

Prescribing pattern in Rheumatoid Arthritis patients in a tertiary care teaching hospital

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ABSTRACT

Background: Rheumatoid arthritis (RA) is associated with joint deformity and significant health care related expenses. This disease affects approximately 1% of the adult population, the prevalence of RA in India is approximately 0.75% and increasing trend has been observed. Irrational prescribing is a common phenomenon around the globe. The drug utilization studies form an important tool for the assessment of rational or irrational prescribing and WHO drug use indicators. Thus keeping this in view the prescribing pattern analysis in RA patients was done.

Methods: This prospective study was carried out by the department of pharmacology in medicine OPD of SGRRIM and HS, Dehradun for one year. A total of 450 RA diagnosed patients were included in the study. The diagnosis was made on the basis of clinical assessment and lab parameters as rheumatoid factor and anti-ccp. The collected prescriptions were analyzed by using WHO drug use indicators.

Results: Total of 450 prescriptions was analyzed. 378 (84%) were females and 72 (16%) were males. Most commonly presenting age group was 31-60 years 276 (61.33%). Family history and RA factor was positive in 168 (37.33%) and 318 (70.67%) patients respectively. Anti-ccp was raised in 408 (90.67%) patients. The comorbid conditions were type-2 diabetes mellitus 72 (16%), hypertension 48 (10.67%), hypothyroidism 36 (8%) and other associated illness 54 (12%). Total of 1655 drugs were prescribed during the study period. The prescribed drugs were disease modifying anti-rheumatic drugs (DMARDs) 582 (35.18%), vitamin-D3 and calcium supplements 320 (19.34%), analgesics 311 (18.80%), antacids 204 (12.33%), others 238 (14.38%). 437 (26.40%) fixed dose combinations (FDCs), 3.67 drugs per prescription, 1145 (69.18%) drugs by brand names and 1161 (70.15%) drugs from the National List of Essential Medicine (NLEM) 2015 were prescribed.

Conclusions: Drug prescribing pattern depicts that most commonly prescribed were DMARDs, vitamin-D3 and calcium supplements and analgesics. Most of the drugs were prescribed from NLEM 2015.

Keywords: Drug utilization study, Disease modifying anti-rheumatic drugs, Rheumatoid arthritis, WHO drug use indicators

INTRODUCTION

Prescription writing can be depicted as an art, since it reflects the directions given by the prescriber to the patients or their representatives.¹ Therefore, a prescription written by a physician is a reflection of his perspective towards the particular disease and the role of drug in its treatment. It also provides an apprehension into the essence of the health care delivery system. Examining

and monitoring of prescriptions and drug utilization studies can actually analyze the recent trend of prescription pattern which will further help to identify the problems and provide feedback to prescribers. Defining drug prescription and utilization pattern provides advantageous feedback to prescribers in order to improve their prescribing behaviour.²

Rheumatoid arthritis (RA) is a chronic autoimmune inflammatory illness characterized by polyarthritis of small and large joints which in the course of time may progress to disability.³ Due to its pathogenesis, this condition affects internal organs, particularly heart, lungs, kidneys, blood vessels, brain, and therefore is regarded as a systemic illness.⁴ RA is a ubiquitous condition throughout the globe; it affects all races, both genders and all age groups. About 0.75% of the adult Indian population is affected by the disease and the incidence increases between 25 and 55 years of age, after which it plateaus until the age of 75 and then decreases.^{5,6} Females are more prone to RA 2-3.5 times more often than men, and this difference is due to hormonal differences, because by approaching the sixth decade of life, the hormonal differences among genders are minimal, or even are equal with men's hormones.^{7,8}

Current rheumatoid arthritis management emphasis of the benefits of early Disease Modifying Anti-Rheumatic Drugs (DMARDs). These agents are characterized by the ability to reduce or reverse the signs and symptoms, disability and improve quality. Periodic evaluation of drug utilization needs to be done to enable suitable modifications in prescription to increase the therapeutic benefit and minimize the adverse effects. Accordingly the present study was conducted to analyze the prescription pattern in rheumatoid arthritis patients in a tertiary care teaching hospital at Dehradun.

