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STUDY OF 5'- NUCLEOTIDASE IN PATIENTS OF RHEUMATOID ARTHRITIS

Biochemistry

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ABSTRACT

Arthritis literally means "inflammation of joints". Rheumatoid arthritis is one such type of arthritis mainly affecting synovial membrane of multiple joints. Few studies have been carried out on diagnostic role of 5'- Nucleotidase activity in rheumatoid arthritis patients. Hence the present study was undertaken in a tertiary care hospital to evaluate the role of 5'- Nucleotidase in RA patients.

KEYWORDS

Rheumatoid arthritis, 5'- Nucleotidase

INTRODUCTION-

Rheumatoid arthritis is a chronic inflammatory disease affecting synovial membranes of multiple joints occurring in symmetrical pattern.[1] The prevalence of the disease is 1 to 2% in general population with females affected more than males.[2] Rheumatoid arthritis has got a high mortality rate. Even with appropriate drug therapy, almost 7% patients are disabled to some extent 5 years after the disease onset and 50% are too disabled to work 10 years after the onset of the disease.[2] In rheumatoid arthritis, the immune system attacks patient's own cells inside the joint capsule.

5'- Nucleotidase is a phosphatase that acts only on nucleoside 5'-phosphatase to form adenosine and release inorganic phosphate. It acts in degradation of purine nucleotides. AMP and GMP are converted into their nucleoside forms by 5'- Nucleotidase.

It is suggested from various studies that 5'- Nucleotidase levels are increased in rheumatoid arthritis with alteration of lipid profile parameters exposing them to the risk of cardiovascular diseases. With this background in mind, we have carried out the present study.

MATERIAL & METHODS-

Our present study was conducted in Biochemistry department of a tertiary care hospital over 1 year duration.

Cases & controls selection- Rheumatoid arthritis cases were taken from patients attending Orthopaedics OPD and admitted in wards of the hospital. 50 number of women patients were enrolled as cases after due consent and 50 age matched healthy women relatives of patients accompanying them were enrolled as controls.

Inclusion criteria-

1. Volunteers who consented to participate
2. Patients with a positive rheumatoid factor test
3. Age group of cases and controls in between 30 to 60 years

Exclusion criteria-

1. Male gender patients
2. Age < 30 years and > 60 years
3. Patients having any other systemic illness

Sample collection- 3 ml blood was collected from antecubital vein of the participants. Serum was separated. The tests were performed on the same day on separated serum.

Method of estimation:-

PARAMETER	METHOD OF ESTIMATION
Serum 5'- Nucleotidase	Manganese sulphate- Nickel chloride colorimetric method3

RESULTS-

Table No 1: Table showing distribution of study subjects according to age

Age in years	Cases	Controls
30 to 40	23	24
41 to 50	19	18
51 to 60	8	8
Total	**50**	**50**

TABLE No 2; Table showing values of 5'-Nucleotidase in the study subjects according to age groups

Age in Years	Cases (n=50) Mean SD	Conrols (n=50) Mean SD	p Value
30 to 40	8.50 1.73	8.22 3.97	p>0.05
41 to 50	13.48 2.01	7.84 3.90	p<0.001
51 to 60	16.43 3.60	14.27 1.20	p>0.05
Overall 30 to 60	11.53 3.90	8.99 4.18	p<0.01

Table No 2 shows mean values of serum 5'- Nucleotidase levels in cases and controls. There is a significant increase (p<0.01) in 5'-Nucleotidase level overall in Rheumatoid arthritis cases compared to healthy controls. Upon segregation of levels in age groups, highly significant elevation in ADA was found in patients within age group of 41 to 50 years.

DISCUSSION-

Rheumatoid arthritis is a systemic autoimmune disease, characterized by inflammation of synovial tissue with joint pain, swelling and stiffness. The onset is between ages of 30 to 40 years and symptomatic disease manifests among those aged 40 to 60 years.[2] With symptoms manifesting late, it is difficult to diagnose rheumatoid arthritis early.

Various researches have indicated a significant increase in serum 5'-nucleotidase level in rheumatoid arthritis patients. Increased levels of 5'-nucleotidase in serum and synovial fluid of patients with RA is attributed to damage to synovial lining in inflamed joints where 5'-nucleotidase is concentrated.[4] Thus serum 5'-nucleotidase may provide an additional tool for diagnosis and monitoring the patients with rheumatoid arthritis.[6]

In the present study, there was statistically significant increase in the levels of serum 5'-nucleotidase in rheumatoid arthritis patients compared with healthy controls. The findings of our study correlated well with the studies conducted by **MJ Kendall et al[5], Morton K et al[6].** In none of the above mentioned two studies, 5'-nucleotidase levels were deduced by classifying patients into age groups. The present study shows the serum levels of 5'-nucleotidase classified according to age group of study population. From the results of the study, it was found that there was a statistically significant rise in the level of 5'-nucleotidase in the age group of 41 to 50 years. Thus our study put forth by grouping the patients decade wise of life revealed a better diagnostic probability in case of rheumatoid arthritis patients.

CONCLUSION-

A statistically significant elevation in serum 5'-nucleotidase in age group 41 to 50 years rheumatoid arthritis patients points to the fact that 5'-nucleotidase should be studied further in prospective studies on rheumatoid arthritis as an early diagnostic marker of the beginning of inflammatory changes in the joints and synovial injury in the detection of rheumatoid arthritis pathophysiological changes earlier.

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