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RESEARCH ARTICLE

AN EVALUATION OF EFFICACY AND SAFETY OF DRUGS IN PATIENTS OF RHEUMATOID ARTHRITIS AND THEIR IMPACT ON QUALITY OF LIFE

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ABSTRACT

Aims: To evaluate efficacy and safety of drugs in patients of rheumatoid arthritis (RA) and their impact on quality of life. **Materials and Methods:** Newly diagnosed patients of RA were included in the study [Group A=Methotrexate (7.5 to 25 mg) orally + Hydroxychloroquine (200 mg) orally& Group B =Methotrexate (7.5 to 25 mg) orally + Hydroxychloroquine (200 mg) orally + Prednisolone (1 mg/kg/day and then tapered to maintenance dose 7.5 mg/day) orally] and followed up for a period of 6 months after enrolment. Efficacy of drugs was assessed using Disability Assessment Score 28 (DAS 28) and Quality of life was measured with Modified Health Assessment Questionnaire (MHAQ).The data was recorded in Microsoft Excel Worksheet version 2007 and statistical evaluation was done using ANNOVA test and unpaired t-test and $P<0.05$ was considered to be statistically significant. **Result:** Total 82 patients were included and divided in group [A (n=47) and B (n=35)]. In group A & B, there was significant reduction ($P<0.001$) in DAS28 at 2nd follow up as compared to baseline. In group B, DAS28 was significantly reduced at 1st follow up ($P<0.05$). Mean difference between group A & B was non-significant. In group A, total MHAQ was significantly change ($P<0.001$) at 2nd follow up as compared to baseline. In group B, the groups. **Conclusion:** MHAQ score was significantly reduced ($P<0.001$) at 1st follow up and at 2nd follow upas compared to baseline. Significant reduction (P<0.001) in MHAQ observed in both the group at 2nd follow up as compared to 1st follow up. In group B, there was strong correlation (r value=0.7) between DAS28 & MHAQ. Adverse drug reaction observed were mild in severity in both DMARDs decrease the severity of symptoms in RA patients over a period of time but symptomatic improvement is seen earlier in combination of DMARDs (methotrexate and hydroxychloroquine) plus prednisolone therapy.

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INTRODUCTION

Rheumatoid arthritis (RA) is a chronic multisystem disease of autoimmune disorder affecting small and large joints (Shah, 2015). According to published reports, prevalence in different populations varies from 0.2% to 5.3% all over world; 0.5 to 0.75% prevalence of rheumatoid arthritis reported in India (Sharma, 2012) and commonly affecting age group is between 35 to 50 years of age (Kavanaugh and Lipsky, 1996) with Male to female ratio 1:3 (Firestein, 2013). RA is associated with persistent inflammatory synovitis, usually involving peripheral joints and causes cartilage damage, bone erosion and subsequent changes in joint integrity (Shah, 2015). Hence, Clinical remission, prevention of joint destruction and long-term disability are the primary goals of treatment for RA (Schuna, 2008). As per the 2013 European League Against Rheumatism (EULAR) guideline, pharmacological treatment of RA depends on severity of the disease; in mild/early disease, Non-steroidal anti-inflammatory drugs (NSAIDs) and Disease modifying anti-rheumatic drugs (DMARDs: methotrexate, azathioprine, cyclosporine, sulfasalazine, chloroquine or hydroxychloroquine, leflunomide, etanercept, infliximab, adalimumab, anakinra, tocilizumab, abatacept, tofacitinib, rituximab) are used for treatment of RA. Corticosteroids e.g. prednisolone arealso used as an adjuvant due to anti-inflammatory and immunomodulator effect. Methotrexate is first line drug in patients with active RA andin case of methotrexate contraindication, sulfasalazine or leflunomide should be first line drug (Smolen *et al.,* 2014). Non-pharmacological treatment, education, physiotherapy and a variety of orthotic and assistive devicesare used[1].Methotrexate, sufasalazine and leflunomide are hepatotoxic drugs. While hydroxychloroquinecan cause ophthalmic toxicityon chronic

