Comparison of Patient's Return to Work Capability between Spinal Injection and Muscle Relaxant Medicine among Patients with Chronic Low Back Pain

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Abstract

Introduction

Low back pain is a very common disorder and often hinders our daily activities. There are several treatment options for LBP management. This study aims to determine differences in patient recovery to return to work evaluated based on VAS, Roland Morris Disability Questionnaire (RMDQ) and Oswestry Low Back Pain Disability Questionnaire (ODI) after spinal injection with oral analgesics and muscle relaxants in patients with chronic low back pain.

Methods

This is a randomized controlled trial study on patients with LBP undergoing conservative therapies at the Orthopaedic outpatient clinic from February – March 2019. Inclusion began from when patients were admitted to the clinic in February 2019 until March 2019. Mean scores between two treatment groups were compared. Functional evaluation on patients with low back pain is commonly done using questionnaire. Spinal Injection contained a combination of lidocaine and triamcinolone acetonide. Oral therapy containing a combination of paracetamol 325mg and tramadol 37.5mg were given 3 times daily for 3 weeks, along with Eperisone 50mg which acted as a muscle relaxant. Data then was analysed descriptively and statistically

Result

32 patiens were included in this study with 16 patients in each treatment groups. The mean age of the patients is 42. Patients VAS, RMDQ, and ODI score were measured before the treatment, after 1 week, 2 weeks and 3 weeks. the results were shown in Table 1. All study parameters were shown improvements with increasing time. LBP treated with Spinal injection were clinically and statistically better compared to oral therapy

Conclusion

Spinal injection method with lidocaine and triamcinoloan acetonide is better than oral analgesic therapy with the parameters used in this study

Keywords **:** Low Back Pain; Visual Analogue Score; Roland Morris Disability Questionnaire; Oswestry Low Back Pain Disability Questionnaire; Spinal Injection

1. Introduction

Back pain is a problem that is often faced in adulthood to the elderly and its causes are multifactorial [1]. Symptoms of Low Back Pain (LBP) can be due to pathologies in anatomical structures, such as nerve roots, muscles, facial structures, bones, joints, intervertebral discs, and abdominal organs [2-3].

Source of spinal pain can be from severe trauma or less severe trauma in the last 50 years, weight loss, fever for no apparent reason, immunosuppression, a history of cancer diagnosis, prolonged use of IV drugs, prolonged use of corticosteroids, or osteoporosis, age over 70 years, and decreased neurological function caused by disabling symptoms. Treatment options for LBP may include administration of analgesics, NSAIDs, muscle relaxants, opioids, and gabapentin[4–6]. Conservatively treatment with manual therapy, splinting, stretching, and strengthening exercises for the lumbar and hip region[7-8].

The aim of this study was to determine differences in patient recovery to return to work evaluated based on VAS, Roland Morris Disability Questionnaire (RMDQ) and Oswestry Low Back Pain Disability Questionnaire (ODI) after spinal injection with oral analgesics and muscle relaxants in patients with chronic low back pain.

2. Methods

We performed a randomized controlled trial on patients with Low Back Pain undergoing conservative therapies at the Orthopaedic outpatient clinic, Premiere Hospital from February – March 2019. The data of which would be scored using ODI and the RMDQ to compare the recovery between patients treated with spinal injection and the ones treated with oral therapy.

Design

The patients included in the study were acquired using consecutive sampling. Patient would then be randomized into either spinal injection or oral therapy. Inclusion began from when patients were admitted to the clinic in February 2019 until March 2019. The primary objective of this study is to measure the recovery time between patient with low back pain who was treated using either spinal injection or oral therapy in terms of the ability of re-establish themselves into their work field.

Statistical Consideration

This study aimed to compare mean scores between two groups, therefore, the desired sample size was calculated using the Federer formula. The result was 16 patients in each treatment group.

Inclusion

Patients aged 30-40 years old with chronic low back pain were assessed for eligibility in the clinic. The patient had to have a VAS score of ≥ 4 with normal lumbosacral AP x-ray and MRI imaging. Patients also had to agree to be included in the study.

