

COMPARISON OF DISEASE ACTIVITY IN ANTI-MUTATED CITRULLINATED VIMENTIN POSITIVE AND ANTI-MUTATED CITRULLINATED VIMENTIN NEGATIVE SUBJECTS WITH RHEUMATOID ARTHRITIS

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ABSTRACT

Objective: To compare disease activity in anti-mutated citrullinated vimentin (MCV) positive and anti-MCV negative subjects with rheumatoid arthritis.

Material & Methods: A cross-sectional study was carried out at University of Health Sciences Lahore. Fifty eight diagnosed rheumatoid arthritis subjects who fulfill the American College of Rheumatology criteria were recruited from Fatima Memorial Hospital. For laboratory investigation, venous blood sample was obtained from the participants. Serum extraction was performed through centrifugation and placed at -20°C for further investigation. Anti-MCV antibodies was evaluated using ELISA. Disease Activity Scores (DAS-28) scoring was done in both groups (aMCV+ive and aMCV -ive Rheumatoid arthritis patients) and comparison was done.

Results: Considerable difference was noted in the DAS-28, TJC, SJC, ESR of Anti-MCV+ive and Anti-MCV-ive patients.

Conclusion: Anti-MCV+ive subjects DAS-28 scores were higher as compared to Anti-MCV-ive patients.

Key Words: Arthritis, Antibody, Blood, Laboratory.

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INTRODUCTION

Rheumatoid arthritis (RA) is a common autoimmune disease with widespread systemic manifestations.¹ Persistent inflammation of synovial joints is common in this disease RA usually involves peripheral joints but sometime may affect large joints of the body.² Presence of anti-citrullinated protein are commonly reported in RA.³ Citrullinated peptides are generally synthesized for diagnostic immunoassays. The Anti-MCV assay (ELISA) utilize an antigen which is genetically modified for the recognition of antibodies against MCV, which is very abundant in RA subjects.⁴

Anti-MCV has a diagnostic value analogous to anti-CCP. Few studies have evaluated the correlation of anti-MCV antibodies with disease progression in RA patients raising the chance that anti-MCV might be good predictor of RA progression in contrast to anti-CCP.⁵ Although existence of anti-MCV has recently been accepted as a diagnostic tool in subjects with RA, its association still remains unclear with RA progression. The objective of current study was to compare disease activity in anti-MCV+ive and anti-MCV-ive subjects with RA.

MATERIAL AND METHODS

A cross-sectional study was carried out at University of Health Sciences Lahore for a period of one year. Fifty eight diagnosed RA

subjects who fulfill the American College of Rheumatology (ACR) criteria were recruited from Fatima Memorial Hospital. Ethical review committee of UHS, Lahore approved the study. Each study participant gave an informed written consent.

A proforma was utilized to record demographic and clinical information of the subjects. RA disease activity estimation in all patients was done through the disease activity score of twenty eight joints and for four variables, with a preprogrammed calculator (DAS-28).⁶ the swollen and tender joint of 28-joint count was performed. Global assessment of pain in patients and general health was mentioned as millimeter (zero means no pain, 100 means worst pain possible). The established cut-points for disease activity using DAS-28-ESR are as follows: remission < 2.6; 2.6 ≤ low disease activity). For laboratory investigation, venous blood sample was obtained from the participants. Serum extraction was performed through centrifugation and placed at -20°C for biochemical investigation. Anti-MCV antibodies was assessed using ELISA. Laboratory tests done included ESR and anti-MCV antibody (ELISA Cusabio Biotech Co., Ltd, China). ESR

was done by Westergren's method and was reported as millimeter per hour. SPSS version 21.0 was used for data analysis.

RESULTS

58 subject (38 females, 20 males) were included. The reported mean age of the subjects was 44±1.2 years. Median (IQR) anti-MCV antibodies titer was 19.7(14.2-30.06) (IU/ml). All the patients were using methotrexate, while 35 were using steroids. (Table-1)

Subgrouping of RA patients (n=58) was performed on the base of absence or presence of anti-MCV antibodies in the sera. Out of the 58 RA patients, 20 (34.5%) subjects were anti-MCV +ve while remaining 38(65.5%) were anti-MCV -ive. A cutoff value of 25 U/L was considered for anti-MCV +ive and -ive. A significant difference in the DAS-28 of aMCV +ive and aMCV -ive patients was observed. Significant difference (p=0.001) was noted in the RA disease activity scores and other disease severity parameters like ESR (p=0.001), SJC (p=0.001), TJC (p=0.001) in anti-MCV+iv and anti-MCV -ive subjects but no significant difference of pain (p=0.06) was observed in the two subgroups.

Table 1: Comparison of Anti-MCV +ive and Anti MCV -ive subjects with RA

	Anti-MCV+ive (n=20)	Anti-MCV-ive (n=38)	P-value
	Mean±SEM/ Median(IQR)	Mean±SEM/ Median(IQR)	
Age (years)	45.7±2.08	42.2±1.9	0.25
Disease duration(years)	5(3.25-8)	5(4-9.25)	0.86
Pain (visual analogue scale)	65(52-77.5)	50(30-80)	0.06
Tender Joint Count (TJC)	13(10.5-16)	7(3.75-14)	0.001
Swollen Joint Count (SJC)	7(6-7)	1(0.00-4)	0.001
DAS-28 Score	6.56±0.1	4.94±0.22	0.001
Erythrocyte Sedimentation Rate (ESR)	65(55-73.7)	32.5(22-45.2)	0.001

DISCUSSION

Anti-MCV has recently been accepted as a reliable prognostic & diagnostic parameter but its association with the activity and severity of RA is still not clear. Disease activity parameters for follow-up in these patients are degree of joint pain, duration of morning stiffness, HAQ, ESR, DAS-28, serum RF positivity and serum RF positivity. The study compared disease activity in anti-MCV+ive and anti-MCV-ive subjects with rheumatoid arthritis. A considerable difference was noted in RA disease activity scores & other disease severity parameters between anti-MCV+ive and anti-MCV-ive subjects.

The findings reported in the study are in concordance with the reports of other researchers. Bang, et al. (2007), reported a significant correlation of DAS28 with anti-MCV antibodies in 42 German RA subjects over different time points.⁶ Mathsson, et al. (2008), showed anti-MCV+ive subjects had more disease activity according to physician assessment and DAS-28 and than their counterparts with anti-MCV-ive.⁷ Similarly, Wagner, et al. (2008) also reported similar results.⁸ Innala, et al. (2008) showed considerable correlation of anti-MCV titer with SJC and ESR.⁹

Mansour, et al. (2010) also found that RA patients who were anti-MCV+ive had greater DAS-28 scores as compared to anti-MCV-ive subjects, who had a more benign disease with lesser erosions.¹⁰ Esalatmanesh, et al. also reported that serum MCV levels considerably correlated with DAS-28. A study conducted in 271 Iranian patient also concluded that anti-MCV might be helpful diagnostic test to assess disease activity.¹¹ Tanawy et al. also reported a correlation of disease activity with anti-MCV levels and suggested its possible role in disease pathogenesis.¹²

CONCLUSION

A significant correlation exists between serum Anti-MCV antibodies with DAS-28, so Anti-MCV may be a helpful disease activity indicator in RA subjects, which may guide physician as regards the treatment options.

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