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use. Long term corticosteroid like prednisolone treatment may result into hypothalamus pituitary axis suppression, weight gain, osteoporosis etc. on chronic use (Firestein, 2013). WHO defines Quality of Life as "individual perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHOQOL–BREF Introduction, 1996). Morbidities due to RA and adverse drug reaction (ADR) may affect adversely on quality of life of patients of rheumatoid arthritis. Therefore, quality of life measures can be one of the useful parameters to evaluate treatment interventions (Pincus *et al.,* 2005). Data about correlation of drug treatment with quality of life is lacking from Indian population. Hence, this study was conducted with aim to measure efficacy and safety of drugs used in patients of rheumatoid arthritis and their impact on quality of life.

MATERIALS AND METHODS

The continuous, longitudinal, prospective, observational study was carried out to study the efficacy and safety of drugs in patients suffering from RA and their impact on quality of life at Department of Pharmacology and Rheumatology out-patient-department (OPD), B. J. Medical College and Civil Hospital, Ahmedabad, a tertiary care teaching hospital in Gujarat state, Western part of India. The study protocol was approved by Institutional Ethics Committee (IEC) (EC/ Approval/40/15) and permission from superintendent and Head of Department of Rheumatology of the institute was taken. The study was conducted for a total duration of 18 months. Newly diagnosed patients of either gender of RA, more than 18 years of age and willing to participate in the study were enrolled in the study after obtaining written informed consent. Patients were enrolled in the study during initial 12 months and each recruited patient was followed up for a period of 6 months after enrollment. Patients were assessed and diagnosed by a rheumatologist.

The baseline data like demographic details, presenting complaints, past, personal and family history, diagnosis and details of the drug treatment was recorded in pretested and pre-validated Case Record Form (CRF). The efficacy of drugs was assessed using Disability Assessment Score 28 (DAS 28) which contains four components 1) Swollen joints, 2) Tender joints, 3) ESR and 4) Global assessment (Wells *et al.,* 2009). Quality of life was measured withModified Health Assessment Questionnaire (MHAQ). MHAQ is designed for use in adults (>16 years) with RA. It is a validated and self-explanatory questionnaire.

There are 8questions which are divided under four headings

1) Without any difficulty
2) With some difficulty
3) With much difficultyand
4) Unable to do.

A correlation between DAS28 and quality of life was estimated in both groups. All the recruited patients were followed up at 1 month (1st follow up) and 6 months (2nd follow up). At each follow up visit, presenting complaints, any change in drug treatment, DAS28 and quality of life was recorded and analyzed at the end of the study. Efficacy using DAS28 and Quality of life using MHAQ were assessed at baseline, at the end of 1st and 6th months. Detail of suspected adverse drug reaction, if any was recorded. Based on prescribed treatment, patients were Grouped as: Group A (n=47): {Disease Modifying Anti-Rheumatoid Drugs (DMARDs) [Methotrexate (7.5 to 25 mg) orally + Hydroxychloroquine (200 mg) orally]}, Group B (n=35): {Methotrexate (7.5 to 25 mg) orally + Hydroxychloroquine (200 mg) orally + Prednisolone (1 mg/kg/day and then tapered to maintenance dose 7.5 mg/day) orally]}. The data was recorded in Microsoft Excel Worksheet version 2007. The statistical evaluation was done using ANNOVA test and unpaired t-test with the help of Graph Pad demo version 3.1 (2016) and $P<0.05$ was considered to be statistically significant. The parameters like demographic details, clinical presentation, personal and family history, drug treatment, efficacy of drug using DAS28 score, change in quality of life using MHAQ, relationship between efficacy and quality of life, adverse drug reactions (ADRs) including their causality, severity and preventability were analyzed.

RESULTS

Total 89 patients were included in prospective, observational study according to inclusion and exclusion criteria and patients were followed up at the end of 1stand 6th months of treatment. Six patients were lost to follow up. Demographic details and baseline characteristic were comparable in both treatment group (Table 1). There were no significant difference in baseline laboratory investigation between both treatment groups. Erythrocyte sedimentation rate (ESR) ($P<0.001$) was significantly decreased at 2nd follow up as compared to base line and 1st follow-up in both the groups. In group A, there was significant reduction in DAS28 at 2nd follow up as compared to baseline ($P<0.001$) (Table 2, Fig 1). In group B, DAS28 was significantly reduced at each follow up as compared to baseline; significant reduction in DAS28 at 1st follow up ($P<0.05$) and 2nd follow up ($P<0.001$) as compared to baseline. There was also significant reduction in DAS28 at 2nd follow up as compared to 1st follow up ($P<0.001$) (Table 2, Fig. 1).

