

# Comparative Efficacy of Combined Physiotherapy and Drug Therapy Versus Single Modality Treatment in Management of Rheumatic Disorders

Arshad Kamal Butt, Khalid Jamil Akhtar, Sajjad Moeed, Qaiser Jawaid  
Department of Internal Medicine and Department of Physical Medicine & Rehabilitation,  
Mayo Hospital, Lahore

## SUMMARY

*Management of symptoms in patients with rheumatic disorders employs various combinations of drug therapy, physiotherapy and surgery tailored to the individual needs of the patients. No single treatment modality has been found to be effective in all patients. We present experience with drug therapy employing Diclofenac Sodium and physiotherapy either alone or in combination for patients with commonly encountered rheumatic disorders. 84 patients included in this study were followed for 8 weeks. Improvement in pain, stiffness, limitation of mobility and compliance was significantly better in patients receiving combination therapy ( $P < 0.05$ ). We conclude that combined treatment with Diclofenac Sodium and Physiotherapy is superior to either modality used alone for symptomatic improvement in rheumatic disorders.*

*Key Words: Rheumatic disorders, Physiotherapy, Diclofenac Sodium, Combination therapy.*

## INTRODUCTION

**T**reatment options in rheumatology is a complex matter with a wide range of choices available in the form of drugs, physiotherapy, pschotherapy and surgery used alone or in combination, the choices being dictated by the individual patients<sup>1,2,5</sup>. No one form of treatment has been found suitable for all patients. The aim of treatment in rheumatic disorders is usually to enable the patient to pursue as near a normal social and working life as possible even if the underlying disease can not be cured or eliminated<sup>12</sup>. Specific therapeutic options need to be tailored to severity of the disease<sup>8-11</sup>. Drugs are usually used in the acute stages followed by physiotherapy and perhaps surgery<sup>11,12</sup>. The authors have studied the efficacy of drug therapy and physiotherapy given alone or in combination for the treatment of common rheumatic disorders.

## PATIENTS AND METHODS

Eighty four Patients presenting in the Department of Physical Medicine and Rehabilitation Mayo Hospital were selected for the study. The patients attending the clinic had a broad spectrum of rheumatic disorders but for the study only four groups were selected viz. cervical spondylitis without associated radiculopathy, rheumatoid arthritis in sub acute phase, osteoarthritis knee joints without associated effusion and non articular rheumatism. Patients above 18 years of age and both sexes were eligible for inclusion.

### Study design

At enrollment patients were randomly allocated to receive one of the followig treatment modalities. Each group consisted of 28 patients. All patients gave informed con ?

## Treatment in Management of Rheumatic Disorders

Table 1: Mean, S.D, S.E and 95% confidence intervals for parameters with significant differences between 3 groups.

Group	Count	Mean	Standard Deviation	Standard Error	95 Pct Conf. Inter. for Mean
<b>Pain at 2 weeks</b>					
Group 1	28	3.1786	.6696	.1265	2.9189 To 3.4382
Group 2	28	2.0000	.5443	.1029	1.7889 To 2.2111
Group 3	28	2.5357	.7927	.1498	2.2284 To 2.8431
<b>Pain at 4 weeks</b>					
Group 1	28	3.1786	.6696	.1265	2.9189 To 3.4382
Group 2	28	1.6786	.4756	.0899	1.4942 To 1.8630
Group 3	28	2.5000	.5092	.0962	2.3026 To 2.6974
<b>Pain at 6 weeks</b>					
Group 1	28	2.5357	.6929	.1310	2.2670 To 2.8044
Group 2	28	1.7143	.5345	.1010	1.5070 To 1.9216
Group 3	28	2.0000	.6667	.1260	1.7415 To 2.2585
<b>Pain at 8 weeks</b>					
Group 1	28	2.1071	.7373	.1393	1.8212 To 2.3930
Group 2	28	1.5714	.5727	.1082	1.3493 To 1.7935
Group 3	28	1.9286	.6042	.1142	1.6943 To 2.1629
<b>Mobility at 2 weeks</b>					
Group 1	28	2.7500	.7515	.1420	2.4586 To 3.0414
Group 2	28	2.1786	.7228	.1366	1.8983 To 2.4589
Group 3	28	2.4643	.5762	.1089	2.2409 To 2.6877
<b>Mobility at 4 weeks</b>					
Group 1	28	2.3929	.7373	.1393	2.1070 To 2.6788
Group 2	28	1.7500	.7005	.1324	1.4784 To 2.0216
Group 3	28	2.3214	.6696	.1265	2.0618 To 2.5811
<b>Mobility at 6 weeks</b>					
Group 1	28	2.0714	.6627	.1252	1.8145 To 2.3284
Group 2	28	1.5000	.5774	.1091	1.2761 To 1.7239
Group 3	28	2.0357	.6929	.1310	1.7670 To 2.3044
<b>Mobility at 8 weeks</b>					
Group 1	28	1.9286	.7164	.1354	1.6508 To 2.2064
Group 2	28	1.2500	.5182	.0979	1.0491 To 1.4509
Group 3	28	1.7857	.6862	.1297	1.5196 To 2.0518

Group 1: Physiotherapy with isotonic exercises preceded by short wave diathermy.