Exclusion

Patients with acute or sub-acute low back pain were not included in the study. The exclusion criteria also extend to patients with neurological dysfunction; who had a history of spinal surgery, malignancy, diabetes mellitus, or chronic kidney disease; pregnant or post-partum; had a fever; or declined to be included in the study.

Functional Evaluation of Patients with Low Back Pain

Functional evaluation on patients with low back pain is commonly done using questionnaire. In the last decade there has been some questionnaire which was developed to evaluate the outcome of patients with LBP, such as the RMDQ, and the Oswestry Low Back Pain Disability Questionnaire or the ODI[9].

The RMDQ is a tool developed in 1983 to assess the disability on patients with back pain. The questionnaire included the assessment of physical ability/activity level, household management level, psychosocial aspect, and pain frequency. This questionnaire was designed to do within 5 minutes, which made it easy to implement within outpatient clinic settings, and to which, this study[10].

The ODI is often used by researcher to evaluate permanent spinal disability. This test is considered the gold standard of low back pain outcome measurement tool.

The comparison between the VAS, RMDQ, and ODI score would be used to determine whether the patient is ready to re-establish themselves in their work field, or back-to-work,

Spinal Injection

Blind spinal injections containing a combination of lidocaine and triamcinolone acetonide were given to the patients assigned. Fluoroscopy guidance was not used, instead the treating physician would use a physical landmark to identify the injection site[11]

Oral therapy

Oral therapy containing a combination of paracetamol 325mg and tramadol 37.5mg were given 3 times daily for 3 weeks, along with Eperisone 50mg which acted as a muscle relaxant. Both paracetamol and tramadol has been a long standing and proven therapy in pain control. And the use of muscle relaxant combination with analgesics has been proved to be more effective in low back pain cases, rather than the use of analgesics alone[12].

Statistics

The result of the study would be presented in the form of descriptive table and graph to describe the treatment group which was treated using lidocaine injection and oral therapy. Then the data would be computed using dependent t-test parametric test or the non-parametric Wilcoxon test to get the difference between VAS, RMDQ, and ODI score. The IBM Statistical Package for the Social Sciences (SPSS) version 22.0 was used for statistical comparison

3. Results

A total of 32 patients were included in this study after inclusion and exclusion criteria. Patients were divided into 2 groups and randomly assigned, 16 patients were treated with spinal injection and the other 16 were treated with Muscle Relaxant Medicine. 53% of patients were male, with the mean age of the patients is 42.

Patients VAS, RMDQ, and ODI score were measured before the treatment, after 1 week, 2 weeks and 3 weeks. the results were shown in Table 1.

Table 1. Study Parameters

Study's Parameter	Mean (SD)	P-Value
VAS		
Before Treatment		
Spinal Injection	7.2 ± 0,7	0.82
Oral Therapy	7.1 ± 0,7	
1 Week		
Spinal Injection	1.5 ± 0.7	< 0.001
Oral Therapy	3,6 ± 0,8	
2 Weeks		
Spinal Injection	1,1 ± 0,3	< 0.001
Oral Therapy	3,6 ± 0,9	
3 Weeks		
Spinal Injection	0,6 ± 0,6	< 0.001
Oral Therapy	2,4 ± 0,7	
RMDQ		
Before Treatment		
Spinal Injection	48,88 ± 2,825	0.19
Oral Therapy	50,13 ± 2,473	
1 Week		
Spinal Injection	32,88 ± 2,062	< 0.001
Oral Therapy	39,75 ± 1,77	
2 Weeks		
Spinal Injection	13,38 ± 1,586	< 0.001
Oral Therapy	21,38 ± 1,408	
3 Weeks		
Spinal Injection	8,88 ± 1,025	< 0.001
Oral Therapy	17,88 ± 1,147	
ODI score		
Before Treatment		
Spinal Injection	16.0 ± 1,6	0.345
Oral Therapy	15.3 ± 2	

