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Prevalence of Comorbidities Due To Rheumatic Arthritis in the Eastern Uttar Pradesh, India.

Sadhna Ajay^{1*}, Vinod Kumar Bind², Manish Kumar Misra³, Tabassum Yasmeen⁴, and Vishakha Gupta⁵.

¹Associate Professor, Department of Biochemistry, UNS ASMC, Jaunpur, UP, India.

²Assistant professor, Department of Medicine, UNS ASMC, Jaunpur, UP, India.

³Associate Professor, Department of Biochemistry, RD ASMC, Ayodhya, UP, India.

⁴Professor, Department of Biochemistry, UNS ASMC, Jaunpur, UP, India.

⁵Junior Resident, Department of periodontology, Faculty of Dental Sciences, KGMU, Lucknow, UP, India.

ABSTRACT

Rheumatic Arthritis (RA) is a chronic systemic autoimmune disease that primarily involves the joints. On an average, Rheumatic arthritis is associated with one or more comorbid conditions and these comorbidities are associated with various risk factors and medications used in these patients. Present study was planned to see the prevalence of comorbidities in RA in eastern part of Uttar Pradesh state of India, so that the management of these patients can be improved. This study was conducted in a tertiary care hospital of eastern Uttar Pradesh, India. Total 427 cases of Rheumatic Arthritis were included in this study. Comorbidities were recorded in diagnosed cases of Rheumatic Arthritis. Prevalence of various comorbidities was noted according to gender and various age groups. A very high rate (37.2%) of comorbidity was found in RA patients. Comorbidity was more common in females (72.3%) as compared to males (27.7%). Most common comorbidities recorded were Depression (36.4%), hypertension (33.8%) and osteoarthritis (32.4%). Other comorbidities recorded were cardiovascular (4.8%), Diabetes Mellitus (19.2%), Osteoporosis (29.1%) and various infections (15.9%). In 10.2% cases other comorbidities were also recorded. Most common age group for comorbidity was 45-54 years followed by 55-64 years.

Keywords: Rheumatic Arthritis, Comorbidity, Depression, Hypertension, Osteoporosis

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**Corresponding author*

INTRODUCTION

Rheumatic Arthritis (RA) is one of the most prevalent chronic, non-communicable disease affecting the musculoskeletal system in a wide range of age groups. It is a systemic disease with extra-articular manifestations causing comorbidities. Comorbidity has become a focus of attention in Rheumatic Arthritis. The term comorbidity is defined as any condition associated or co-existing with the primary disease or index disease [1]. Estimation of the prevalence of comorbidities in the index disease is essential to understand the overall impact and to design the proper disease management guidelines [2]. Comorbid conditions can arise either by the disease pathology or due to treatment drugs [3]. Comorbidities are associated with poor health outcomes including decreased function, reduced quality of life and increase morbidity and mortality. It has been reported that the patients with RA mostly suffer from at least one or more comorbid conditions which reduce life span in RA patients [4, 5].

As per our knowledge, there is no study available regarding the prevalence of comorbidities in RA patients in the eastern part of Uttar Pradesh, India. Therefore, present study was planned to know about the prevalence of comorbidities in RA patients in this region so that their management can be improved.

MATERIALS AND METHODS

It was a cross sectional study which was carried out in the deptt of Medicine and deptt of Biochemistry in a tertiary care hospital of eastern of Uttar Pradesh, India, during Dec 2019 to Dec 2020 after the prior permission of ethical committee to conduct this study.

A total of 427 cases of Rheumatic Arthritis who were diagnosed by American College of Rheumatology criteria – 2010 (Aletaha et al, 2010) [6] were included in this study. All the patients were \geq 18 years of age. Out of 427 cases, 313 were females and 114 were males. A written consent was taken from all the patients before the study.

Exclusion criteria

- Patients who had pre-existing comorbid conditions like DM, Hypertension, Osteoporosis, osteoarthritis etc. were excluded.
- Patients who did not provide written consent to participate in this study.
- All those patients having other Rheumatic diseases like SLE (Systemic Lupus Erythromatosus), SPA (Spondylo arthropathy) and PsA (Psoriasis Arthritis).