To compare the efficacy in between group A and B, the mean difference was measured for each group and the difference of the baseline and 2nd follow up data was calculated. Mean difference of DAS28 was not significant between group A and group B ($P=0.59$). In group A, MHAQ score was significantly ($P<0.001$) reduced at 2nd follow up (0.8±0.05) as compared to baseline (1.28±0.05) and 1st follow up. In group B, Mean MHAQ score was significantly reduced ($P<0.001$) at 1st [1.2±0.04] and 2nd follow up (0.9±0.04) as compared to baseline (1.46±0.04). There was also significant reduction in score of MHAQ at 2nd follow up as compared to 1st follow up ($P<0.001$) (Figure 2). Mean difference of MHAQ was not significant ($P=0.48$) between two groups. In group A, correlation coefficient (r) value was 0.41 (week relationship) and in group B, 0.7 (strong positive) correlation between DAS28 and QOL. Figure 3 & 4 shows the correlation of efficacy and QOL in group A and B, respectively. Total 57 adverse drug reactions were reported during the study period. Out of 47 patients, total 22(46.80%) patients developed adverse drug reaction including elevation of liver enzymes [14(24.56%)], nausea and vomiting [7(12.28%)], gastritis [3(5.26%)] in group A. Out of 35 patients, total 24 (68.57%) patients developed elevationin liver enzymes [17(29.82%)], weight gain [8(14.03%)], gastritis [4(7.01%)], nausea and vomiting [2(3.5%)], menstrual irregularities [1(1.57%)]. Severity and treatment of the ADR mentioned in Table 3.

Table 1. Analysis of demographic and clinical characteristic at base line (n=82)

Parameter	Group A(n=47) (combination of DMARDs)	Group B(n=35) (combination of DMARDs + Prednisolone)
Age (year) (Mean ± SEM)	44.27±1.63	41.91±1.97
Gender	M: 8, F: 39 (82.97%)	M: 10, F: 25 (71.42%)
Weight (kg) (Mean ± SEM)	63.47±1.64	66.06±2.03
Past history of RA	10(21.27%)	8(22.85%)
History of smoking/tobacco chewing	2(4.25%)/3(6.38%)	1(2.85%)/2(5.71%)
Family history of RA	-	-
Tender joints	23.51±0.33	24.14±0.78
Swollen joints	22.48±1.05	23.91±0.29
Erythrocyte sedimentation rate (ESR)	75.14±23.45	72.7±33.2
Global assessment (out of 100)	81.09±1.31	89.1±1.59
DSA28 score	7.83±0.13	8.08±0.15
MHAQ score for QOL	1.28±0.05	1.46±0.04

All data are expressed as Mean ± SEM. P< 0.05 considered as statistically significant. Inter group comparison was done by unpaired t-test.

Table 2. Analysis of DAS28 score in group A and group B (n=82)

	Group A (n=47) (combination of DMARDs)			Group B (n=35) (combination of DMARDs + Prednisolone)		
	1st visit	2nd visit	3rd visit	1st visit	2nd visit	3rd visit
Tender joints	23.51±0.33	21.2±0.8	13.6±0.9	24.14±0.78	20.1±0.47	11.43±0.5
Swollen joints	22.48±1.05	20.96±0.6	13.1±0.4	23.91±0.29	19.27±0.4	12.3±0.4
ESR	75.14±23.45	55.69±12.64	41.12±11.7$	72.7±33.2	45.9±22.1	33.9±10.7$
Global assessment	81.09±1.31	71.7±1.1	58.78±1.1	89.1±1.59	66.4±0.7	53.1±0.1
DAS28 score	7.83±0.13	7.52±0.13	6.49±0.15#	8.08±0.15	7.45±0.17@	6±0.2*

All data are expressed as Mean ± SEM. P< 0.05 considered as statistically significant. ANOVA test was used to compare the data at baseline, 1st and 2nd follow up. Inter-group comparison was done by unpaired t-test. $P value was significant (P<0.001) as compared to 1st visit and 2nd visit. # P value was significant as compared to baseline as well as 1stvisit (P<0.001). @ P value was significant as compared to base line (P<0.05). *P value was significant as compared to baseline as well as 1stvisit (P<0.001).

