

## Low Back Ache, Methyl Prednisolone, Interferential Current, General Health Questionnaire

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### Abstract

Low back pain is a symptom and not a disease which can lead to suffering, sadness and sleeplessness and hence physical limitation and disability. It's a universal problem the etiology of it can be viscerogenic, neurogenic, vascular, psychogenic, spondylogenic, ergonomic, obesity. The major pitfall is to miss a treatable cause in the rush to treat the symptoms. Kelly et al. 1956 postulated that inflammation of nerve root from the compression causes pain and neurological changes. Various modalities of treatment are available including injection therapy, current therapy and surgery with a conservative approach before going for definitive treatment. Epidural injection of local anesthetics (Viner 1925), steroids (Kepes and Duncalf 1960), interferential current therapy (Tidy 1968) were the various modes tried for treatment of symptoms - the aim being to reduce the inflammatory response, restore the electric equilibrium of the affected cell membranes. This present study was undertaken to break the cycle of pain and thus providing better life style to the patient which in turn helps early mobility relieving the muscle spasm and further reducing the pain. Patients with low backache of neurogenic and spondylogenic in nature were taken in consideration. Those patients who didn't respond to conservative approach were subjected to receive either epidural steroids (Methyl prednisolone) or Interferential Current therapy. Epidural Methyl Prednisolone 80 mg with Inj. Bupivacaine 0.125% and Inj. Buprenorphine 0.1 mg was used followed by NSAIDS orally for whole duration of treatment of 30 days. The other group received interferential therapy at a dose of 30 mv medium frequency at the maximum point of tenderness followed by physiotherapy and NSAIDS for a period of 90 days. The patients were observed for the effectiveness of both modalities of treatment in terms of symptom free life style, early rehabilitation and psychologic well being using General Health Questionnaire both pre and post procedure.

**Keywords:** Low Back Ache; Methyl Prednisolone; Interferential Current; General Health Questionnaire.

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### Introduction

Low back pain (LBP) is a very common symptom which can affect about 80% of the population at

least once in lifetime. Each year, 15-20% of the population will have back pain. It is usually a self-limiting condition but can go into chronicity in about 10% of the individuals. It is the most common

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cause of disability for people less than 45 years of age. Low backache which is acute and has red flag signs should be evaluated urgently to look for emergency and catastrophic causes. Chronic pain does cause physical disability and along with that the psyche of the patient is also affected.

Kelly 1956 postulated that inflammation of nerve root from compression causes pain and neurological changes. This is how the concept of using steroids to reduce inflammation came into picture. Various studies have come up for use of steroids in combination of local anesthetics and other adjuvant like opioids for the treatment of low backache given epidurally. In 1989, Goldberg et al studied the usefulness of 28 point GHQ in detecting the psychiatric co morbidity in patients with acute and chronic pain. This questionnaire is quite predictive in screening the patients for the psychological component if involved due to pain.

Use of interferential current (IFT) also has gained popularity in management of acute back aches and is better than other techniques like rubbing ice, ultrasound and early mobilization (Tidy 1968) and is of more value in patients having residual pain after healing (Flower [3] et al. 1982). Use of IFT in low back ache of varied etiology has proved its efficacy in many cases like fibromyalgia, herniated discs, myogenic pain and residual pain after healed fractures, surgery.

So proper examining and evaluating the patient for all aspects pertaining to cause of pain, associated factors and the psychological changes if any and then subjecting them to definitive therapy was the key approach to the patients in this study.

## Materials and Methods

60 patients from pain OPD having pain restricted to low back or radiating to lower limbs with or without paraesthesia were selected for this study. After thorough history for co existing diseases, physical examination pain mapping was done with a note of aggravating and alleviating factors. Radiological investigations if required were carried out. The patients were subjected to SLR (Straight Leg Raising) test and examined for Mobility Score (Table 1). The psychological component was assessed using GHQ-28 and if found significant were subjected to treatment with imipramines.

Patients were divided in two groups (n=30) each to receive epidural Methyl Prednisolone with Inj. Bupivacaine 0.125% 10 ml and Inj. Buprenorphine 0.1 mg (Group A) or IFT (Endomed 582) in the

strength of 30 mA at point of maximum tenderness. (Group B).

