ROLE OF RHEUMATOID FACTOR IN ARTHROPATHIES

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ABSTRACT

BACKGROUND
Rheumatoid Factor (RF) is an autoantibody targeting the Fc region of IgG antibodies. Testing for rheumatoid factor is the most widely used blood test in the classification of Rheumatoid Arthritis (RA). RFs are found in patients with other autoimmune and non-autoimmune diseases as well as in healthy subjects. The aim of this study was to detect the presence of RF in patients to aid in the diagnosis of arthritis.

MATERIALS AND METHODS
150 clinically diagnosed cases of rheumatoid arthritis were chosen. Sera samples of these patients were subjected to latex agglutination test for detection of RF. Positive or negative status of the samples for RF was reported. The test kits used were Immunstar (Latex Slide Test) by Star Diagnostics Pvt. Ltd., Mumbai, India.

RESULTS
Out of total 150 samples studied, we obtained 16 (10.66%) positive samples in our study. Majority of the positive cases were seen in adults (93.75%), out of which females were pre-dominant (81.25%).

CONCLUSION
RFs are found in patients with autoimmune and non-autoimmune diseases as well as in healthy subjects. Rheumatoid factors form part of the workup for the differential diagnosis of arthropathies from the time of diagnosis until deciding on the choice of therapeutic strategy.

KEYWORDS
Rheumatoid Factor (RF), Rheumatoid Arthritis.


BACKGROUND
Rheumatoid Arthritis (RA) is an autoimmune disease affecting 0.5 - 2% of the population.[1-2] The prevalence of rheumatoid arthritis in adults in India varies from 0.5 - 3.8% in women and 0.15 - 0.37% in men. The disorder is characterised by the presence of Rheumatoid Factor (RF) in serum. Rheumatoid factor is an autoantibody targeting the Fc region of IgG antibodies. Testing for rheumatoid factor is the most widely used blood test in the classification of rheumatoid arthritis.[3]

Rheumatoid Factors (RFs), a class of immunoglobulins (Igs) that have different isotypes and affinities were first detected much more than 70 years ago. In 1948, Rose described these antibodies in patients with Rheumatoid Arthritis (RA)[4] and in 1952 they were finally christened RFs because of their association with RA.[5] It has long been recognised that RFs play a pivotal role in the differential diagnosis of polyarthritis, because they make it possible to identify RA patients.[6] For this reason, RF testing has been one of the classification criteria for RA since 1987[7] and although many years have passed since their identification, their crucial role in classifying RA has been confirmed by the updated criteria.[3]

However, although they owe their name to their first detection in RA patients, RFs are found in patients with other autoimmune and non-autoimmune diseases as well as in healthy subjects. The aim of this study was to detect the presence of RF in patients to aid in the diagnosis of arthritis.

MATERIALS AND METHODS
The study was carried out from June 2011 - December 2011 in a tertiary care centre. The subjects chosen were patients visiting the OPDs. These patients were clinically diagnosed with reactive polyarthritis and associated symptoms as fever, number and site of joints affected, duration of symptoms, etc. were noted; 150 such clinically diagnosed cases were chosen. Blood samples were collected from these patients and sent to the laboratory for detection of RF. Sera were separated and subjected to latex agglutination test. Testing was carried out as per manufacturer's instructions. Positive or negative status of the samples for RF was reported. Since this was a screening test, determination of titres was not done. The test kits used were Immunstar (Latex Slide Test) by Star Diagnostics Pvt. Ltd., Mumbai, India. Descriptive statistics were utilised during the analysis of results.

RESULTS

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<tr>
<td>Positive samples</td>
<td>16 (10.66%)</td>
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<tr>
<td>Negative samples</td>
<td>134 (89.33%)</td>
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<td>Total</td>
<td>150</td>
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Table 1. Distribution of Total Samples
RF testing has evolved a long way from the classic Rose-Waaler test. It was followed by development of other carriers such as bentonite and latex particles. Automated techniques such as nephelometry and enzyme-linked immunosorbent assays gradually replaced the other methods. Multiplexed immunosensing is an emerging high-throughput technique for the quantitative detection of multiple analytes from a single biological sample. But because of their simplicity and cost-effectiveness, latex agglutination tests continue to remain popular among the masses. RF detection by latex agglutination tests is still done on a regular basis in our country due to its easy availability in routine laboratories.

In patients affected with RA, the male-to-female ratio is 2.5:1.[15] The findings in our study coincide with literature as majority of the patients with RF positivity were adult females (81.25%) with low incidence in adult males (12.5%). Occurrence of one paediatric case in our study points towards juvenile arthritis as the aetiology. Consequently, the distinction between inflammatory articular disorders, connective tissue disorders and other infections must be made clinically. Limitations of our study include lack of RF titre determination. Nevertheless, reporting presence of RF definitely aided in the diagnosis of patients, as it has been one of the classification criteria for diagnosis of RA.

Defining RFs as anti-IgG or anti-gamma-globulins is inaccurate, because it restricts RF reactivity to the IgG Fc fragment. IgM RFs are the most frequently detected isotype, but IgG, IgA, IgE and IgD RFs can also be observed.[16] It has been shown that three RF isotypes (IgM, IgA and IgG) are detected in up to 52% of RA patients, but in fewer than 5% of patients with other connective tissue diseases. Moreover, the presence of IgA and IgG RF isotypes in absence of IgM-RF is more prevalent in patients with connective tissue diseases than in RA patients, whereas an increase in both IgM and IgA RFs is almost exclusively observed in patients with RA.[17,18] IgM-RF specificity increases considerably at high titres.[19]

However, in order to increase the specificity of the latest RA classification criteria, anti-cyclical citrullinated protein/peptide antibody (ACPA) testing has been added. Combining ACPA and RF positivity is more permissive in terms of sensitivity because the antibodies complement each other, especially for early RA. The detection of IgM RFs is also helpful as a prognostic index.

CONCLUSION

Rheumatoid factors form part of the workup for the differential diagnosis of arthropathies from the time of diagnosis until deciding on the choice of therapeutic strategy.

REFERENCES