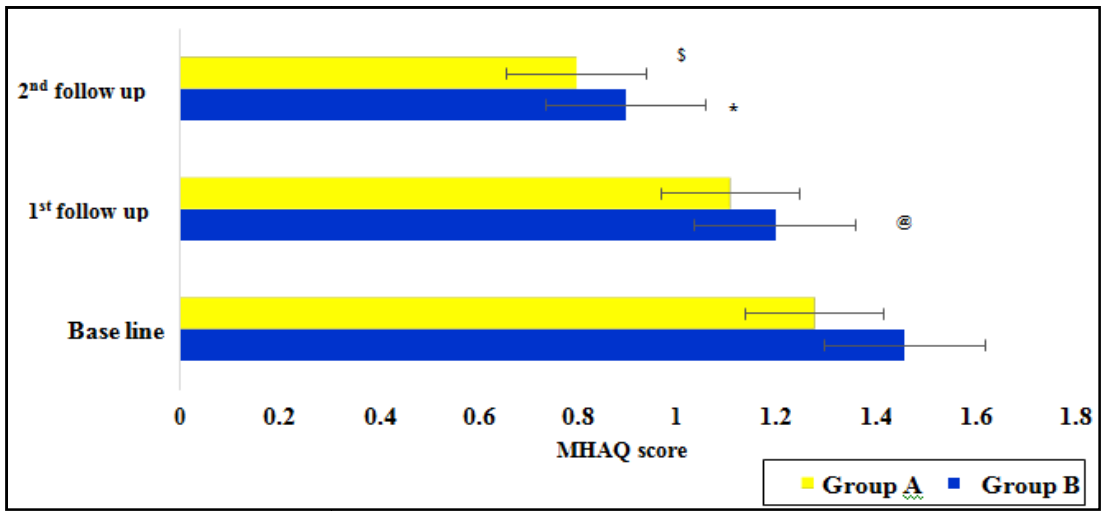
Table 3. Analysis of QOL in patients suffering from rheumatoid arthritis (n=82)

	Group A			Group B		
	Base line	1st follow up	2nd follow up	Base line	1st follow up	2nd follow up
Dress yourself, including tying shoelaces and doing buttons?	1.74±0.05	1.59±0.05	1.2±0.05	1.7±0.04	1.51±0.06	0.9±0.05
Get in and out of bed?	0.91±0.05	0.7±0.04	0.5±0.05	0.84±0.01	0.67±0.05	0.42±0.07
Lift a full cup or glass to your mouth?	1.68±0.05	1.18±0.05	1±0.05#	1.5±0.05	0.87±0.05	0.71±0.05#
Walk outdoors on flat ground?	1.09±0.06	0.89±0.05	0.5±0.01	1.1±0.05	0.81±0.03	0.52±0.02
Wash and dry your entire body?	1.45±0.05	1.2±0.05	0.9±0.04	1.37±0.01	1±0.05	0.78±0.06
Bend down to pick up clothing from the floor?	1.09±0.05	0.86±0.04	0.5±0.05	1.18±0.05	0.7±0.04	0.53±0.02
Turn regular faucets on and off?	1.8±0.05	1.65±0.05	1.2±0.05	1.72±0.03	1.44±0.05	1.1±0.06
Get in and out of a bus, car, train, or airplane?	1.07±0.05	0.98±0.05	0.6±0.05	1.1±0.05	0.9±0.04	0.51±0.06
Total MHAQ score	1.28±0.05	1.11±0.05	0.8±0.05@	1.46±0.04	1.2±0.04	0.9±0.04*$

All data are expressed as Mean±SEM. *P*< 0.05 considered as statistically significant. ANOVA test was used to compare the data at baseline, 1st and 2nd follow up. Inter-group comparison was done by unpaired t-test.# *P* value was significant as compared to baseline (*P*<0.001).@ *P* value was significant as compared to base line as well as 1st visit (*P*<0.05). *P value was significant as compared to base line as well as 1st visit (*P*<0.001). $P value was significant as compared to 1st follow up(*P*<0.001).