METHODS

The prospective study was carried out by the Department of Pharmacology in Shri Guru Ram Rai Institute of Medical and Health Sciences (SGRRIM and HS) in Medicine OPD for one year after the approval from Institutional Ethics Committee. Written informed consent was obtained from all the patients/legal guardians. All the diagnosed rheumatoid arthritis (RA) patients were included in the study. Patients were diagnosed on the basis of clinical assessment and the lab parameters assessed were Rheumatoid Factor and Anti-ccp (anti-cyclic citrullinated peptide antibody). The drugs prescribed for the RA were analyzed, by using drug utilization WHO indicators as drugs prescribed per prescription, drug formulations, fixed dose combinations (FDCs), drugs prescribed by brand names, drugs from national essential list of medicines 2015 were analyzed and Defined daily dose was calculated for daily used drugs for the total number of the patients (450) by using.

Drug usage= items issued × amount of drug given per item / Defined daily dose

RESULTS

Total of 450 prescriptions was analysed. 378 (84%) were females and 72 (16%) were males. The ratio affecting female:male was 5.25:1. Most commonly presenting age group was 31-60 years 276 (61.33%). The family history

was positive in 168 (37.33%), RA factor was positive in 318 (70.67%), anti-ccp was raised in 408 (90.67%) patients respectively. Profession wise distribution, 282 (62.67%) housewives, 120 (26.67%) private workers, 42 (9.33%) farmers and 6 (1.33%) were student. The comorbid conditions were type-2 diabetes mellitus in 72 (16%), hypertension in 48 (10.67%), hypothyroidism in 36 (8%) and other associated illness in 54 (12%) patients (Table 1 and Figure 1).

Table 1: Demographic profile.

Parameters	Number (%)	
Female: Male	5.25:1	
Positive Family History	168(37.33%)	
Positive RA Factor	318(70.67%)	
Raised Anti-CCP	408(90.67%)	
Profession	House Wife	282(62.67%)
	Private Job	120(26.67%)
	Farmers	42(9.33%)
	Student	6(1.33%)
Comorbid Conditions	Type-2 DM	72(16%)
	Hypertension	48(10.67%)
	Hypothyroidism	36(8%)
	Others	54(12%)

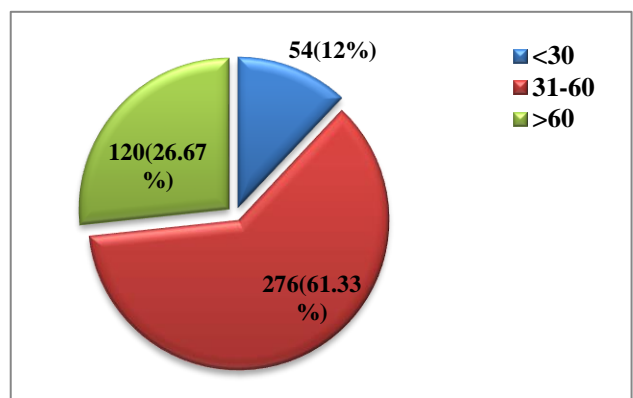


Figure 1: Age wise distribution.

Total of 1655 drugs were prescribed during the study period. The prescribed drugs were disease modifying antirheumatic drugs 582 (35.17%), analgesics 311 (18.80%), vitamin D3 and calcium supplements 320 (19.34%), antacids 204 (12.33%) and others 238 (14.38%) [Others includes diacetylrhein (Diacerin) 165 (9.96%), ondansetron 51 (3.1%), amitriptyline 12 (5.04%) and clozapine 10 (4.20%)] respectively (Table 2). Most commonly prescribed DMARD was methotrexate (MXT) 302 (51.90%), hydroxychloroquine (HCQ) 280 (48.10%). Analgesics prescribed were etoricoxib 178 (57.23%), diclofenac 98 (18%), aceclofenac 23 (7.39%) and paracetamol 12 (3.86%) respectively. Pantoprazole 128 (62.75%), sucrulfate 76 (37.25%) were prescribed as antacids and 320 (19.34%) vitamin D3 and calcium preparations were prescribed (Table 2).

