, juvenile arthritis and some types of cancer[1]. RF also take place in other deficiency. As a representation, some connective tissue diseases, such as primary Sjögren's syndrome and systemic lupus erythematous (SLE), may be related with the existence of RF. In addition, RF levels may be raised in individuals with specific infections, such as rubella, malaria and hepatitis C[8]. The grades of RFraise with age, and positive reactions can be found in aged in women[9,8]. Rheumatoid factorsare proteins created by the immune system. Typically, the immune system assault disease-causing substances like bacteria and viruses. Rheumatoid factors assault glands, healthy joints or other normal cells by fault . The susceptibility of RF for determined RA is only 60-70% with a specificity of 79% ^{11}C-reactive protein (CRP) is an acute-phase protein that avail as an early sign of infection or inflammation. The c-reactive protein is synthesized in the organ of liver and is typically establish at concentrations of less than 10 mg/L in the blood. In the course of inflammatory disease states, CRP levels increase quickly within the first 6 to 8 hours and top at levels of up to 345–400 mg/L after 48 hours. A rise or growing levels of CRP submits have an acute infection (inflammation) in the patient[18]. The CRP test is not definite sufficient to detect a particular type of arthritis[5,13].

Materials and Method

The data were collected between the (January to August 2016) and the blood samples were collected from (314) patients age (13 – 61years) (for both gender) from the serological unite in Al-Sadder teaching hospital. also from different areas in Maysan governorate like AL- Hussein Q, AL- Majddia Q, AL-Ascarry Q, AL-Qadisea Q, Abo Romana Q, Al-Risala Q . RF and CRP were estimated by latex agglutination test, rely on indirect agglutination of latex particles covered with monoclonal anti-CRP antibody and human IgG, respectively. The analysis results were used to detect the findings according to CRP and RF as the follow

C-Reactive Protein: The slide agglutination test (CRP-latex) for the semi- quantitative and qualitative discovery of C - reactive proteinin human serum. Particles with goat lgG anti-human are when blended with samples including C - reactive protein; the CRP concentration can increase up to 350 in 12-24 hours. Through tissue necrosis and inflammation arise from microbial infections

Rheumatoid Factor (RF): The slide agglutination test (RF-latex) for thesemi quantitative and qualitative discovery of rheumatoid factor(RF) in patient serum. Latex particles covered with human gamma globulin are agglutinated when blended with samples including rheumatoid factor (RF).

Statistical Data Analysis: The study's facts were resolved through the statistical working has been drove out with program SPSS 20.0, MedCalc, Sigma Plot 2000, Sigma Stat 2.03 and Excel 2010. Statistical treatment has assisted us in interpretative analysis, whereas statistical parameters have assisted us to define the range index, standard error, arithmetic median, standard deviation, and confidence interval with precision 95% (95% CI).

Results

Table (1): Association between the C – Reaction Protein tests of individuals.

Criteria	Age Group		C – Reaction Protein				Chi-Square
			Negative	**Positive**	**None Test**	**Total**	
Age	11-20	F	46	15	3	64	X^2observ = 35.181 Critic = 18.13 df = 10 P = 0.000 HS
		%	14.6%	4.8%	1.0%	20.4%	
	21-30	F	38	17	2	57	
		%	12.1%	5.4%	0.6%	18.2%	
	31-40	F	57	19	10	86	
		%	18.2%	6.1%	3.2%	27.4%	
	41-50	F	44	21	15	80	
		%	14.0%	6.7%	4.8%	25.5%	
	51-60	F	10	5	10	25	
		%	3.2%	1.6%	3.2%	8.0%	
	61 and more	F	0	2	0	2	
		%	0.0%	0.6%	0.0%	0.6%	
	Total	F	195	79	40	314	
		%	62.1%	25.2%	12.7%	100.0%	
Gender	Male	F	69	22	11	102	X^2observ = 1.975 Critic = 2.920 df = 2 P = 0.372 NS
		%	22.0%	7.0%	3.5%	32.5%	
	Female	F	126	57	29	212	
		%	40.1%	18.2%	9.2%	67.5%	
	Total	F	195	79	40	314	
		%	62.1%	25.2%	12.7%	100.0%	
Residency	Urban	F	188	77	38	303	X^2observ = 0.490 Critic = 2.920 df = 2 P = 0.783 NS
		%	59.9%	24.5%	12.1%	96.5%	
	Rural	F	7	2	2	11	
		%	2.2%	0.6%	0.6%	3.5%	
	Total	F	195	79	40	314	
		%	62.1%	25.2%	12.7%	100.0%	

Table (1) indicates there was a high significant relationship between C – Reaction protein of patients with their age at confidence interval (P < 0.05),while show there are no significant relationship between C – Reaction protein with gender and residency at confidence interval (P > 0.05) when analyzed by chi-square test.