Group A: The Epidural injection was given in operation theatre with 18G toughy needle under strict aseptic and antiseptic precautions. (inj. Methyl Prednisolone 2 ml + Inj. Bupivacaine 0.125% 10 ml + Inj. Buprenorphine 0.1 mg diluted to 20 ml). Patients were kept under observation for one hour and monitored for vital parameter, relief in pain and at the end of one hour they were sent home with NSAIDS cover to be taken twice a day. They were called up for follow up after 10 days. During the follow up these patients were asked about the pain relief pointing to the VAS (visual analogue scale) (0-10 to suggest the relief). SLR was performed and improvement if any was noted. Second and third injections were given at interval of 10 days with complete NSAIDS analgesic cover in between. Regular follow-up of these patients was done monthly there after up to six months.

Group B: The patients were subjected to IFT in physiotherapy department using ENDOMED 582 and 30 mA current was delivered using rubber probe of multiple stimulator for 3 minutes under aseptic precautions. Patients were kept under observation for 10-15 minutes and then discharged with advice to come for follow up twice a week for first month, weekly for second month and fortnightly in the third month. These patients were asked to do strict physiotherapy of back extension, flexion, stretching and traction regularly. They were called up for follow up regularly for three months and even up to six months with good physiotherapy cover at home.

## Results

In this study of 60 patients with chronic backache being localized to low back with or without radiating to lower limbs were selected to receive either epidural steroids (Methyl Prednisolone) or Interferential current (n=30 each).

We had patients of varied etiology as shown in table 1 with few patients were under investigations for the cause of low back ache.

Table 2 shows symptomatic distribution of patients having either localized backache or radiating to both lower limbs with or without paresthesia. We divided the patients equally for the modality of treatment as per symptoms also.

Patients were mainly of the age group 20-60 years of either sex (statistically not significant). The mean weight of patients in Group A was about 53.66 ±

7.81 and that in group B was  $49.7 \pm 5.77$  kg which was also statistically not significant. Mostly patients from different economic class were selected including those having sedentary life style, moderate worker and labor class in both the groups (Table 3).

Table 4 shows the comparison of onset of analgesia on the first visit which was earlier for epidural injection as compared to interferential current. Subsequently on second to 30<sup>th</sup> day there was progressive improvement in pain relief in both groups with percentage improvement almost of same efficacy and when compared were statistically comparable.

Table 5 shows the improvement in the pain relief on subsequent visits of the patients in the follow up schedule (as discussed in methodology), it was seen that there was progressive pain relief

in both the groups as compared to the previous visits and when compared with each other it was found to be statistically insignificant suggesting definitive improvement seen in both the groups. Going further for evaluation of pain relief we used VAS, SLR and observed Mobility of the patients with Modified Bromage Scale (Tables 5, 6, & 7 respectively). All values were suggestive of progressive improvement in the pain relief in both the groups clinically manifested as better patient's compliance, improvement in the SLR and increased mobility which was restricted due to the pain. We even observed the patients for any psychological component by subjecting the patients to the General Health Questionnaire (GHQ-28) [6] on first follow up visit. A GHQ score >8 was suggestive of disturbed psychological behavior. The score was less than 8 for majority of the patients in both the groups as shown in Table 8

**Table 1:** Showing Causative Factors for Low Back Pain

Causes	Group A	Group B	Total
PID	14	03	17
LCS	12	02	14
Post Laminectomy	-	02	02
Compression Fracture	02	-	02
Ankylosing Spondylitis	-	04	04
Myofascial Backache	-	13	13
Under Investigation	02	06	08
Total	30	30	60

**Table 2:** Showing Symptom Wise Distribution of Patients

Site of Pain	Group A	Group B
Low Back	08	04
Low Back Radiating to Lower Extremities	22	26
Paraesthesia/ Numbness	14	10

**Table 3:** Occupation of the Patients

Type of Occupation	Group A			Group B			X <sup>2</sup>	p
	M	F	T	M	F	T		
Category A Sedentary Work	02	04	06	00	03	03	1.18	>0.05 NS
Category B Moderate Work	10	06	16	14	04	18		
Category C Labor	06	02	08	06	03	09		

