

# Importance of ESR in Referring Patients to Rule Out Rheumatoid Arthritis

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**Abstract:-** The quality improvement program is intending to screen the rheumatoid arthritis at the primary health centre and to avoid the unwanted referral to higher centre for further management. This will help to reduce the financial burden and avoid the unnecessary referrals. The data for the study is collected from the inpatients of a primary health centre. With some basic investigation, proper history and examinations will help doctors and other staffs get an idea about the inflammatory arthritis. Inflammatory arthritis has multi organ involvement identifying those condition as early as possible will help to control the disease and to reduce the complications. History, examination and basic investigation have an important role in identifying cases and refer the patients to higher centre for further management.

## I. INTRODUCTION

This study determines the importance of basic investigation in management of rheumatoid arthritis. The

goal of this quality improvement program is to determine which patients require further more investigations and referral to the higher centre. The aim is to reduce the financial burden on the government and to prevent the patient transfer that aren't necessary.

## II. METHODS

We retrospectively and prospectively looked at 30 patients who were referred to higher centre to rule out rheumatoid arthritis, with normal ESR to rule out. The goal is to stop unnecessary patient transfers and relieve the monetary burden on the government.

## III. RESULTS

In the first group of patients (Table – 1), who had joint pain was transferred to the higher centre to rule out rheumatoid arthritis and they were found to have normal ANTI CCP levels.

#	A	B	C	D
1	patients hospital id number	age / gender	patients ESR measured at primary health centre	patients anti CCP measured at higher centre
2	245799	31/female	12 mm/hr	<20.0 U
3	145687	27/female	15 mm/hr	<20.0 U
4	117448	36/female	08 mm/hr	<20.0 U
5	281242	33/female	15 mm/hr	<20.0 U
6	241244	28/male	10 mm/hr	<20.0 U
7	187440	36/female	18 mm/hr	<20.0 U
8	257483	30/female	14 mm/hr	<20.0 U
9	268745	39/female	20 mm/hr	<20.0 U
10	219848	37/female	08 mm/hr	<20.0 U
11	279815	32/female	12 mm/hr	<20.0 U
12	187952	28/female	16 mm/hr	<20.0 U
13	271568	30/female	18 mm/hr	<20.0 U
14	150008	35/female	10 mm/hr	<20.0 U
15	165442	38/female	14 mm/hr	<20.0 U
16				
17				
18				
19				
Total number of rheumatoid arthritis cases diagnosed - nil				

Table 1>Data of Rheumatoid Arthritis cases before the study

In the second group of patients (Table – 2) who had symptoms suggestive of inflammatory arthritis discovered to have high ESR and out of 15 patients two of them were tested positive towards ANTI CCP.

	A	B	C	D
1	patients hospital id number	age / gender	patients ESR measured at primary health centre	patients anti CCP measured at higher centre
2	230499	32/female	47 mm/hr	<20.0 U
3	283844	29/female	35 mm/hr	<20.0 U
4	112388	34/female	102 mm/hr	221.0 U
5	288842	30/female	41 mm/hr	<20.0 U
6	229984	29/female	56 mm/hr	<20.0 U
7	124540	35/male	34 mm/hr	<20.0 U
8	193843	38/female	58 mm/hr	<20.0 U
9	356642	29/female	105 mm/hr	242.0 U
10	200948	35/female	54 mm/hr	<20.0 U
11	231345	31/female	30 mm/hr	<20.0 U
12	298754	28/female	42 mm/hr	<20.0 U
13	270908	32/female	52 mm/hr	<20.0 U
14	346778	33/female	48 mm/hr	<20.0 U
15	129342	40/female	52 mm/hr	<20.0 U
16				
17				
18				
19				
20				

Total number of rheumatoid arthritis cases diagnosed - 2

Table 2 Data of Rheumatoid Arthritis cases after the study

#### IV. DISCUSSION

##### ❖ ESR

ESR is the rate of settling of RBCs in anticoagulated blood. This is a nonspecific marker of inflammation. However, many non-inflammatory conditions can also raise the ESR. ESR gives a composite of acute phase proteins like fibrinogen, alpha and beta globulins and immunoglobulin (Bandoim, n.d.). It is influenced by age, sex and haemoglobin level. As age advances, ESR progressively increases. Certain conditions can cause unusually low ESR also.

ESR rises slowly after the onset of inflammation. It takes days or even weeks to rise and come down slowly, in around 2 to 4 weeks after subsidence of inflammation.

An erythrocyte sedimentation rate (ESR) is a blood test that measures how fast the red blood cells settle to the bottom of a test tube. If the red blood cells settle quickly, then you may have inflammation in your body. Inflammation can make erythrocytes clump together, which makes it easier for them to settle in a test tube.

Relationship between age and ESR, males age/2 and for females age+10/2.

##### A. Causes of raised ESR

###### ➤ Inflammatory conditions

Acute rheumatic fever, Rheumatoid arthritis, connective tissue diseases-SLE, Systemic sclerosis, MCTD, myositis, systemic vasculitis, infective arthritis tuberculosis, septic arthritis and infective.

###### ➤ Non-inflammatory conditions

Anaemia, Renal diseases-nephrotic syndrome, glomerulonephritis, hypercholesterolemia, female sex, oral contraceptives, endocarditis, healthy older persons, pregnancy and malignancies like myeloma.

##### B. Cause of lower ESR

Sickle cell anaemia, Polycythaemia, Spherocytosis, Hepatic failure and Macrophage activation syndrome.

#### V. CONCLUSIONS

Most of the patients with inflammatory arthritis referred to the higher centre from a primary health centre requires detail history, examination and basic investigations like complete blood count, ESR and CRP. This will help to rule out the differential diagnosis and prevent the need of transfer the patients to a higher centre. This will also help to minimize the financial strain on the government and to stop unnecessary patient transfers.

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