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Original Research Article

A STUDY TO EVALUATE THE THYROID FUNCTION IN SERO POSITIVE RHEUMATOID ARTHRITIS

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Abstract

Background: The thyroid dysfunction in rheumatoid arthritis is well-known but unfortunately there are only few studies available in our country to assess the thyroid function in RA patients.

Methods: It was a Hospital based observational, descriptive study. Upgraded department of General Medicine, SMS Medical College and Attached Hospitals, (Jaipur).

Results: Maximum patients 208(80.00%) are euthyroid followed by 28(10.77%) are overt - hypothyroidism, 22(8.46%) subclinical hypothyroidism and 2 patients (0.77%) are subclinical hyperthyroidism patients

Conclusion: Prevalence of thyroid dysfunctions in rheumatoid arthritis is high and associated with thyroid autoimmunity and suggested that all rheumatoid arthritis patients should go for thyroid functions. Hence, it is advisable to screen the patients of rheumatoid arthritis for thyroid dysfunction so that early identification and treatment can provide a healthier life ahead.

Keywords: NAFLD, TSH, T3, T4.

Introduction:

Rheumatoid arthritis (RA) is a most common progressive, multi- systemic autoimmune disease characterized by chronic inflammation of multiple joints with associated systemic manifestations. This inflammation causes joint pain, stiffness and swelling, resulting in joint dysfunction due to damage of the bone and cartilage in various joints of body, particularly the smaller joints of the hands and feet and large peripheral joints, often leading to progressive disability.[1] RA is a multi factorial chronic condition, resulting from the complex interaction between genetic factors (shared epitope on locus HLA-DRB1 ,but also PTPN22, STAT4, 6q23 and TRAF1/C5), environmental factors like cigarette smoking, auto-antibodies such as rheumatoid factor (RF), anti-cyclic citrullinated Protein antibodies (ACPA), infectious agents as well as nutritional and hormonal factors but autoimmunity plays a pivotal role in its chronicity and progression.[2]

The thyroid dysfunction in rheumatoid arthritis is well-known but unfortunately there are only few studies available in our country to assess the thyroid function in RA patients. Thyroid abnormalities associated with rheumatoid arthritis need not only clinical assessment but also require some investigations for definite diagnosis. Since sub-clinical manifestations occur many years before their clinical presentation, hence the need for early recognition and more aggressive management of the disease, with a view to prevent the aforementioned complications is very important.

MATERIALS AND METHODS

Study Area:

The present study was conducted in the Department of GeneralMedicine, S.M.S Hospital & Attached Group of Hospitals Jaipur.

Study Design:

Hospital based observational, descriptive study.

Study Period:

After approval of the research review board, this study will be carriedout from July 2018 to up-to sample size completed.

Sample Size:

Sample size is calculated at 95 % confidence interval assuming 21.5% prevalence with, the absolute allowable error 5%,260 RA patients are required for sample size.

INCLUSION CRITERIA

1. A patient with an established diagnosis of RA, as defined by the American college of Rheumatology Association and EULAR criteria2010.
2. Sero-positive rheumatoid arthritis.

EXCLUSION CRITERIA

Patients with history of:

1. Surgical removal of thyroid gland.
2. Any malignancy on radiotherapy and damage to

thyroid.

3. Patients on drugs causing hypothyroidism.
4. Pregnancy.
5. Patients on oral contraceptives.
6. Sepsis and serious underlying diseases.
7. Those cases taken in parallel other study.

RESULTS

Table 1:Age and Sex wise distribution of study population

Age Group (Years)	Male		Female		Grand Total	
	N	%	N	%	N	%
15-25	6	2.31	17	6.54	23	8.85
25-35	11	4.23	36	13.85	47	18.08
35-45	18	6.92	79	30.38	97	37.31
45-55	8	3.08	55	21.15	63	24.23
55-65	4	1.54	22	8.46	26	10.00
above 65	1	0.38	3	1.15	4	1.54
Grand Total	**48**	18.46	**212**	81.54	**260**	100.00
Mean Age	37.96		41 .45		40.80	
SD	11.57		10.68		10.91	

Chi-square = 3.319 with 5 degrees of freedom; P = 0.773

Above table shows the age and sex wise distribution of study subjects. Mean age of RA patients is 40.80 ±10.91 years and majority of patients belongs to 35-45 years age 37.31% followed by 24.23% in 45-55 years age group and gender distribution of study shows majority of patients are female 212(81.54%) and 48(18.46%) male .This age and sex distribution of study group was statistically found not significant.(P = 0.773)

