

# Positive Anti-Cyclic Citrullinated Peptide Antibodies in RA and IBD Patients: Is It One or Two Disease

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**Abstract:** Inflammatory bowel disease (IBD) and Rheumatoid arthritis (RA) are both an autoimmune systemic disease of different etiology, anti-cyclic citrullinated peptide (anti-CCP) antibodies are directed toward epitopes that pass citrullination process; peptidyl arginine deiminase (PAD) enzymes modify structure and function of proteins by converting arginine residues to citrulline in post translational stage, are specific serological markers for RA . Despite of the higher specificity of anti-CCP for Rheumatoid arthritis, their role in Crohn's disease and ulcerative colitis remains unclear. There are only a few studies on the prevalence of anti-CCP antibodies in patients with IBD but no clear significance. one study conducted by Papamichael K, conclude that the prevalence of anti-CCP antibodies is very low in IBD patients and no clinical evidence of arthritis was seen in anti-CCP-positive patient. Another study conducted by Shafaghi A show\_no significant association between the prevalence of anti-CCP positivity and IBD related arthritis, activity or extension of inflammatory colitis was found. Also A retrospective analysis was performed by Jaita Mukherjee and colleague about the association of anti-CCP with inflammatory bowel disease only 5 out of 31 patients with positive anti-CCP was found , all of them had peripheral joint disease but no evidence of erosive disease on radiological assessment indicating that these patients may initially be incorrectly diagnosed with rheumatoid arthritis, rather than articular manifestations of their underlying bowel disease.

**Keywords:** inflammatory bowel disease, Rheumatoid arthritis, anti-cyclic citrullinated peptide.

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## 1. INTRODUCTION

Rheumatoid arthritis and inflammatory bowel disease are both an autoimmune systemic disease of unknown etiology and characterized by chronic inflammation mainly arthropathy , anti-cyclic citrullinated peptide (anti-CCP) antibodies are specific for diagnosis of Rheumatoid arthritis. Some patient with inflammatory bowel disease having positive anti-CCP antibodies , their role in Crohn's disease and ulcerative colitis remains unclear .This Review article about the few studies that was conducted on the prevalence of anti-CCP antibodies in patients with IBD and their clear significance.

## 2. REVIEW ARTICLE

Rheumatoid arthritis (RA) is a systemic autoimmune disease of unknown etiology, characterized by chronic inflammation of joints and other organ resulting in tissue degradation and joint deformity , Rheumatoid factor (RF) can be detected in up to 75% of RA patients, Its specificity is limited because RF is also detected in other diseases, such as autoimmune and infectious diseases, as well as in healthy individuals, RA has been associated with several other autoantibodies, including antiperinuclear factor, anti-keratin antibodies, anti-filaggrin antibodies, and anti-cyclic citrullinated peptide (anti-CCP) antibodies [1-2].

Antibodies to citrullinated protein/peptide antigens, (These antibodies are directed toward epitopes that pass citrullination process; peptidyl arginine deiminase (PAD) enzymes modify structure and function of proteins by converting arginine residues to citrulline in post translational stage), are specific serological markers for RA, anti-cyclic citrullinated peptide antibody (anti-CCP) had a much higher specificity of 97.9%, In 2009, ACPA (anti-CCP) was included in the new Criteria for RA from the American College of Rheumatology and the European League Against Rheumatism [3-5].

Crohn's disease (CD) and ulcerative colitis (UC) are chronic idiopathic immune related that associates with extra intestinal manifestations such as axial and/or peripheral arthritis. Despite of the higher specificity of anti-CCP for Rheumatoid arthritis, their role in Crohn's disease and ulcerative colitis remains unclear. There are only a few studies on the prevalence of anti-CCP antibodies in patients with IBD but no clear significance. Papa Michael K and colleague describe only one positive Anti-CCP antibodies in one CD patient out of 84 patients and 0 out of 50 case of UC and they conclude that the prevalence of anti-CCP antibodies is very low in IBD patients and no clinical evidence of arthritis was seen in anti-CCP-positive patient [6] .

Another study conducted by Shafaghi A and colleague found that anti-CCP was detected in 10/93 (10.7%) patients with UC. Around 13.9% of patients had peripheral arthritis that in 23.07% of them anti CCP detected. But again no significant association between the prevalence of anti-CCP positivity and IBD related arthritis, activity or extension of inflammatory colitis was found. This result is similar to the previous studies by Papamichaels and colleague. This could be explained that the mechanism of developing arthritis in RA patient is different than IBD patient as the higher titer of anti-CCP antibodies in patients with RA is associated with sever and erosive arthropathy. These findings suggest that anti CCP antibodies are not useful biomarkers in IBD to predict who may develop IBD-related arthropathy [7].

A retrospective analysis was performed by Jaita Mukherjee and colleague about the association of anti-CCP with inflammatory bowel disease, only 5 out of 31 patients with positive anti-CCP was found, all of them had peripheral joint disease but no evidence of erosive disease on radiological assessment indicating that these patients may initially be incorrectly diagnosed with rheumatoid arthritis, rather than articular manifestations of their underlying bowel disease [8].

### 3. CONCLUSION

Further studies with larger numbers is required to explain the significant association between inflammatory bowel disease and Anti-CCP antibodies.

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