Comorbidities were selected by clinical relevance and by previous reports [5, 7].

RESULTS

Table 1: Distribution of patients of RA according to Age and Gender

Age group (years)	Male	Female	Total
18 - 24	8	17	25 (5.9%)
25 - 34	11	53	64 (15.0%)
35 - 44	14	72	86 (20.1%)
45 - 54	53	88	141 (33.0%)
55 - 64	21	59	80 (18.7%)
>65	7	24	31 (7.3%)
Total	114 (26.7%)	313 (73.3%)	427

Out of a total of 427 cases enrolled under this study, 313 (73.3%) were females and 114 (26.7%) were male. Most of the patients were in the age group of 45 – 54 years.

Figure 1: Distribution of patients (n=427) of RA according to Age and Gender

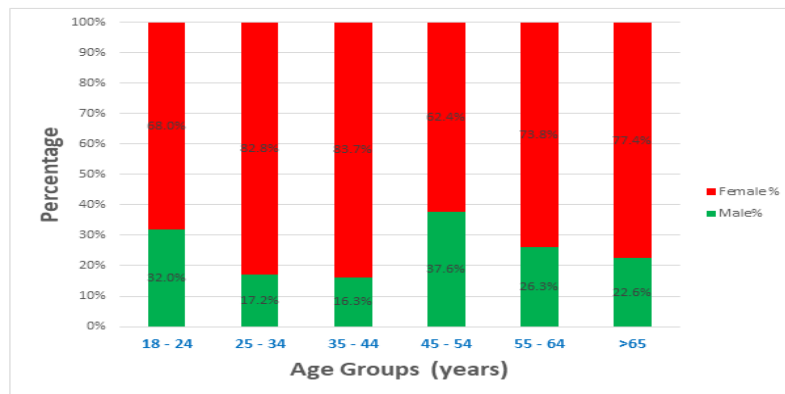


Table 2: Comorbidity in the patients of RA

Comorbidity (No. of cases)	Male (No. of cases)	Female (No. of cases)	% RA
159	44 (27.7%)	115 (72.3%)	37.2%

In our study, out of 427 cases of Rheumatic Arthritis, 159 cases had at least one comorbidity (37.2%). Out of these 44 (27.7%) cases were male and 115 (72.3%) were females.

Table 3: Prevalence of comorbidities in RA patients according to gender

Comorbidity	Male nos (%) Total 44 cases	Female nos (%) Total 115 cases	%RA Total 427 cases
Cardiovascular	5 (23.8%)	16 (76.2%)	21 (4.8%)
Diabetes Mellitus	32 (39.0%)	50 (61.0%)	82 (19.2%)
Hypertension	37 (25.7%)	107 (74.3%)	144 (33.8%)
Osteoarthritis	33 (23.9%)	105 (76.1%)	138 (32.4%)
Osteoporosis	43 (34.6%)	81 (65.4%)	124 (29.1%)
Depression	41 (26.5%)	114 (73.5%)	155 (36.4%)
Infection	31 (45.6%)	37 (54.4%)	68 (15.9%)
Others	21 (48.8%)	22 (51.2%)	43 (10.2%)

Most common comorbid condition was found to be depression, which was present in 36.4% of Rheumatic Arthritis patients. This was followed by Hypertension (33.8%), Osteoarthritis (32.4%), Osteoporosis (29.1%), Diabetes Mellitus (19.2%), Infection (15.9%) and cardiovascular diseases (4.8%). Other comorbidities were 10.2%. Distribution of all the comorbidities in both the gender shows that prevalence of each comorbidity is more in females than males.