Table 2: Drugs prescribed.

Drug groups	Name of Drugs	Number (%)
DMARDs 582(35.17%)	Methotrexate	302(51.90%)
	Hydroxychloroquine	280(48.10%)
Analgesics 311(18.80%)	Etoricoxib	178(57.23%)
	Diclofenac	98(31.51%)
	Aceclofenac	23(7.39%)
	Paracetamol	12(3.86%)
Vitamin D3 and Calcium 320(19.34%)	Calcium+Vitamin-D3	161(50.31%)
	Vitamin D3	159(49.69%)
Antacids 204(12.33%)	Pantoprazole	128(62.75%)
	Sucralfate	76(37.25%)
Others 238(14.38%)	Diacetylrhein(Diacerin)	165(69.33%)
	Ondansetron	51(21.43%)
	Amitriptylline	12(5.04%)
	Clozapine	10(4.20%)

437 (26.40%) drugs were prescribed as fixed dose combinations (FDCs) that includes 276 (63.16%) methotrexate plus hydroxychloroquine and 161 (36.84%) vitamin D3 plus calcium (Figure 2).

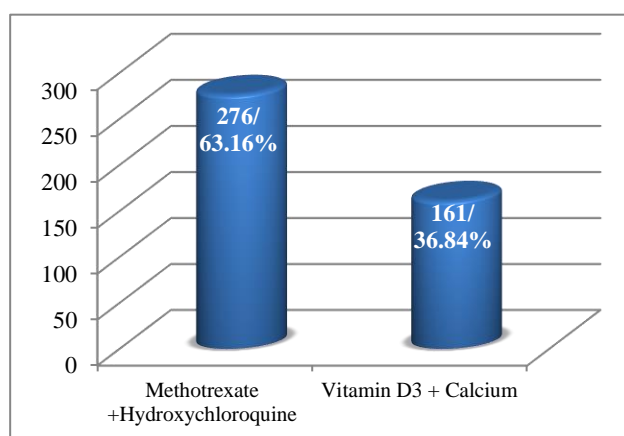


Figure 2: Fixed dose combinations (FDCs).

Table 3: WHO parameters analysed.

Parameters	Number (%)
Drugs prescribed per prescription	3.67
Drugs prescribed from NLEM	1161(70.15%)
Drugs prescribed by brand names	1145(69.18%)
Fixed dose combinations	437(26.40%)

Table 4: Defined daily dose (DDD).

Name of drug	DDD (mg)	Total DDD	DDD/ Patient/day
Hydroxychloroquine	400	140	0.31
Vitamin D3+Calcium	1000	80.5	0.18
Diacetylrhein	50	165	0.37
Pantoprazole	40	128	0.28

3.67 drugs were prescribed per prescription. 1145 (69.18%) drugs were prescribed by brand names. 1161 (70.15%) drugs were prescribed from national list of essential medicines 2015. The daily defined dose per patient per day was 0.31 for hydroxychloroquine, 0.18 for vitamin D3+Calcium, 0.37 for diacetylrhein and 0.28 for pantoprazole (Table 3 and 4).