1 Week		
Spinal Injection	9,6 ± 0,9	< 0.001
Oral Therapy	12,6 ± 1,7	
2 Weeks		
Spinal Injection	7,5 ± 0,8	< 0.001
Oral Therapy	10 ± 1,4	
3 Weeks		
Spinal Injection	5,4 ± 0,6	< 0.001
Oral Therapy	7,8 ± 1,2	

*Oral Therapy consisted of paracetamol 325mg and tramadol 37.5mg were given 3 times daily for 3 weeks, along with eperisone 50mg

**Vas:Visual Analogue Score, RMDQ:Roland-Morris Disability Questionnaire, ODI:Oswestry Disability Index

4. Discussion

In all initial scoring, which were VAS, RMDQ and ODI, showed that there was no evidence of a difference between both therapies (Table 1.). However, after 1 week of receiving treatments, all initial scoring showed evidence of difference between spinal injection and oral therapy, where in general spinal injection have a lower mean score. Moreover, there were a decrease in all the scores in both treatment throughout the whole study, indicating the decrease in pain in all patients involved in the study. These findings shows that it is line with previous studies where the use of muscle relaxants or oral pain reliever are equally effective in reducing the pain[13-14]. However, the primary endpoint of this study was the time taken for the patients to get back to work[15]. This study has indicated there are strong evidence in a more potent decrease of pain that were in receipt of spinal injections.

Koes et al showed that non-steroidal anti-inflammatory drugs relieve pain better than placebo has strong efficacy. Staying active can speeds up recovery and reduces chronic disability. Muscle relaxants relieve pain more better than placebo, [16]

Hooten and Cohen(2015) stated that opioid drugs , such as tramadol has shown remarkable efficacy for treating the episode of acute low back pain and chronic low back pain which could not be treated with other conservative treatment.[17]

Peloso, et al conducted a study that showed moderate benefits over the course of a 3 month treatment with tramadol/acetaminophen for patients with chronic LBP. The combination tablets are effective across a wide range of clinical measures, including pain and patient and physician overall assessment, as well as physical functioning and health related quality of life. In addition, the combination was safe and showed a discontinuation rate due to adverse events comparable with other opioids used in the treatment of chronic pain. Tramadol/acetaminophen should be considered as an option for the treatment of chronic low back pain.[18]

In this study, tramadol 37.5 mg/APAP 325 mg combination tablets were effective and had a favorable safety

profile in the treatment of chronic lower back pain Additional pharmacologic options for the treatment of chronic lower back pain are needed. NSAIDs may be effective for short-term treatment of acute lower back pain; however, there is insufficient evidence of their efficacy in chronic back pain. The results of this randomized, double-blind, placebo-controlled study suggest that the tramadol 37.5 mg/APAP 325 mg combination tablet is an effective therapy for the treatment of chronic lower back pain[19]

Based on the current state of the literature there is insufficient evidence to support or refute the use of injection therapy, regardless of type and dosage, for patients with subacute and chronic low back pain without radicular pain.[20]

Based on the studies reviewed, epidural corticosteroids may be an effective treatment for patients experiencing LBP due to sciatica. For other types of LBP, a combination of a corticosteroid and a preservative-free local anesthetic may provide greater relief than would be experienced by the administration of either agent alone.[21]

Strength and limitations of study.

This study showed a significant effect for the treatment in clinical practice, this reports provide a hypothesis and direction for future clinical studies. This study is a case report study, which has no control group to compare outcomes and have little statistical validity. This study need larger sample population with more even distribution to present general population

Recommendation for future research and therapy

Further research is needed regarding the administration of spinal injection compared to oral therapy with a larger sample. In this study, only spinal injection was given with one combination of drugs, so further research is needed on the best combination of spinal injection drugs to use.

5. Conclusion

Spinal injection method with lidocaine and triamcinoloan acetonide is better than oral analgesic therapy Paracetamol combined with Tramadol and mucle relaxant Eperisone in terms of patient recovery time to return to work as measured by scoring ODI (Oswestry Disability Index) and RMDQ (Roland-Morris Disability Questionnaire).

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