Table 4. Analysis of adverse drug reaction observed in patients suffering from rheumatoid arthritis (n=82)

Suspected Drug	Event	No of events	Causality				Preventability	Severity	Treatment Given
			WHO-UMC Criteria		Naranjio Criteria				
			Possible	Probable	Possible	Probable			
GROUP A (n=47)									
Methotraxate & Hydroxychloroquine	Liver Enzyme Elevation	14	14	--	14	--	Not Preventable	Mild	Hold methotraxate & increase dose folic acid
Methotraxate	Nausea & Vomiting	07	-	07	-	07	Not Preventable	Mild	Symptomatic
Methotraxate	Gastritis	03	-	03	-	03	Not Preventable	Mild	Symptomatic
GROUP B (n=35)									
Methotraxate & Hydroxychloroquine	Liver Enzyme Elevation	17	17		17		Not Preventable	Mild	Hold methotraxate & increase dose folic acid
Methotraxate	Nausea & Vomiting	02		2		2	Not Preventable	Mild	Symptomatic
Methotraxate & Prednisolone	Gastritis	04	4		4		Not Preventable	Mild	Symptomatic
Prednisolone	Increase body weight	08		8		8	Not Preventable	Mild	Symptomatic
Prednisolone	Menstrual irregularities	01		1		1	Not Preventable	Mild	Symptomatic



@P<0.001 at 1st follow up as compared to baseline in group B
$P<0.001 at 2nd follow up as compared to baseline and 1st follow up in group A
*P<0.001 at 2nd follow up as compared to base line and 1st follow up in group B

Figure 1. Comparison of QOL between treatment groups of patients suffering from rheumatoid arthritis (n=82)

