



ANTI-CCP ANTIBODIES AND EROSIVE ARTHROPATHY IN SYSTEMIC LUPUS ERYTHEMATOUS

Rheumatology

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ABSTRACT

Aim and Objective:

1. To describe the occurrence of Erosive Arthropathy in Systemic Lupus Erythematosus patients.
2. To describe the clinical significance of antiCCP antibodies in systemic lupus erythematosus.

Material and Methods: The study was conducted at Rajiv Gandhi Government General Hospital (2013-2014) and as extension at Stanley medical college (2015-2018). SLE patients attending the Rheumatology OPD who satisfied ACR criteria were chosen. antiCCP antibodies were done by ELISA in 96 SLE patients. 104 RA patients who satisfied the ACR/EULAR classification criteria were also chosen for comparison of prevalence of anti-CCP antibodies. Patients with MCTD, overlap and Sjogrens disease were excluded. Their disease duration was less than 3 years. All patients underwent high frequency musculoskeletal ultrasound. MRI hands were done in feasible patients.

Results: antiCCP antibodies positivity was detected in 14.58% of SLE (n=14) and 51.92% of RA (n=54). It was significantly high in RA patients ($p < 0.05$). Erosions were noted in 71.43% of SLE patients which was significant with $p < 0.0001$. Other skeletal manifestation observed in our study was avascular necrosis which occurred in 6 patients (6.25%), Jaccouds arthropathy in 15 patients (15.6%) and tenosynovitis in 10 patients.

Conclusions: The presence of anti-CCP has significant association with erosions in systemic lupus erythematosus patients.

KEYWORDS

INTRODUCTION

Systemic lupus erythematosus (SLE) is an autoimmune disease with multisystem involvement. Polyarthritis is one of the major manifestations of SLE; however they are nondeforming and non-erosive arthropathy. Erosions and deformities are commonly observed in rheumatoid arthritis. Sometimes, it becomes difficult to differentiate SLE and RA when they present with predominant arthritic manifestation without internal organ involvement. Anti-cyclic citrullinated peptide (Anti-CCP) antibodies are highly-specific for RA. This study was conducted to describe the occurrence and significance of anti-CCP antibodies in SLE patients and their correlation with erosions.

MATERIAL AND METHODS:

The study was conducted at the Department of Rheumatology, Madras Medical College (2014 to 2015) and Stanley Medical College (2015 to 2018). It is a longitudinal prospective observational study.

All consecutive SLE patients with predominant musculoskeletal manifestations, attending the rheumatology outpatient department with disease duration of less than 3 years were studied and their clinical profile was analysed. Rheumatoid arthritis patients who satisfied the ACR-EULAR 2010 classification criteria were studied for comparison of prevalence of anti CCP antibodies. Patients with overlap with other diseases like scleroderma, MCTD and Sjogrens were excluded. Hemogram, renal function and liver function test was done in all patients. anti CCP antibodies were performed using second generation ELISA. Value of more than 5 U/mL was taken as positive. All the patients underwent high frequency musculoskeletal ultrasound and xrays of both hands. MRI hands were done in whenever it was feasible. Statistical significance was done using Chi-square test and taken significant at $p < 0.05$.

RESULTS:

A total of 96 SLE patients (Male:4, female:92) satisfied the inclusion criteria. For comparison, a total number of 104 RA patients were analysed. Complete musculoskeletal profile was analysed in them. Out of 96 patients with SLE, 18 patients had active hand arthritis and 78 had chronic arthritis without active disease at the time of recruitment. Symmetrical polyarthritis of the hand joints was the predominant pattern of arthritis noted.

Anti CCP antibody was positive in 14.58% of SLE (n=14) and 51.92% of RA (n=54) and it was significantly high in RA patients ($p < 0.05$). Erosions were noted in 11.45% (n=11) of SLE patients. Erosions were noted in carpal bones and metacarpal bones. Out of 14 SLE patients

with anti-CCP positivity, 10 had erosions (71.43%), which was significant at $p < 0.0001$. Jaccouds arthropathy was seen in 15 patients with SLE (15.6%); only 3 patients with Jaccouds had anti-CCP positivity but they did not have erosions. It did not correlate with anti-CCP positivity. 6 patients had avascular necrosis of carpal bones independent of anti CCP positivity. All these patients were on low dose steroids, prednisolone 5mg more than 1 year. Tenosynovitis was seen in 10 patients.