Table 2: Distribution of thyroid function test in study population

ıyroid functiontest	Level	No. of cases	Percentage
FT3 (ng/dl)	<2.3	157	60.38
	2.3-4.2	103	39.62
FT4 (ng/dl)	<0.89	23	8.85
	0.89-1.76	91	35.00
	>1.76	146	56.15
TSH (microIU/ml)	<0.35	2	0.77
	0.35-5.5	208	80.00
	5.5-10	22	8.46
	>10	28	10.77

Above table shows distribution of thyroid function in study population. The level of FT3 low in 157 (60.38%), normal in 103(39.62%) patients and level of FT4 low in 23(8.58%), normal in 91(35%), elevated in 146(56.15%) patients while level of TSH low in 2 (0.77%), normal in 208(80%), elevated in 50(19.23%) patients.

Table 3: Spectrum of thyroid function in study population

Thyroid status	No. of cases	Percentage
Euthyroid	208	80.00
Overt hypothyroidism	28	10.77
Sub clinical Hypothyroidism	22	8.46
Sub clinical Hyperthyroidism	2	0.77
Grand Total	**260**	100.00

Above table shows Spectrum of thyroid function in study population. Maximum patients 208(80.00%) are euthyroid followed by 28(10.77%) are overt - hypothyroidism, 22(8.46%) subclinical hypothyroidism and 2 patients (0.77%) are subclinical hyperthyroidism patients.

Table 4: Distribution of anti-TPO level in thyroid dysfunctions study population (n=52)

Anti-TPO level	No. of cases	Percentage
Negative	20	38.46
Elevated	32	61.54
Grand Total	**52**	100.00

Above table shows distribution of anti-TPO level in thyroid dysfunctions study population in which 20(38.46%) patients have negative level while as 32 (61.54%) patients have elevated

Thyroidfunction	Present Study	Kiran Tandia, Shikha Agrawalet al[103](2016)	HalaH.Mosli, Suzman M. et al[100] (2014)	Dihingia P,Debbarma M. et al[106](2017)	Enas A. Elattar, Takwa B.Younes et al[101](2014)
Sub Clinical Hypothyroidism	8.46 %	3%	19%	11.65%	24%
Overt Hypothyroidism	10.77%	23%	4%	5.82%	4%
Sub clinical Hyperthyroidism	0.77%	None	2.6%	3.88%	1.3%

DISCUSSION

In the present study, all patients with rheumatoid arthritis aged 15 years to above 65, who attended Medicine OPD or were admitted in the Department of Medicine were included. They were evaluated clinically along with relevant investigations. After considering the inclusion and exclusion criteria, a total of 260 sero-positive cases were included in the present study in a period of two years.

In the present study we found that thyroid dysfunction is observed in 20% of patients. The most common thyroid dysfunction observed was overt hypothyroidism seen in 10.77% of the patients followed by subclinical hypothyroidism seen in 8.46% and subclinical hyperthyroidism 0.77% of patients. In other study, conducted by Kiran Tandia, Shikha Agrawal et al showed 26% thyroid dysfunction in which overt hypothyroidism is 23%, subclinical hypothyroidism 3% and no case of hyperthyroism observed, Hala H.Mosli, Suzman M. et al showed 25.6% thyroid dysfunction in which overt hypothyroidism 4%, subclinical hypothyroidism 19%, subclinical hyperthyroidism2.6%, Dihingia P, Debbarma M

et al showed 21.35% thyroid dysfunction in which overt hypothyroidism 5.82%, subclinical hypothyroidism 11.65%, subclinical hyperthyroidism 3.88% and Elattar, Takwa B. Younes et al showed

29.3 % thyroid dysfunction in which overt hypothyroidism 4%, subclinical hypothyroidism 24%, subclinical hyperthyroidism 1.3%. Thyroid hormone dysfunction and /or autoimmune thyroid disease were present in 6% to 33% patients with Rheumatoid Arthritis, which can be attributed to the natural feature of autoimmune disease and there tendancy to overlap.

CONCLUSION

Prevalence of thyroid dysfunctions in rheumatoid arthritis is high and associated with thyroid autoimmunity and suggested that all rheumatoid arthritis patients should go for thyroid functions. Hence, it is advisable to screen the patients of rheumatoid arthritis for thyroid dysfunction so that early identification and treatment can provide a healthier life ahead.

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