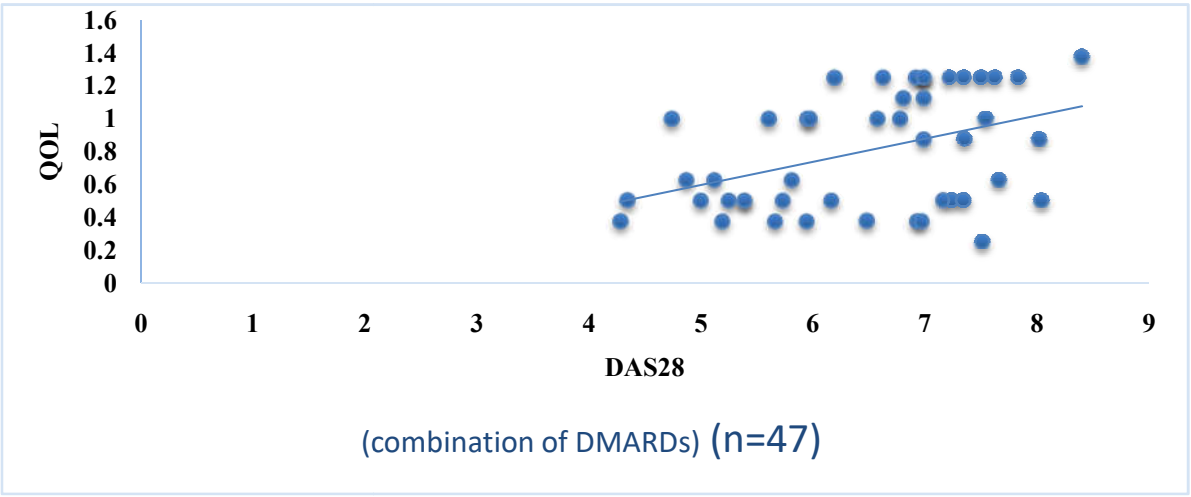


Figure 2. Correlation between DAS28 and QOL in group A

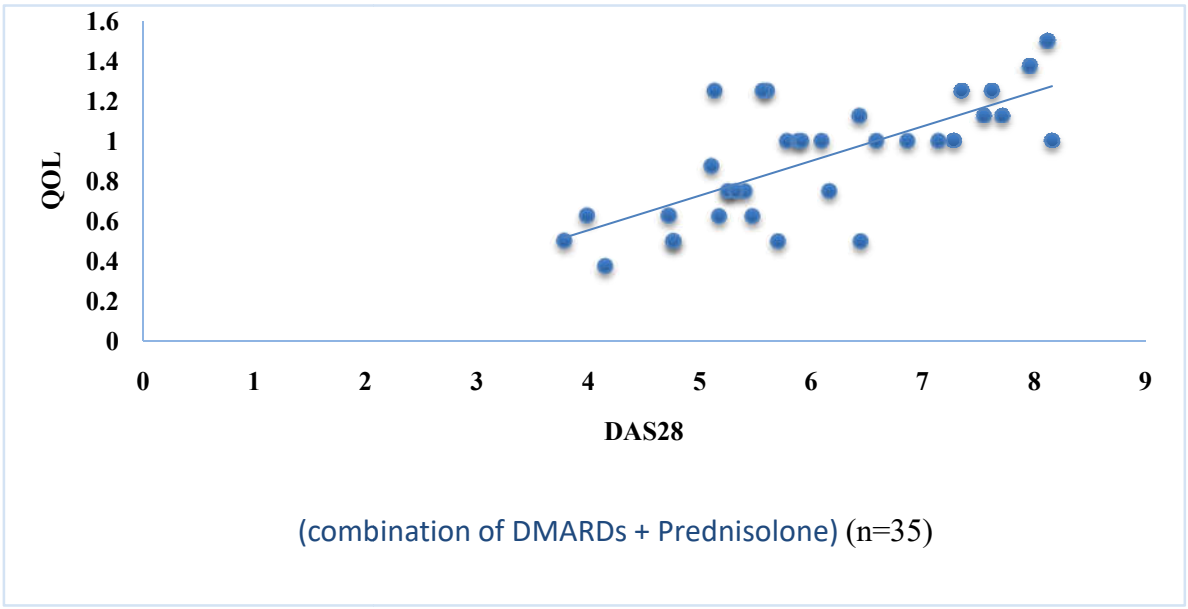


Figure 3. Correlation between DAS28 and QOL in group B

DISCUSSION

Rheumatoid arthritis is a chronic, immune mediated, inflammatory multisystem joint affecting disease (Firestein, 2013). The prevalence rate of rheumatoid arthritis is influenced by genetic, environmental factors, smoking and obesity (Symmons *et al.,* 2006) and more prevalent in female population (Chopra, 2008). Non pharmacological (Rest, regular physiotherapy, exercises maintaing muscle strength as well as joint mobility without exacerbating joint inflammation and patient education) and Pharmacological treatment (Combination of Disease Modifying Anti-Rheumatic Drugs (DMARDs, Non-Steroidal Anti Inflammatory Drugs (NSAIDs), corticosteroids and biological products. In our study, majority of the patient (90.24%) were diagnosed as suffering from rheumatoid arthritis for ≥6 weeks duration as per 2010 ACR/EULAR criteria, patients have symptoms of RA ≥6 weeks duration. In our study, age of majority of the patients suffering from rheumatoid arthritis was between 40-49 years (43.26±16) with higher number of female patients. Study reported mean age 49.5±11.6 (Schuna, 2008). Different genetic basis, hormonal changes, obesity can be responsible for higher number of female (Dougados *et al.,* 2014). In group A(combination of DMARDs) and group B(combination of DMARDs + Prednisolone), ESR was improved significantly (P<0.001) at 2nd follow up as compared to baselineand 1st follow up Similar result was observed in a study by Bakker *et al.* (2012) in which mean ESR was significantly reduced at 3 months and 6 months (P<0.001) (Bakker *et al.,* 2012). ESR alter in inflammation and significantly decrease in ESR suggest decrease in inflammation and thus improved clinical symptoms of patients of RA. In our study, the mean baseline DAS28 scores significantly (P<0.001) reduced at 2nd follow upas compared to baseline and 1st follow up in both the groups and significant reduction (P<0.05) at 1st follow up as compared to baseline in group of combination of DMARDs + Prednisolone (group B). Our findings are similar to a study carried out at Karnataka, India (2010) which shows mean score of DAS28 reduced significantly (P<0.001) at 6 weeks of treatment (6.42 ± 1.74 v/s 5 ± 1.61) and at 12 weeks of treatment (6.42 ± 1.74 v/s 3.37 ±0.84) (Shashikumar *et al.,* 2010). A study done by Hansen *et al.* (1999) showed disease activity reduced in the prednisolone treated group within two weeks and no significant difference observed between groups treated with DMARDs with or without prednisolone after six monthsof therapy (Hansen, 1999). Similar result also found in a study in which methotrexate was combined with prednisolone and there was significant reduction (P<0.001) of DAS28 score at 6 months follow up (Bakker *et al.,* 2012). A study showed that significant synovial membrane volume reductions were observed after 3 and 6 months in the combination of DMARDs plus prednisolone group, while it is seen after 6 and 12 months in the combination of DMARDs group (P<0.01) (Ostegaard *et al.,* 1999). The combination of DMARDs reduces the severity of symptoms of rheumatoid arthritis after few weeks of treatment as combination of DMARDs directly affect the disease progression by altering the immunity which is provided by B as well as T cells. The activation of both T and B cells is inhibited by non-biological combination of DMARDs and thus it decreases the progression of disease (Olsen and Stein, 2004). Reduction of DAS28 score significantly (P<0.001) in combination of DMARDs + Prednisolone indicates that there was decrease in severity of the disease at each follow up. Combination of DMARDs plus prednisolone therapy is effective rapidly in reducing the severity in rheumatoid arthritis as anti-inflammatory effect of prednisolone decrease the swelling and tenderness of synovial joints and provides early symptomatic relief in patients of rheumatoid arthritis[5]. Thus, ESR and DAS28 correlate to the inflammatory