

## Degree of Agreement Between 2010 ACR/EULAR Classification Criteria of Rheumatoid Arthritis and Rheumatologist's Diagnosis

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### ABSTRACT

**Background:** Rheumatoid arthritis (RA) is an autoimmune disorder primarily having synovial joints inflammation and leading to their destruction and may also involve extra-articular manifestations. Diagnosing RA as early as possible and starting treatment immediately is key to prevent complications.

**Aim:** To determine the degree of agreement between American College of Rheumatology and European League against Rheumatism classification criteria 2010 (ACR/EULAR 2010) of RA and diagnosis made by rheumatologist in diagnosing RA in Pakistani population.

**Methods:** This is a cross sectional study and conducted in the Department of Rheumatology and Immunology at Shaikh Zayed Hospital Lahore over a period of six months from January 2014 to June 2014. Study comprised of 200 patients after fulfilling the inclusion and exclusion criteria. The degree of agreement between ACR/EULAR 2010 classification criteria of RA and rheumatologist's diagnosis was analyzed.

**Results:** Out of 200 cases, 52(26%) were between 16-50 years of age and 148(74%) were between 51-70 years of age, mean  $\pm$  SD was calculated as 56.43  $\pm$  9.23 years, 83(41.5%) male and 117(58.5%) females, frequency of agreement between ACR/EULAR 2010 classification criteria of RA and diagnosis made by rheumatologist in diagnosing RA was calculated which reveals true positive i.e., 119 for both ACR/EULAR 2010 criteria and true negative for both i.e., 31, Kappa statistics were computed as 0.393 (75% of the observations), showing the strength of agreement as 'fair'.

**Conclusion:** We concluded that the degree of agreement between ACR/EULAR 2010 classification criteria of RA and diagnosis made by rheumatologist in diagnosing RA in Pakistani population is higher which may be helpful for diagnosis of this morbidity in a country like Pakistan.

**Keywords:** Rheumatoid arthritis, diagnosis, ACR/EULAR 2010 classification criteria,

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### INTRODUCTION

Rheumatoid arthritis (RA) is a chronic inflammatory disease of autoimmune origin resulting in symmetrical synovial joint swelling, tenderness and later destruction, resulting in marked morbidity and early mortality. Incidence of RA in North America and Western Europe is 20-50 cases per 100,000 and its prevalence is 0.5-1.1% but in Karachi its prevalence in a study was found to be 0.142%<sup>1-2</sup>. There is no gold standard test for the diagnosis of RA. Early detection of disease is very essential to improve the disease outcome and limit the joint damage and extra-articular complications with treatment. In 2010 American College of Rheumatology (ACR) and European League against Rheumatism (EULAR) released new classification criteria of RA to detect early disease so that Disease Modifying Antirheumatic Drugs (DMARDs) could be started at earliest to limit joint erosions and hence deformities. Some studies have assessed the diagnostic accuracy of ACR/EULAR 2010 classification criteria of RA

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which performed well as compared to 1987 ACR classification criteria in detecting early disease. Still in 1987 ACR criteria there were some patients who were missed especially those who are Rheumatoid Factor (RF) and anti-Cyclic Citrullinated Peptide antibodies (Anti CCP antibodies) negative<sup>3,4,5,6</sup>. The positive or negative status of RF and Anti CCP antibodies is affected by multiple non genetic factors.

### PATIENTS AND METHODS

This cross sectional study was carried out in the Department of Rheumatology and Immunology at Shaikh Zayed Hospital Lahore over a period of six months from January 2014 to June 2014. Study comprised of 200 patients presenting in Rheumatology Out Patient Department, and fulfilling the inclusion and exclusion criteria. Demographic characteristics including name, age and sex was recorded. ACR/EULAR 2010 criteria was applied on all subjects and criteria score for each individual was recorded. Then later diagnosis made by rheumatologist was noted and documented. Data was analyzed through SPSS version 12. Quantitative data like age was presented by mean and standard

deviation. Qualitative data like gender and degree of agreement was presented by frequency and percentages. Kappa statistics was used to determine the strength of agreement between ACR/EULAR 2010 classification criteria of RA and diagnosis made by rheumatologist in diagnosing it.

