ORIGINAL RESEARCH PAPER

Volume-7 | Issue-3 | March-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

STUDY OF CRP, ASO TITRE AND RA FACTOR IN CASES WITH JOINT PAINS

Microbiology

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ABSTRACT

Arthritis is an inflammatory process caused by injury, metabolic abnormalities, hereditary factors and infections. Laboratory blood tests are valuable diagnostic tools which are not definitive when considered alone. A total of 299 blood samples sent from patients with joint pains, were screened for different combinations of tests using latex agglutination kits CRP and RA factor (110 samples), CRP and ASO titres (41 samples) and CRP,ASO,RA (148 samples). Interpretation of results of combination of three tests was more informative as they differentiate inflammatory and non inflammatory, acute and chronic cases and streptococcal and rheumatoid arthritis when compared to the tests done in combinations of two. In cases of joint pains all three ASO,RA and CRP tests done in combination can give a better picture before going for higher and more expensive investigations.

KEYWORDS

Arthritis, ASO, CRP, RA factor

Introduction:
Arthritis or joint pains is an inflammatory process caused by injury, metabolic abnormalities, hereditary factors and infections. For their diagnosis, blood tests play an important role in addition to history, clinical picture and image studies. Though these are valuable diagnostic tools, they are not definitive when considered alone.

Aims and objectives:
To establish the importance of combining simple screening blood tests (CRP,ASO,RA factor) as biomarkers for diagnosis of joint pains.

Biomarkers:
C Reactive Protein – It is an acute phase protein, which rises due to inflammation, infection and injury.[1] It is synthesized by liver in response to IL-6 secreted by activated macrophages and T cells in acute and chronic inflammatory conditions. Changes in serum CRP concentration occur more quickly than ESR and therefore CRP may be a better reflection of current inflammation.[2]

Anti Streptolysin O – It is an antibody immunologically produced against oxygen labile streptococcal haemolytic exotoxin produced by group A streptococci. Streptococcal antibody tests are used for the diagnosis of infections caused by group A Streptococcus and are particularly useful in the diagnosis of acute rheumatic fever and poststreptococcal glomerulonephritis.[3]

Rheumatoid Factor –It is an autoantibody that reacts with Fc portion of IgG and is an established serological marker for rheumatoid arthritis. The specificity of rheumatoid factor as a diagnostic indicator for Rheumatoid arthritis is around 60 – 80%. Rheumatoid factor positive patients are more likely to have progressive, erosive arthritis with loss of joint mobility and also have extra-articular manifestations.[2]

Materials and Methods:
299 blood samples from patients with joint pains attending the medical Out Patient Department, Government General Hospital, Kakinada during a period of 6 months were included. Blood was collected by vene-puncture from the patients and were tested with latex agglutination kits. Out of total samples, 110 samples were screened for CRP & RA factor, 41 samples for CRP & ASO titre and 148 for CRP, ASO titre & RA factor.

Results and Discussion:
Among 110 samples screened for CRP and RA factor, 22 were positive and 88 were negative for CRP. Among 22 CRP positive samples, 2 were positive for RA and in 88 CRP negative samples, 3 were positive for RA factor. Among 41 samples screened for CRP and ASO, 5 were positive and 36 were negative for CRP. In CRP positive cases, 1 was positive for ASO titre and in CRP negative cases, 3 were positive for ASO. When the blood samples were screened for all the 3 tests, in 34 CRP positive samples, 3 were positive for RA factor and 4 were positive for ASO titre. In 114 CRP negative samples only 1 was positive for RA factor and 16 were positive for ASO titre.

Figure 1: Results of CRP and RA factor:

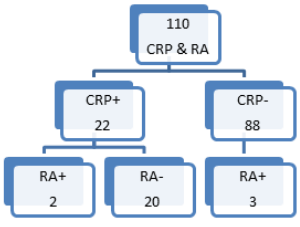

Figure 2: Results of CRP and ASO titres:

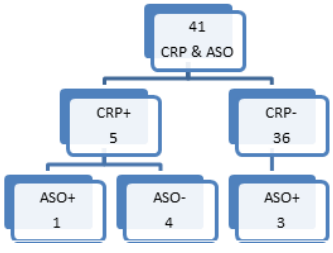

Table 1: Results and inference of combined testing in CRP positive cases:

TEST RESULTS	INFERENCE	
CRP +, ASO +, RA +	Severe rheumatoid arthritis or Recent / past Streptococcal infection	1
CRP +, ASO -, RA +	Rheumatoid arthritis or any other autoimmune disease	2
CRP +, ASO +, RA -	Recent Streptococcal infection	3
CRP +, ASO -, RA -	Inflammatory conditions other than Streptococcal or rheumatoid arthritis	28

Table 2: Results and inference of combined testing in CRP negative cases:

TEST RESULTS	INFERENCE	
CRP - ,ASO +, RA +	Rheumatoid arthritis on treatment or Past Streptococcal infection	0
CRP -, ASO -, RA +	Presence of rheumatoid arthritis but no active inflammatory process	1
CRP -, ASO +, RA -	Past Streptococcal infection with no active inflammatory process	16
CRP - , ASO -, RA -	No infection or inflammatory process	97

Conclusion:

In cases of joint pains, combination of all the three tests (CRP, ASO, RA factor) was more informative to differentiate

1. inflammatory and non-inflammatory,
2. acute and chronic,
3. streptococcal and rheumatoid arthritis.

It gives a better picture before going for further higher & expensive investigations.

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