**Table 4:** Onset of Pain Relief and Improvement (%) (Vas Score)

Days	Group A Mean ± SD	Group B Mean ± SD	X <sup>2</sup>	p value
1 <sup>st</sup>	40.3 ± 24.88	15.0 ± 4.43	12.177	<0.05 S
2-4	42.0 ± 14.5	25.3 ± 10.78	8.61	>0.05 NS
5-7	35.3 ± 12.27	29.48 ± 8.38	9.23	>0.05 NS
7-10	35.6 ± 12.57	-	9.38	>0.05 NS
10-15	-	40.0 ± 11.95	10.06	>0.05 NS
30 <sup>th</sup>	-	59.48 ± 15.83	8.32	>0.05 NS

except for 2 patients in Group A and 1 patient in group B. Adding Imipramine 150 mg o.d. to their treatment cart helped them to be more proactive and less depressed. This improvement in GHQ which became <8 after imipramine after the third follow up this improvement being more in Group B as compared to A was statistically significant.

Table 10 indicates the follow up of the patients after 3 and 6 months. We couldn't do the long term follow up with all the patients involved in the study. Looking to the percentage of patients coming for followup with improvement in the pain relief was more significant in Group B as compared to Group A. This indicates a better persistent effect of Interferential current therapy as compared

to epidural injection. As the improvement was progressive the intake of oral analgesics also reduced with the time. Table 11 shows the increased working ability after the pain relief in both the groups which had been restricted due to pain. The pattern of improvement varies with the etiology of the pain. As table suggest the improvement was better with epidural injections in patients of PID, LCS, compression fracture whereas interferential current proved to be more effective in patients with myofascial pain syndrome, ankylosing spondylitis and post surgery. This suggests that epidural injection of Methyl prednisolone is better for chronic pain whereas the IFT is beneficial in alleviating acute pain.

**Table 5:** Percentage Improvement in Pain Relief After 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Visit

Days	Group A Mean ± SD	Group B Mean ± SD	X <sup>2</sup>	p value
1 <sup>st</sup>	34.8 ± 12.42	40.0 ± 11.95	1.41	>0.05 Ns
2 <sup>nd</sup>	49.66 ± 14.47	45.12 ± 15.03	1.82	>0.05 Ns
3 <sup>rd</sup>	54.82 ± 17.14	59.00 ± 17.19	1.84	>0.05 Ns

**Table 6:** Mean Changes in SLR After Each Visit

Days		Group A Mean ± SD	Group B Mean ± SD	X <sup>2</sup>	p value
1 <sup>st</sup>	Rt	2.00 ± 4.00	2.00 ± 4.00	-	Ns
	Lt	2.00 ± 4.00	2.00 ± 4.00	-	Ns
2 <sup>nd</sup>	Rt	3.33 ± 4.41	2.00 ± 3.68	0.68	>0.05 Ns
	Lt	2.67 ± 4.47	2.00 ± 5.40	1.17	>0.05 Ns
3 <sup>rd</sup>	Rt	4.00 ± 4.42	2.00 ± 4.00	0.26	>0.05 Ns
	Lt	4.00 ± 4.90	2.00 ± 4.42	0.77	>0.05 Ns

**Table 7:** Mean Changes in Modified Bromage Score for Mobility after Each Visit

Days	Group A Mean ± SD	Group B Mean ± SD	X <sup>2</sup>	p value
1 <sup>st</sup>	1 ± 0.82	1 ± 0.84	4.45	>0.05 NS
2 <sup>nd</sup>	2 ± 0.67	1 ± 0.87	4.12	>0.05 NS
3 <sup>rd</sup>	2 ± 0.71	2 ± 0.62	3.18	>0.05 NS

**Table 8:** Showing Evaluation of Psychological Component on First Visit

GHQ Score (Total Score = 28)	No. of Patients		
	Total	Group A	Group B
<8	57	28	29
>8	03	03	01
	60	30	30

**Table 9:** Showing Percentage Improvement in Psychiatric Component after Imipramine

Visit	Group A Mean ± SD	Group B Mean ± SD	GHQ Score	X <sup>2</sup>	p value
1 <sup>st</sup>	19.64 ± 8.23	29.76 ± 9.04	5	6.04	<0.05 S
2 <sup>nd</sup>	30.12 ± 10.04	30.19 ± 8.12	>8	7.21	<0.05 S
3 <sup>rd</sup>	39.83 ± 12.06	39.21 ± 10.38	<8	7.74	<0.05 S

**Table 10:** Follow UP of Pain Relief after 3 and 6 Months

Visit	No. of Patients	Group A	No. of Patients	Group B
3	09	50%	12	60%
6	05	35%	07	45%