**RESULTS**

Age distribution of the patients was done which shows that 52(26%) were between 16-50 years of age and 148(74%) were between 51-70 years of age, mean+SD was calculated as 56.43+9.23 years (Table 1). Patients were distributed according to gender showing 83(41.5%) male and 117(58.5%) females (Table 2). Frequency of agreement between ACR/EULAR 2010 classification criteria of RA and diagnosis made by rheumatologist in diagnosing RA in the study was calculated which reveals true positive i.e. 119 for both ACR/EULAR 2010 criteria and true negative for both i.e., 31, Kappa statistics were computed as 0.393 (75% of the observations), showing the strength of agreement as 'fair' (Table 3).

Table 1: Age Distribution (n=200)

Age(in years)	n	%age
16-50	52	26
51-70	148	74
<b>Mean+SD</b>	<b>56.43+9.23</b>	

Table 2: Gender Distribution

Gender	n	%age
Male	83	41.5
Female	117	58.5

Table 3: Degree of agreement between 2010 ACR/EULAR classification criteria of rheumatoid arthritis and diagnosis made by rheumatologist in diagnosing rheumatoid arthritis in Pakistani population

Clinical diagnosis	2010 ACR/EULAR classification criteria	
	Yes	No
Yes	119	12
No	38	31
<b>Total</b>	<b>157</b>	<b>43</b>

Number of observed agreements: 150 (75.00% of the observations)  
 Kappa= 0.393  
 SE of kappa = 0.068  
 95% confidence interval: From 0.259 to 0.526  
 The strength of agreement is considered to be 'fair'.

**DISCUSSION**

RA is a chronic inflammatory disease characterized by joint swelling, joint tenderness and destruction of synovial joints, leading to severe disability and premature mortality. It also involves extra-articular manifestations including eye, skin, cardiopulmonary and renal systems. Given the presence of

autoantibodies, such as RF and anti-citrullinated protein antibody (ACPA) (tested as anti-CCP antibodies), which can precede the clinical manifestations of RA by many years. RA is considered as an autoimmune disease. A joint working group of the ACR and EULAR formed to develop a new approach for classification of RA. While classification criteria are potentially adopted for use as aids for diagnosis.

We aimed this study to assess the sensitivity and specificity of ACR/EULAR 2010 classification criteria in Pakistani population because no such study has been done in this population. Moreover, the incidence and prevalence of Rheumatoid Arthritis vary widely between the geographical areas which cannot be explained by genetic factors alone and this can affect the sensitivity and specificity of diagnostic criteria in our local population. All studies evaluating diagnostic accuracy have been done in western and Chinese populations and this was the first study in Pakistani population.

Out of 200 cases, 26%(n=52) were between 16-50 years of age and 74%(n=148) were between 51-70 years of age, mean+SD was calculated as 56.43+9.23 years, 41.5%(n=83) male and 58.5%(n=117) females, frequency of agreement between ACR/EULAR 2010 classification criteria of RA and diagnosis made by rheumatologist in diagnosing RA was calculated which reveals true positive i.e. 119 for both ACR/EULAR 2010 and true negative for both i.e. 31, Kappa statistics were computed as 0.393 (75.00% of the observations), showing the strength of agreement as 'fair'.

We find similar findings in a study published in 2013 showed that the agreement between ACR/EULAR 2010 classification criteria of RA and diagnosis made by rheumatologist was 78.2%.

Nakagomi et al<sup>7</sup> determined the optimized definition of ultrasound-detected synovitis for the ACR/EULAR 2010 criteria and assessed the impact of its use on the accuracy of RA classification, they recorded sensitivity and specificity of the ACR/EULAR 2010 criteria using different definitions of synovitis to identify patients who developed a disease requiring methotrexate (MTX) treatment within 1 year were 58.5% and 79.4%, respectively, for clinical synovitis (tenderness or swelling), 78.0% and 79.4%, respectively, and concluded that ultrasound assessment improves the accuracy of the ACR/EULAR 2010 criteria for identifying patients with a disease requiring MTX treatment. We assessed the accuracy on clinical and lab investigations and the recorded frequency of agreement is similar with the above study.

However, the decrement of agreement is significantly higher for ACR/EULAR

2010 classification criteria when compared with diagnosis made by Rheumatologist in diagnosing RA in Pakistani population. Our data is primary as no such study in Pakistani population is done.

## CONCLUSION

We concluded that the degree of agreement between ACR/EULAR 2010 classification criteria of RA and diagnosis made by Rheumatologist in diagnosing RA in Pakistani population is higher which will be helpful for diagnosis of this morbidity.

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