Group 2: Diclofenac sodium plus physiotherapy and short wave diathermy as outlined above.

Group 3: Diclofenac sodium only.

All patients in groups 2 and 3 received 100 mg of Diclofenac Sodium per day orally in single or two divided doses.

### Clinical evaluation

The study was conducted for a period of eight weeks. Patient evaluation was done at start of

treatment and at 2 weekly intervals thereafter as follows:

Pain, stiffness, swelling, tenderness and restriction of movement were recorded on a 1 to 4 integer scale with higher score indicating increasing severity of parameter. Patient compliance scores were rated on a 1-4 integer scale with higher score indicating better patient compliance.

### Data analysis

Data analysis was done using SPSS PC+ (Statistical Package for Social Sciences). Chi Square Analysis ( $X^2$ ) was used to study association between



**Table 2: Mean, S.D, S.E and 95% confidence intervals for parameters with significant differences between 3 groups.**

<i>Group</i>	<i>Count</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Standard Error</i>	<i>95 Pct Conf. Inter. for Mean</i>
<b>Stiffness at 2 weeks</b>					
Group 1	28	2.5714	.7418	.1402	2.2838 To 2.8591
Group 2	28	2.0357	.6929	.1310	1.7670 To 2.3044
Group 3	28	2.3214	.6118	.1156	2.0842 To 2.5587
<b>Stiffness at 4 weeks</b>					
Group 1	28	2.0000	.6667	.1260	1.7415 To 2.2585
Group 2	28	1.5714	.6341	.1198	1.3255 To 1.8173
Group 3	28	2.1429	.5909	.1117	1.9137 To 2.3720
<b>Stiffness at 6 weeks</b>					
Group 1	28	1.8214	.6118	.1156	1.5842 To 2.0587
Group 2	28	1.5000	.5092	.0962	1.3026 To 1.6974
Group 3	28	2.0714	.7164	.1354	1.7936 To 2.3492
<b>Stiffness at 8 weeks</b>					
Group 1	28	2.0357	.8381	.1584	1.7107 To 2.3607
Group 2	28	1.2857	.4600	.0869	1.1073 To 1.4641
Group 3	28	1.6429	.6215	.1174	1.4019 To 1.8838
<b>Compliance at 2 weeks</b>					
Group 1	28	1.5714	.6341	.1198	1.3255 To 1.8173
Group 2	28	2.7143	.7127	.1347	2.4379 To 2.9906
Group 3	28	2.8571	.5909	.1117	2.6280 To 3.0863
<b>Compliance at 4 weeks</b>					
Group 1	28	1.9643	.7927	.1498	1.6569 To 2.2716
Group 2	28	3.1786	.6696	.1265	2.9189 To 3.4382
Group 3	28	2.3571	.4880	.0922	2.1679 To 2.5464
<b>Compliance at 6 weeks</b>					
Group 1	28	2.1429	.5909	.1117	1.9137 To 2.3720
Group 2	28	2.8929	.7373	.1393	2.6070 To 3.1788
Group 3	28	2.3214	.8630	.1631	1.9868 To 2.6561
<b>Compliance at 8 weeks</b>					
Group 1	28	2.2500	.5853	.1106	2.0230 To 2.4770
Group 2	28	3.3214	.5480	.1036	3.1090 To 3.5339
Group 3	28	2.6429	.5587	.1056	2.4262 To 2.8595

treatment groups and patient compliance scores. Significant changes in individual parameters were evaluated using oneway analysis of variance technique (ANOVA). Scheffe test was used as multiple comparison test to pinpoint the differences in means determined by ANOVA while Cochran's C, Bartlett-Box F and ratio of maximum to minimum variance were used to test for equality of variance. Results were considered significant at the  $P < 0.05$  level.

## RESULTS

Twenty eight patients were included in each of the three groups. There were 40 females (47.6%) and

44 males (52.4%). Mean age was 4.84 years with a SD of  $\pm 1.216$  years. Etiological classes of patients included in the study showed 28 patients of Cervical Sponylitis comprised the largest group followed by non articular rheumatism in 26 patients, rheumatoid arthritis in 19 with osteoarthritis knees being the cause in 11 patients.