Table (2): Association between the Rheumatoid Factors tests of individuals.

Criteria	Age Group		Rheumatoid Factors				Chi-Square
			Negative	Positive	None Test	Total	
Age	11-20	F	52	1	11	64	X²observ= 20.717 Critic=1.812 df= 10 P=0.023 S
		%	16.6%	0.3%	3.5%	20.4%	
	21-30	F	41	5	11	57	
		%	13.1%	1.6%	3.5%	18.2%	
	31-40	F	65	6	15	86	
		%	20.7%	1.9%	4.8%	27.4%	
	41-50	F	61	10	9	80	
		%	19.4%	3.2%	2.9%	25.5%	
	51-60	F	16	6	3	25	
		%	5.1%	1.9%	1.0%	8.0%	
	61 and more	F	0	1	1	2	
		%	0.0%	0.3%	0.3%	0.6%	
	Total	F	235	29	50	314	
		%	74.8%	9.2%	15.9%	100.0%	
Gender	Male	F	78	6	18	102	X²observ= 2.175 Critic= 2.920 df= 2 P=0.337 NS
		%	24.8%	1.9%	5.7%	32.5%	
	Female	F	157	23	32	212	
		%	50.0%	7.3%	10.2%	67.5%	
	Total	F	235	29	50	314	
		%	74.8%	9.2%	15.9%	100.0%	
Residency	Urban	F	226	28	49	303	X²observ= 0.409 Critic=2.920 df= 2 P=0.815 NS
		%	72.0%	8.9%	15.6%	96.5%	
	Rural	F	9	1	1	11	
		%	2.9%	0.3%	0.3%	3.5%	
	Total	F	235	29	50	314	
		%	74.8%	9.2%	15.9%	100.0%	

Table (2) indicates there was a significant relationship between rheumatoid factors of the patients with their age at confidence interval (P < 0.05), while show there are no significant relationship between rheumatoid factors tests with gender and residency at confidence interval (P > 0.05) when analyzed data by chi-square test.

Discussion

This study has been done to summarize and evaluate of rheumatoid arthritis and its distribution according to socio- demographic data with estimate the association between the C–RPtests and RFtests of patients with their demographic information. The level of education of individuals didn't play function in the happening of rheumatoid arthritis. The data analysis revealed the majority of RA patients are 27.4% at age group (31-40 years), this result agrees with a study conducted by[18, 16]. Also due to the peak age of infected in the universal is between (35 to 45 years) with geographic variances, this agree with study .Most of infected are from females about(67%) more than males which agree with study by [13],the residence have high effects due to the majority of the patients about 96.5% are from urban regions reverse the rural regions which have agree with study by [15] he have been showed a prevalence of RA among urban Europeans, while rural groups showed much lower prevalence,in our research have dominated patients from urban areas. The study has been showed the majority of patients have C-reaction protein tests presented negative results (62.1%), as well as negative results (74.8%) of

rheumatoid factorwhich have agree with study by[16, 17] and the date of incidence distribution of RA diseases annually most occur in June month (27.4%)of the study sample.Table 1present that the majority of CRP test positive reaction increased in aged (41-50years) via (6.7%), Also this table indicates there was a high significant correlation between c- reactive protein in the gender with their age at ($P < 0.05$) and the reverse significant correlation between c- reactive protein in the gender with residency ($P > 0.05$) when analyzed by chi-square test.These data have agreement with study by [12, 13, 18]. According to the results in (table 2),which have been revealed the majority of the patients with age (41-50 years) via (3.2%) as positive reaction, this indicates there are a substantial links between rheumatoid factors test in the patients with their age at ($P < 0.05$) but there are no significant relationship between rheumatoid factors test with their gender and residency by ($P > 0.05$), when analyzed by chi-square test. This study is agreement with study by [14, 11].

Conclusion:

According to the results in tables, the recent studyconcluded the followings: Most of patient with rheumatoid arthritis (RA) at ages were ranging (31-40) years old with (27.4%), the females are more susceptible for infecting with rheumatoid arthritis (RA) than males by (67.5%). The majority of patients (96.5%) of the study samples were living in urban and therefore they have positive reaction of (CRP) and (RF),also both of reaction have increase with age.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Basic medical science department/Nursing and all experiments were carried out in accordance with approved guidelines.

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