TABLE-1

SLE patients	Total N=96	Erosive arthritis n = 11	Non -erosive arthritis (non-deforming) n=85	Jaccouds arthropathy n=15
Anti CCP pos	14(14.58%)	10(71.43%)	4(4.70%)	3(20%)
Anti CCP neg	82((85.41%))	1(1.21%)	81(95.29%)	12(80%)

DISCUSSION

Anti-CCP antibody is a specific marker for RA. It has high specificity in early RA patients and it also indicates the severity of the disease in rheumatoid arthritis patients. Mediawake et al in 2001¹, studied the prevalence of anti-CCP in SLE patients with arthritis (20%) and suggested that it could be a useful marker to distinguish SLE patients with erosive disease.

In our study, the anti-CCP prevalence was 14.58% in SLE patients with dominant musculoskeletal manifestations; expectedly it was less prevalent when compared to its presence in rheumatoid arthritis. The association of anti-CCP antibodies with erosions were studied in various studies. Martinez JB et al², Kakumanu P et al³ and Qing et al⁴ also described the association of anti-CCP antibodies with erosions in their studies. But the exact etiopathogenetic mechanism of erosions and their association with anti-CCP antibodies is not well studied as in rheumatoid arthritis. Kakumanu et al observed that only citrulline-dependent antibodies are associated with erosive arthritis in SLE patients but not with other peptides like arginine.

In our study, we could demonstrate the association of anti-CCP antibodies with erosions where as Faezi and Paragom et al⁵ studies in 2017 did not demonstrate the association of anti-CCP antibodies with erosions in SLE patients. The possibility of higher number of erosions demonstrated in our study could be because of the usage of MRI and high frequency ultrasound. Matteo Piga et al⁶ demonstrated that ultrasound had specificity of 98.7% for the detection of bone erosions in the hands of SLE patients in their study.

In another study by Elisabeth MA et al⁷, erosions detected by MRI were significantly high in SLE patients though it did not correlate with anti-CCP titres. Another significant observation noted in our study was the presence of avascular necrosis in 6 patients. Carpal bones were affected, with predominance of lunate bone but it did not have any association with anti-CCP positivity, probably related to long term steroid usage.

CONCLUSIONS

Musculoskeletal manifestations of SLE range from arthralgia to erosive arthritis. Anti -CCP, a specific antibody for RA is also positive in patients with SLE; the presence of which was significantly associated with erosions in our study.

ABBREVIATIONS

anti-CCP-anticyclic citrullinated peptide, RA-Rheumatoid arthritis, SLE- systemic lupus erythematosus, MCTD-mixed connective tissue disease, ACR- American college of rheumatology, EULAR-European league against rheumatism

REFERENCES

1. Mediwake R, Isenberg DA, Schellekens GA, et al. Use of anti-citrullinated peptide and anti-RA33 antibodies in distinguishing erosive arthritis in patients with systemic lupus erythematosus and rheumatoid arthritis. *Ann Rheum Dis*. 2001.
2. Martinez JB, Valero JS, Bautista AJ, F et al. Erosive arthropathy: clinical variance in lupus erythematosus and association with anti-CCP case series and review of the literature. *Clin Exp Rheumatol*. 2007..
3. Kakumanu P, Sobel ES, Narain S, et al. Citrulline dependence of anti-cyclic citrullinated peptide antibodies in Systemic Lupus Erythematosus as a marker of deforming/erosive arthritis. *J Rheumatol*. 2009.
4. Qing YF, Zhang QB, Zhou JG, et al. The detecting and clinical value of anti-cyclic citrullinated peptide antibodies in patients with systemic lupus erythematosus. *Lupus*. 2009..
5. Faezi S, Paragomi P, Akbarian M, et al. Role of anti-CCP in arthritis in patients with systemic lupus erythematosus. *Rheumatology Research*, 2017.
6. Piga M, Saba L, Gabba A, et al. Ultrasonographic assessment of bone erosions in the different subtypes of systemic lupus erythematosus arthritis: comparison with computed tomography. *Arthritis Res Ther*. 2016.
7. Elisabeth M. A. Ball, Tan AL, Fukuba E et al. A study of erosive phenotypes in lupus arthritis using magnetic resonance imaging and anti-citrullinated protein antibody, anti-RA33 and RF autoantibody status. *Rheumatology*, 2014.