Figure 2: Prevalence of comorbidities in RA patients (n=427) according to gender

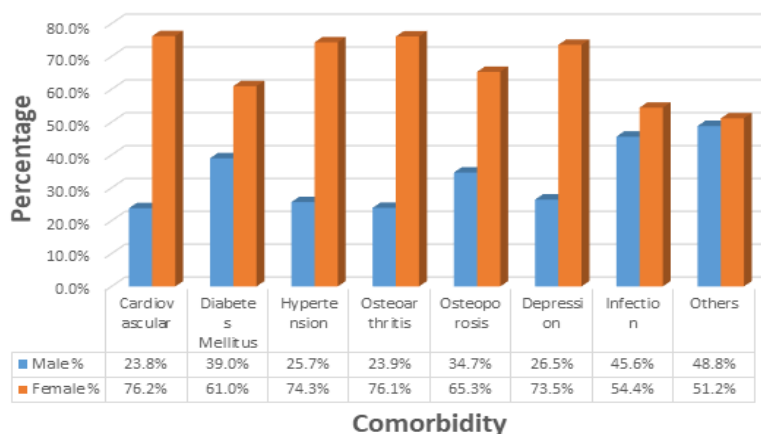


Table 4: Prevalence of comorbidities in RA patients according to Age group

Comorbidity	Age group (years)						% of RA
	18 - 24	25 - 34	35 - 44	45 - 54	55 - 64	>65	
Cardiovascular	-	1 (4.8%)	3 (14.3%)	10 (47.6%)	5 (23.8%)	2 (9.5%)	21 (4.8%)
Diabetes Mellitus	-	6 (7.3%)	7 (8.5%)	41 (50.0%)	21 (25.6%)	7 (8.5%)	82 (19.2%)
Hypertension	-	9 (6.3%)	12 (8.3%)	71 (49.3%)	45 (31.3%)	7 (4.9%)	144 (33.8%)
Osteoarthritis	-	8 (5.8%)	12 (8.7%)	68 (49.3%)	41 (29.7%)	9 (6.5%)	138 (32.4%)
Osteoporosis	-	2 (1.6%)	6 (4.8%)	63 (50.8%)	44 (35.5%)	9 (7.3%)	124 (29.1%)
Depression	2 (1.3%)	9 (5.8%)	13 (8.4%)	76 (49.0%)	46 (29.7%)	9 (5.8%)	155 (36.4%)
Infection	2 (2.9%)	5 (7.4%)	6 (8.8%)	26 (38.2%)	21 (30.9%)	8 (11.8%)	68 (15.9%)
Others	-	-	3 (7.0%)	23 (53.5%)	16 (37.2%)	1 (2.3%)	43 (10.2%)

Age-wise distribution of comorbidities showed that maximum comorbidities were found in (45 – 54) years age group followed by (55 – 64) years of age group.

DISCUSSION

Inflammation in Rheumatic Arthritis is not limited to joints. It affects several vital organs (cardiovascular system, bones, lungs etc.) and is the cause of comorbidities which are more frequent, less serious and less supported than in general population.

Rheumatic arthritis is a disease which is more common in females. In our study, out of 427 patients, 73.3% were females. In various other studies also similar results were reported [3, 8, 9]. Mostly the patients were in the age group of (45-54) years (33%), followed by 20% of age group (35-44) years.

Different studies showed different percentage of comorbidities which varied from 40-66%. In the present study at least one comorbidity was present in 37.2% cases whereas Haddani et al (2019) [10] reported 67% of patients having comorbidity. Prevalence of comorbidity in a Thai study [11] is 53.6% and in KRAC study [12], it was approximately 40%.

Cardiovascular death is considered the leading cause of mortality in patients with RA (Saha, 2023) [13]. In our study, cardiovascular disease was found in 4.8% of total RA patients, out of which, 23.8% were males and 76.2% were females. Gomes (2017) [14] also reported 4.4% prevalence of cardiovascular diseases in RA patients whereas in other studies it varied from 13.8% (Saha 2023) [13] to 40% (Daniel 2020) [15]. The increased cardiovascular risk observed in patients with RA is likely to be multi factorial reflecting an increased prevalence of traditional CVD risk factors, the impact of systemic inflammation and potential side effects from medications used to treat RA (Taylor 2021) [16]. RA should be considered as a cardiovascular risk factor in its own right with all its consequences, not just a deforming inflammatory arthritis [10].

