

ANTI-CYCLIC CITRULLINATED PEPTIDE (CCP): A NEW TEST FOR RHEUMATOID ARTHRITIS

By: Paul B. Halverson, M.D.

Diagnosing rheumatoid arthritis (RA) with lab tests alone is not possible. When the diagnosis is suspected, the rheumatoid factor (RF) test is obtained, but this test is neither entirely sensitive nor specific. Up to 80% of persons with RA have a positive RF test. This leaves 20% of RA patients who are RF negative. Some clinicians refer to these patients as seronegative RA. On the other hand, false positive RF tests are not uncommon and may be found in up to 5% of the general population. RF is found with increased frequency in certain diseases, notably hepatitis C disease in which more than 25% may have a positive RF test. Over the years, a number of alternative tests have been proposed for the diagnosis of RA but none of them has ever achieved widespread usage.

Recently, a new test has become available, anti-cyclic citrullinated peptide (anti-CCP), which may have some advantages in comparison to RF. Citrullination (deimination) of proteins is a chemical reaction which occurs when inflammatory cells release enzymes in local tissues. Thus, citrullination of peptides is not necessarily unique to RA. What seems unique to RA is the capacity to form antibodies to citrullinated peptides. The exact significance of citrullated peptides and antibodies to these proteins is uncertain, but evidence suggests that these antibodies may contribute to the pathogenesis of RA.

Studies to date have suggested similar sensitivities of anti-CCP and RF for RA (70-80%). Some patients who have a negative RF test may be anti-CCP positive. Anti-CCP appears to be more specific for RA (approximately 98%) compared to RF. Thus, anti-CCP results in fewer false positives compared to RF testing. This is particularly helpful in the case of hepatitis C disease. Anti-CCP positivity is not increased above the level found in the general population whereas the RF test may be positive in more than 25% of cases.

Currently, rheumatologists may be ordering both the RF and anti-CCP tests in patients suspected of having RA. Alternatively, a patient with a negative RF may be tested further with the anti-CCP test. More studies are necessary, but it is possible that anti-CCP may be more helpful than RF. At present, anti-CCP is not as readily available as RF but this may change in the future.



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Dr. Halverson is a Professor of Medicine at the Medical College of Wisconsin. He is currently involved in patient care and teaching fellows, residents, and medical students and physician assistant students at St. Joseph's Hospital and Froedtert Hospital. He has been a volunteer with the Wisconsin Chapter of the Arthritis Foundation. He has been a member of the Board of Directors since 1984 and also served as Chair of the Board and Chair of Health Promotions.

He and his wife, Gloria, also an Medical College of Wisconsin faculty member, spend time each year teaching overseas.

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