responses and measure disease progression. Anti-inflammatory effect of corticosteroid may result in earlier symptomatic relief and hence decrease in DAS28 as compared to only combination of DMARDs. We observed that there was no significant difference in mean difference of DAS28 between both groups (P=0.59) at end of study. A study conducted by Bakker et al. (2012) showed the methotrexate and prednisone combination was effective in reducing disease activity and physical disability within 1 years of the study (Bakker *et al.,* 2012). In this randomized study, only methotrexate was used as DMARD while in our study, methotrexate plus hydroxychloroquine were used which can be result in higher mean difference at 6 months follow up because combination of methotrexate and hydroxychloroquine is more efficacious and more potent as compared to methotrexate monotherapy (Carmichael *et al.,* 2002). In our study, improvement in lifting a cup to mouth was seen significantly improved (P<0.001) at 2nd follow up as compared to base line in both the groups. This shows that pain reduction in small joints of hand is earlier and better as compared to larger joints. Higher mean score of daily activities of work or school will indicate that these parameters are affected more in patients of rheumatoid arthritis (Misra *et al.,* 2008). We observed, MHAQ score was significantly reduced at 2nd follow up as compared to baseline (P<0.001) and 1st follow up (P<0.001) in both groups. There was also significant reduction in score of MHAQ at 2nd follow up as compared to 1st follow up (P<0.001). A study done by Hansen *et al.* (1999) had found that the reduction in the Health Assessment Questionnaire (HAQ) score and disease progression is reduced in the prednisolone treated group within the first two weeks as compared to combination of DMARDs group (Hansen *et al.,* 1999). This indicate that anti-inflammatory effect of prednisolone provide symptomatic relief earlier in rheumatoid arthritis and hence used as an adjuvant along with combination of DMARDs in treatment of rheumatoid arthritis, so patients can able to perform their normal day to day activities earlier (Shah and Clair, 2015). Mean difference of MHAQ between combination of DMARDs group and group of combination of DMARDs plus prednisolone was not significant (P=0.48). This suggest that both treatment group improve QOL over a period of time. A weak and strong positive correlation between DAS28 and MHAQ observed in group A and B respectively. Positive correlation indicates that when DAS28 score decreases (or improves the clinical symptoms), the QOL score also decreases (or improves QOL) and this association was seen in our study in majority of patients who treated with combination of DMARDs with prednisolone therapy.Although improvement seen in both the groups in our study; significant improvement observed in combination of DMARDs plus prednisolone therapy which suggest higher subjective improvement in QOL in group B. Correlation of efficacy parameters and QOL was variable in our study of rheumatoid arthritis as QOL is a subjective parameter and apart from the disease severity QOL also depends on the other factors including effect on day to day activities. A total number of 57 adverse drug reactions were reported during the study period. A total 24 (42.85%) adverse drug reactions (ADRs) were observed in group A {Combination of DMARDs [Methotrexate (7.5, 10, 15 mg) orally & Hydroxychloroquine (200 mg) orally]} and 32 (57.14%) were in group B {Combination of DMARDs [Methotrexate (7.5, 10, 15 mg) orally & Hydroxychloroquine (200 mg) orally] + Prednisolone (10 mg /day or in two divided doses)}.According to World Health Organization (WHO, 2002) causality assessment in Group A showed that 14 ADRs were possible and 10 ADRs were probable. On the other hand, in group B, 11 ADRs were probable and 21 were possible. According to hartwigseverity assessment scale, all the ADRs were of mild in severity in both the groups (Hartwig *et al.,* 1992). All the adverse drug reactions were not preventable according to Schumock and Thornton scale (Raut *et*