Diabetes Mellitus is another comorbidity occurring frequently in RA patients. In this study, RA patients having Diabetes Mellitus as comorbidity were 19.2% of total RA cases, out of which 61.0% were females 39.0% were males. Maximum cases (50.0%) were in age group (45-54) years, followed by age group (55- 64) years (25.6%). It is reported as 13.8%, 11.83% and 14.4% in the studies of Saha (2023) [13], Chandrasekhar (2022) [1] and KRAC study [12] from south respectively. There is a high incidence of diabetes mellitus in RA patients. It can be a risk factor for cardiovascular diseases.

Next comorbidity which was noted in the present study was Hypertension which was present in 33.8 % cases of RA, where 74.3% were females and 25.7% were male. According to age group, highest number of cases were in (45-54) years (49.3%) whereas second highest cases were in (55-64) years of age group (31.3%). In various RA cohorts [5, 17-19], hypertension is reported from 31-47% whereas in some other studies [1, 13] hypertension was found as low as 8.6% and 20.7% in RA patients. Physical inactivity is considered as a main cause of hypertension. Use of glucocorticoids in patients with RA is another reason of development of hypertension.

Osteoarthritis was seen as a comorbidity in our study in 32.4% of total patients, in which female patients were more (76.1%) than male patients (23.9%). Age wise analysis showed similar results as in previous comorbidities i.e., highest percentage in (45-54) years age group (49.3%) followed by (55-64) years age group (29.7%). Age group (18-24) years did not have any case of comorbidity of osteoarthritis.

Luque et al [9] reported the prevalence of osteoarthritis in RA patients as high as 44% but at the same time in another study [1], it was too low at 0.48%.

Osteoporosis is another comorbidity found in RA patients. The risk of osteoporosis is multiplied by 2 in patients with RA due to disease itself and prolonged use of corticosteroids [20, 21]. 29.1% of total RA patients developed osteoporosis in which 65.4% were female and 34.6% were male. Almost similar results were reported in a study [19] (26%) where as in another study (Vaghela et al 2020) [3], osteoporosis was observed only in 3.33% cases of RA.

Depression was the most prevalent comorbidity in the present study it was found in 36.4% of RA patients. Out of that 73.5 % were females and 26.5% were males. It was present in all age group patients. Many studies were found supporting our study [3, 19, 22]. Prevalence of depression was found more in females as compared to males. There is much argument as to whether depression simply reflects a reaction to the pain of RA or it contributes to pain exercise. There is evidence that depression and psychological stress result in immune dysfunction [23]. There are studies suggesting that depression also relates to poorer RA outcomes. So it is crucial to emphasize on the detection and treatment of depression in RA to improve the life style of the patients (Matcham et al 2013) [24].

Patients with RA are at high risk of bacterial tubercular, fungal and other opportunistic infections (Michaud and Wolfehere, 2007) [25]. In the present study also, 15.9% of RA patients had different infections as comorbidity of which 54.4% were female and 45.6% were males. Infection was observed in all the age group patients. Our results are comparable with Singh et al (2016) [26] and Ziade et al (2020) [27] where infections were reported in 13.73% of and 19.3 % of RA patients respectively.

In our 10.2% cases of total RA patients, various other comorbidities were found. These included Anaemia, Thyroid diseases, lung diseases and gastrointestinal diseases etc. In these cases, 51.2% were females and 48.8% were males. They were mainly found in upper age groups.

Various factors are associated with different comorbidities in different studies. Patients with RA have an increased risk of developing comorbidities, exposing them to excess mortality. Their screening is currently insufficient and it is essential that medical community becomes aware of these risks in order to better comprehend them. Thus, screening and periodic evaluation of comorbidities, their risk factors and their management must be achieved.

CONCLUSION

Comorbidities have a high prevalence in RA and should be considered in patient's routine work-up and integrated in a holistic approach to the patient. Female patients have higher rate of prevalence than males. Most common comorbidity was depression followed by hypertension and osteoarthritis. Maximum no. of comorbidities was found in the age group 45-54 years, followed by 55-64 years. There is a need to organize a systematic screening of major comorbidities and maintain preventive measures such as immunization.

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