Chi square analysis revealed a significant association between treatment groups and patient compliance (acceptance) from 2nd till 8th week ( $P < 0.05$ ). Interestingly patient acceptance of treatment was highest in the group treated with a combination of drugs and physiotherapy than other two groups. Only 1 patient reported excellent

**Table 3: Analysis of variance table.**

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
<b>Pain at 2 weeks</b>					
Between Groups	2	19.5000	9.7500	21.3035	.0000
Within Groups	81	37.0714	0.4577		
Total	83	56.5714			
<b>Pain at 4 weeks</b>					
Between Groups	2	31.5952	15.7976	50.7493	0.0
Within Groups	81	25.2143	0.3113		
Total	83	56.8095			
<b>Pain at 6 weeks</b>					
Between Groups	2	9.7381	4.8690	12.0689	.0000
Within Groups	81	32.6786	0.4034		
Total	83	42.4167			
<b>Pain at 8 weeks</b>					
Between Groups	2	4.1667	2.0833	5.0535	.0085
Within Groups	81	33.3929	0.4123		
Total	83	37.5595			
<b>Mobility at 2 weeks</b>					
Between Groups	2	4.5714	2.2857	4.8313	.0104
Within Groups	81	38.3214	0.4731		
Total	83	42.8929			
<b>Mobility at 4 weeks</b>					
Between Groups	2	6.952	43.4762	7.0330	.0015
Within Groups	81	40.0357	0.4943		
Total	83	46.9881			
<b>Mobility at 6 weeks</b>					
Between Groups	2	5.7381	2.8690	6.8712	.0018
Within Groups	81	33.8214	0.4175		
Total	83	39.5595			
<b>Mobility at 8 weeks</b>					
Between Groups	2	7.1667	3.5833	8.5818	.0004
Within Groups	81	33.8214	0.4175		
Total	83	40.9881			

compliance at 4 weeks in physiotherapy treated group.

Tables 1 and 2 provide mean, standard deviation, standard error of mean and 95% confidence interval for mean for parameters with significant differences in mean scores in all three groups.

Analysis of variance with Scheffe's test suggested no significant differences in pain, mobility, stiffness, swelling and tenderness at the start of treatment while differences in mean score for pain, mobility, stiffness and compliance were statistically significant at 2, 4, 6 and 8 weeks in all groups  $P < 0.05$  as discussed below (Table 3 and 4).

**Pain:** Between 2 to 4 weeks there was a significant difference in all groups with Group 1 having the highest score (most severe pain) and Group 2 lowest score (least pain) while at 6 weeks the difference in score for group 2 and 3 was not statistically significant. Group 1 persisted with high pain score. Pain score at 8 weeks was statistically different only between groups 1 and 2 with the latter having lowest score. However the difference between mean scores of groups 2 and 3 and groups 1 and 3 was not significant.

**Mobility:** At 2 weeks only groups 1 and 2 demonstrated a significant difference with physiotherapy group (group 1) having a greater restriction

Table 4: Analysis of variance table.

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
<b>Stiffness at 2 weeks</b>					
Between Groups	2	4.0238	2.0119	4.2966	.0168
Within Groups	81	37.9286	0.4683		
Total	83	41.9524			
<b>Stiffness at 4 weeks</b>					
Between Groups	2	4.9524	2.4762	6.2124	.0031
Within Groups	81	32.2857	0.3986		
Total	83	37.2381			
<b>Stiffness at 6 weeks</b>					
Between Groups	2	4.5952	2.2976	6.0104	.0037
Within Groups	81	30.9643	0.3823		
Total	83	35.5595			
<b>Stiffness at 8 weeks</b>					
Between Groups	2	7.8810	3.9405	9.0916	.0003
Within Groups	81	35.1071	0.4334		
Total	83	42.9881			
<b>Compliance at 2 weeks</b>					
Between Groups	2	27.8095	13.9048	33.1261	.0000
Within Groups	81	34.0000	0.4198		
Total	83	61.8095			
<b>Compliance at 4 weeks</b>					
Between Groups	2	21.5000	10.7500	24.5282	.0000
Within Groups	81	35.5000	0.4383		
Total	83	57.0000			
<b>Compliance at 6 weeks</b>					
Between Groups	2	8.5952	4.2976	7.8732	.0008
Within Groups	81	44.2143	0.5459		
Total	83	52.8095			
<b>Compliance at 8 weeks</b>					
Between Groups	2	16.4524	8.2262	25.8107	.0000
Within Groups	81	25.7857	0.3183		
Total	83	42.2381			

of mobility than group 2. At 4 weeks group 2 demonstrated significantly better mobility from the other two groups and this difference was maintained till 8th week.

**Stiffness:** At 2 weeks group 2 had a significantly better improvement in stiffness compared to group 1 while no difference was demonstrated between groups 2 and 3 or 1 and 3. At 4 weeks this group showed further improvement in stiffness compared to the other groups. At 6 weeks this difference was noted only between drug treatment and combined treatment while at 8 weeks this difference was present only between groups 1 and group 2.