al., 2012). We observed, elevation of liver enzymes [14(24.56%)], nausea and vomiting [7(12.28%)], gastritis [3(5.26)] in group A (Combination of DMARDs therapy). In group B (Combination of DMARDs plus prednisolone therapy), ADRs observed were elevation of liver enzymes [17(29.82%)], weight gain [8(14.03%)], gastritis [4(7.01%)], nausea and vomiting [2(3.5%)], menstrual irregularities [1(1.57%)]. In a study carried out by Bakker *et al.,* (2012) 23 (19.65%) patients developed elevated liver enzymes in methotrexate plus prednisolone group while in methotrexate group, total 54 (45.37%) patients had elevated liver enzymes (Bakker *et al.,* 2012). A study done by Ortiz *et al.* (1999) recommend that patients on methotrexate therapy should have supplemental folic acid to avoid gastrointestinal side effect because folic acid is required for epithelial cell synthesis (Ortiz *et al.,* 1999). However, we observed gastrointestinal side effects of methotrexate in spite of folic acid supplementation. Methotrexate is weak acid and cause ion trapping which is resulted in gastrointestinal cell injury producing gastritis. Menstrual abnormalities may be due to suppression of hypothalamus pituitary axis altering level of sex hormones and weight gain due to metabolic changes as well as sodium and water retention may be due to prednisolone (Firestein, 2013). Our study concludes that DMARDs decrease the severity of symptoms in RA patients over a period of time. Although improvement seen in both treatment groups {combination of DMARDs (methotrexate and hydroxychloroquine) and DMARDs (methotrexate and hydroxychloroquine) plus prednisolone}, symptomatic improvement is seen earlier in combination of DMARDs (methotrexate and hydroxychloroquine) plus prednisolone therapy as suggested by correlation score with significant improvement in subjective parameters of QOL at the end of one month. The prednisolone due to its anti-inflammatory action give earlier symptomatic improvement in DMARDs plus prednisolone group (Schuna *et al.,* 2008). Prescription of drug therapy depends upon clinical features and severity of the disease. If efficacy measured with the help of severity score calculation e.g. DAS28 score and accordingly modification in treatment of RA may help to improve the quality of life to some extent in patients suffering from rheumatoid arthritis. Monitoring of liver function test, supplementation of folic acid and tapering of prednisolone after symptomatic relief can be helpful to reduce risk of development of adverse drug reaction. Thus, our study may helpful for future research on effect of drug treatment on quality of life in rheumatoid arthritis.

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