DISCUSSION

Drug utilization studies can actually analyse the recent trend of prescription pattern which will further help to identify the problems and provide feedback to prescribers. Hence awareness can be created about irrational use of the drugs. Defining drug prescription and utilization pattern provides advantageous feedback to the prescribers in order to improve the prescribing behaviour.⁹

In the present study 378 (86%) of the affected patients were females and the ratio of disease among female:male was 5.25:1 which is similar to the previous study by Bajraktari IH et al.¹⁰ In the present study the most commonly affected age group was 31-60 years (61.33%) and the study by Owino et al showed that the peak prevalence of RA was in age groups of 20-29 years and 40-49 years.¹¹ The lab parameters as RA factor were positive in 70.67%, which is in relation to the study by O'Dell JR et al.¹² The anti-ccp was raised in 90.67% of the patients which is similar to the study by Shini VK et al where anti-ccp was raised in 87.29% of the patients.¹³ The associated comorbid conditions in present study were Type-2 diabetes mellitus (DM) in 16%, hypertension (HTN) in 10.67%, hypothyroidism in 8% of the patients, which is contrast to previous study where comorbidities like HTN 60%, DM 26.66% and asthma 13.34% respectively.¹⁴ In the present study the affected patients were 62.67% housewives, 26.67% private workers, 9.33% farmers and 1.33% students respectively, the similar pattern has been seen in the previous study by Kashefi S et al in which the 66.4% were housewives, 10.3% were farmers, 6.9% labourers and 16.5% others.¹⁵

Treatment options for rheumatoid arthritis have changed dramatically over the last decade, with a differing approach to the initiation of disease modifying anti-rheumatic drugs. The development of new and more effective medications meaning that early and aggressive intervention can often achieve disease remission before substantial joint damage and disability have occurred.

Adequate pain control is the most common priority for individuals with rheumatoid arthritis. This will often be achieved as the disease is brought under control once DMARD therapy is commenced, but in some individuals, particularly those with a degree of joint damage, analgesia will become a regular requirement. Methotrexate (MXT) 51.90% and hydroxychloroquine (HCQ) 48.10% were prescribed DMARD in present study, which is in accordance with study by Almeida et al

showed most commonly prescribed DMARD were methotrexate 39.8% followed by hydroxychloroquine (30.6%).¹⁶ While in contrast to it in another study the most commonly prescribed DMARD were HCQ (44.64%), followed by Sulfasalazine (33.92%) and MXT (21.42%).¹⁴ In another studies by SR Gawde et al and Ahmed M et al the most commonly prescribed DMARD was HCQ.^{9,17}

In the study by Gurung S et al the most commonly prescribed drug following DMARDs was Analgesics 28.71%, the similar finding has been found in the present study the prescribed analgesics were 18.80%.¹³ In our study the most commonly prescribed antacids were pantoprazole 50.20%, which is similar to other study where 41.17% pantoprazole were prescribed.¹³ In the present study the calcium and vitamin-D supplements were 19.33% while in another study where 32.6% of calcium and vitamin –D were prescribed.¹⁴

3.67 drugs were prescribed per prescription, and in another study the average number of drugs per prescription was 8.06.¹⁸ The drugs prescribed by generic names were 30.82%, while in another study by Dahiya A et al in which 40.7% of the drugs were prescribed by generic names.¹⁸ The drugs prescribed from NLEM were 70.15% which is in accordance with the previous study in which 76.3% drugs were prescribed from NLEM.¹⁸ In the present study almost 100% of the drugs were of oral formulation which is in contrast to previous studies where oral and injectable both formulations were prescribed.^{6,18} 26.40% fixed drug combinations (FDCs) were prescribed in our study, while in another study 25.3% FDCs were used.¹⁸ In present study defined daily dose (DDD) was calculated which is the average maintenance dose per day, is an important WHO indicator for rational prescribing and DDD/patient/day should be ideally presented as number of DDD per 1000 patient per day. This provides estimation of the proportion of study population treated daily with particular drug or group of drugs.¹⁹

CONCLUSION

the drug use pattern in RA was found to be primarily based on DMARDs. The various treatment regimens prescribed enlighten the use of several drugs as DMARDs, analgesics, vitamin-D3 and calcium supplements, diacetylrhein, Antacids etc. The rational use of drugs stresses on patients receiving medications appropriate to their clinical needs. The study of prescription pattern is an important component of medical audit which helps in monitoring, evaluating and making necessary modifications in the prescribing practices to achieve a rational and cost effective medical care.

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