**Tenderness and Swelling:** These parameters did not show any significant difference in all three groups for the duration of the study.

**Compliance:** After 2 weeks patients in group 1 had poor compliance compared to the other two groups. However the difference in compliance scores between groups 2 and 3 at 2 weeks was not significant. At 4 and 6 weeks groups 1 and 3 did not differ from each other while group 2 had a better compliance than others whereas at 8 weeks all three groups had a significant difference with group 2 showing the highest compliance followed by group 3 and then group 1. Patients in group 1 reported an increased pain score till 6th week associated with a

lower compliance score compared to the other two groups. Compliance in this group improved after six weeks associated with diminution of severity of pain.

## DISCUSSION

Management of rheumatic diseases conventionally utilizes various combinations of drugs, physiotherapy and surgery tailored to the individual needs of the patient<sup>11,12</sup>. The present study was undertaken to assess the efficacy of drug treatment and physiotherapy given alone or in combination for eight weeks in a variety of rheumatic disorders. Diclofenac Sodium was chosen for the study in view of its established efficacy and safety in the treatment of rheumatic disorders reported extensively in medical literature<sup>3,4,5,7</sup>.

The clinical experience herein presented demonstrates that a combination of diclofenac and physiotherapy is superior to either modality adopted alone for treatment of a variety of painful disorders. Of the various parameters studied only tenderness and swelling did not show any significant difference in the three groups during the study period. Pain, mobility and stiffness showed significant improvement in group 2 compared to the other two groups. As shown in table 4 patient compliance was lowest in group 1 till 2nd week with increased pain and decreased mobility associated with increased stiffness. Persistent motivation was required to prevent drop out in this group due to patient dissatisfaction at least uptill the second week. Worsening of symptoms was due the absence of analgesia when these patients were subjected to physiotherapy without drugs. The significant relief of symptoms like pain, stiffness and decreased mobility in patients receiving combination therapy provide for greater comfort and need to be considered when deciding on treatment strategy. The authors conclude that combined physiotherapy and diclofenac sodium 100 mg per day are a valuable therapeutic programme for a variety of painful conditions.

## REFERENCES

1. Muller W, Schilling F, Schmidt KL eds. Rheumatic Therapy in Medical Practice. Hoffmann-La Roche Ltd, Basel Switzerland, 1990: 10.

2. Huskisson EC, Doyle V, Lanham JG. Drug treatment of osteoarthritis. *Clin Rheum Dis* 1985; 11: 421.
3. Macauley D. Worldwide experience with diclofenac in rheumatoid arthritis and osteoarthritis. *Semin Arthritis Rheum* 1985; 15(suppl 1): 68.
4. Duerrig T, Pucar I. Clinical study of diclofenac sodium in degenerative and non-articular rheumatic diseases. *Med Mschr* 1977; 31: 420.
5. Valtonen EJ. A comparative short term trial with Voltaren (diclofenac sodium) and naproxen in soft tissue rheumatism. *Scand J Rheumatol (suppl)* 1978; 22: 69.
6. Huskisson EC. Practical aspects in selecting and prescribing antirheumatic drugs. In: Roth SH, ed. Handbook of drug therapy in rheumatology. Littleton, MA: PSG Publishing Co., 1985: 79.
7. Catalano MA. Worldwide safety experience with diclofenac. In Calabro JJ, Ehrlich GE, eds. International Symposium on Inflammatory Disease and the Role of Voltaren (Diclofenac Sodium), Tahiti, 1985. *Am J Med* 1986; 80: 81.
8. British Association of Physical Medicine: Pain in the neck and arm: a multi-centre trial of the effects of physiotherapy. *Br Med J* 1966; 1: 253.
9. Mowat AG. Basic medical treatment in rheumatoid arthritis. *Physiotherapy* 1970; 56: 150.
10. Golding DN. General management of osteoarthritis. *Br Med J* 1969; 3: 575.
11. Nicholas PJR. Physical Medicine. *Br J Hosp Med* 1969; 2: 1152.
12. Nicholas PJR ed. Rehabilitation Medicine: The Management of Physical Disabilities 2nd edition. Butterworths, London 1980: 11.

### The Authors:

Arshad Kamal Butt  
Formerly Casualty Physician  
Mayo Hospital, Lahore

Khalid Jamil Akhtar  
Consultant Department of  
Physical Medicine & Rehabilitation  
Mayo Hospital,  
Lahore.

Sajjad Moed  
Formerly Registrar  
West Medical Unit  
Mayo Hospital,  
Lahore.

Qaiser Jawaid  
Formerly Registrar  
West Medical Unit  
Mayo Hospital,  
Lahore.

### Address for Correspondance:

Khalid Jamil Akhtar  
Consultant Department of Physical  
Medicine & Rehabilitation  
Mayo Hospital,  
Lahore.