



Anti-CCP

A highly specific test for the detection and prognosis of Rheumatoid Arthritis

Rheumatoid arthritis (RA) is both common and chronic, with significant consequences for multiple organ systems. **Rheumatoid arthritis (RA) is one of the most common systemic autoimmune diseases and affects up to 1-2 % of the world population.**

Better understanding of its pathophysiology has led to the development of targeted therapies that have dramatically improved outcomes. The key to therapeutic success lies in identifying individuals who will have severe destructive disease as early as possible, so that effective treatment can be initiated before irreversible damage occurs. Anti-cyclic citrullinated peptide (anti-CCP) antibody testing is particularly useful in the diagnosis of rheumatoid arthritis, with high specificity, presence early in the disease process, and ability to identify patients who are likely to have severe disease and irreversible damage.



An anti-CCP test is primarily ordered along with a Rheumatoid Factor (RF) test, Erythrocyte Sedimentation Rate (ESR) and C-reactive protein (CRP) when someone has signs and symptoms that may be due to previously undiagnosed inflammatory arthritis or has been diagnosed with undifferentiated arthritis. It may be ordered as a follow-up test to a negative RF test when clinical signs and symptoms lead a health practitioner to suspect Rheumatoid arthritis. Rheumatoid arthritis usually affects multiple joints symmetrically. ***Signs and symptoms may include:***

- Painful, warm, swollen joints of the hands and wrists
- Pain sometimes affecting elbows, neck, shoulders, hips, knees, and/or feet
- Stiffness of affected joints in the morning that improves during the course of the day
- Fever
- Development of nodules under the skin, especially at the elbows
- A general feeling of being unwell (malaise)



Rheumatoid Factor and Anti-CCP as diagnostic Aid

Rheumatoid Factor	Sensitivity: 60-70% Specificity: 70 %	Anti-CCP	Sensitivity: >92 % Specificity: >98 %
➤ Rheumatoid factor is part of the immune system's overactive response.		➤ This test finds antibodies, that target CCP (cyclic citrullinated peptide)	
➤ It shows up in the blood of about 60% to 70% of people with Rheumatoid arthritis.		➤ Is present in more than 90% of people with RA.	
➤ High levels of it are linked to more severe cases.		➤ You could have these antibodies years before you get RA symptoms.	
		➤ This test can also predict cases of RA that could become severe.	
Drawbacks: ➤ It misses 30% to 40% of cases of RA. It also shows up in other conditions, including: <ul style="list-style-type: none"> ↙ Chronic hepatitis ↙ Chronic viral infection ↙ Dermatomyositis ↙ Infectious mononucleosis ↙ Leukemia ↙ Scleroderma ↙ Sjogren's syndrome ↙ Lupus 		Drawbacks: ➤ It misses 10% to 15% of cases of RA. Anti-CCP antibodies have not been found at a significant frequency in other diseases to date , and are more specific than rheumatoid factor for detecting rheumatoid arthritis.	
Rheumatoid factor (RF) is often negative or present at a low titre in the early disease stages.		<i>Anti-CCP antibodies can be detected years before onset of clinical manifestations and can therefore be used as a predictive marker for the development of RA.</i>	

Interpretation of the test results	RF	Anti-CCP
When people with signs and symptoms of arthritis are positive for both anti-CCP and RF, <i>it is very likely that they have RA and it is likely that they may develop a more rapidly progressive and severe form of the disease.</i>	Positive (↑30 IU/ml)	Positive (↑ 10.0 U/ml)
When people are positive for anti-CCP but not RF, or have low levels of both, and have clinical signs that suggest RA, then <i>it is likely that they have early RA or that they will develop RA in the future.</i>	Negative (↓30 IU/ml)	Positive (↑ 10.0 U/ml)
	Negative (↓30 IU/ml)	Negative (↓10 IU/ml)
When someone is negative for both anti-CCP and RF, then <i>it is less likely that the person has RA or will develop it later.</i>	Negative (↓30 IU/ml)	Negative (↓10 IU/ml)
When individuals are negative for anti-CCP but have a positive RF, then the clinical signs and symptoms are more vital in determining <i>whether they have RA or some other inflammatory condition.</i> <i>A screening for Autoimmune diseases is highly recommended.</i>	Positive (↑30 IU/ml)	Negative (↓10 IU/ml)