**Table 11:** Showing Evaluation of Treatment Efficacy

Causative factor	No. of patients	Group A	Ability on activity	Work after injection	Group B	Ability on activity	Work after current therapy
PID	17	14	Sedentary	Exertional	03	Sedentary	Sedentary
LCS	14	12	Moderate	Exertional	02	Sedentary	Sedentary
Compression #	02	02	Sedentary	Moderate	00	-	-
Post Laminectomy	02	00	Sedentary	Sedentary	02	Sedentary	Moderate to hard
Myo Fascial Backache	13	00	-	-	13	Sedentary	Exertional
Ankylosing Spndylitis	04	00	-	-	04	Moderate	Exertional
Under Investigation	08	02	Moderate	Moderate	06	Sedentary	Sedentary to moderate
Total	60	30	-	-	30	-	-

## Discussion

Low back pain (LBP) is a very common symptom which can affect about 80% of the population at least once in lifetime. This is even more in the industrial nations where over all life time prevalence of back pain exceeds 70%.

It can be acute (<7 days origin), sub acute (1 week to 3 months) and chronic (> 3 months) of duration. Anesthesiologists have been prime movers in this comparatively neglected field. Despite the frequency of this complain, back pain has been treated partly with total compliance seen in only 10-15% of patients.

The present study of sixty patients between 20-60 years of age with chronic low back pain not responding the conservative approach involved two modalities of treatment. Group A to receive epidural methyl prednisolone and Group B to receive IFT. Various drugs to be used epidurally have been changed from time to time expecting a good result. Injecting a good volume in epidural space helps to break in the adhesions, reduce inflammation, and reduce compression and covers spaces ascending even up to L1 level, Burns [1] (1985). Derby and White [2] (1986) explained the effectiveness of epidural steroids in low back ache of various causes where it was more effective in chronic causes like herniated disc but transient relief in spondylosis and functional backache. Flower RJ et al found that steroids decrease the inflammatory response by preventing prostaglandin production. It has even been found that combination of various drugs like opioids, saline,  $\alpha$ -2 blockers as adjuvants to local anesthetics and steroids prove to be more effective in relieving acute on chronic back ache even of the refractive nature (MT Bhatia).

Interferential Current on the other hand also has its role in management of low back ache which are more localized. Tidy (1968) [7] was of opinion that IFT is better than conventional modalities like USG, ice packs for treatment of low back ache. The stimulation and relaxation after the current application gives a sinusoidal effect triggering the production of endogenous opioids, encephaline which naturally inhibit the pain response. Yadav NS [8] suggested that co techniques like intermittent traction, biofeed re-education along with IFT do improve the efficacy.

Interferential Current Therapy with medium frequency has a long lasting pain relief cause of its programmable computerized unit where relaxation and contraction of muscles can be controlled in the 1:1 or 2:4 ratio specially the pain which is of acute nature or has localized. In our study, the patients of both the groups showed progressive improvement in pain relief which started early in the steroidal group given epidurally, but when followed up at long intervals was comparable to each other. A follow up at 3 months and 6 months showed that 5-10 patients in group A and 7-12 patients in group B had an acceptable pain relief up to 60%. Hence further management with NSAIDS was discontinued after 3 months whereas physiotherapy was continued in patient receiving IFT. All the patients were allowed to resume their routine activity avoiding strenuous work. 2 patients in Group A and one patient in group B were psychologically disturbed and tricyclic antidepressants (imipramine 150 mg o.d.) when given to them did show significant recruitment and compliance to the treatment for backache.

Thus, epidural treatment particularly with steroids constitute a successful modality in pain



management of cases where there is reasonable evidence that inflammation, irritation and compression of nerve roots is the cause whereas interferential therapy proves to be highly beneficial in relieving acute back pain by improving muscle tone and reducing muscle stiffness.

### Conclusion

Epidural methyl prednisolone - prolonged persistent effect - better for back aches with chronic causes like PID, LCS disc herniation.

Interferential current Therapy - consistent and effective by breaking the pain cycle helped by relaxation of the muscle spasms - helps in backaches with spondylotic changes and of localized nature.

Overall help in reducing the pain, improving psyche of the patient, early rehabilitation, early mobilization and thus living a near normal routine life.

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