http://jmscr.igmpublication.org/home/
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v13i02.01

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Role of Non-Steroidal Anti-Inflammatory Drugs in Management of Acute Low Back Pain

Authors
Dr Naded Y.H. Albatta, Dr Siraj Alzintani, Dr Yasser Alojaly
Dr Mohammed Abdulsalam Albargati

Abstract
Low back pain is extremely prevalent, it is the most common presenting complaint in neurosurgery clinic. Regardless of the underlying cause, organic or inorganic low back pain has it's financial impact on patients , hospitals ,and work resources.
This study was designed to discuss causes of low back pain, address the effectiveness of different Non-steroidal Anti-inflammatory Medications on acute low back pain, regardless of the underlying aetiology, assess paracetamol and muscle relaxants effect compared to NSAID, and discuss cost-benefit effect of different medications used in LBP.
Patients prescribed with diclofenac 150 mg, celecoxib 200 mg, Etoricoxib 90 mg, or combination of Paracetamol 1500mg + Chlorzoxazone 1500mg, "daily" for acute low back pain at Neurosurgery Outpatients Department, were enrolled in this study. The decrease in pain scores was recorded on 5th and 10th days of follow-up and pain scores were calculated. Descriptive statistics were used for analysis.
All medications used in this study were equally successful in short term symptom relief and dramatically reducing pain, and no drug was found to be superior. This clearly indicates equal effectiveness of medications used and homogenously and carefully selected study sample.
Keywords: *low back pain, non-steroidal Anti-inflammatory Drugs (NSAID).*

Introduction

Low back pain is the most common cause for employees to request sick leave .finally low back pain is a major cause for disability and secondary rehabilitation need.89-90% of patients with low back pain problems will improve within one month even without treatment(including patients with sciatica from disc herniation).[1,2,3]
Musculoskeletal Back pain the most common from low back pain . may result from strain of paraspinal muscles and/or Ligaments,irritation of facet joint ..excludes anatomically identified causes (e.g.tumor,disc hernation..[2,17]

Methods

Fifty two Patients prescribed with diclofenac 150 mg, celecoxib 200 mg, Arcoxia 90 mg, or combination of paracetamol+muscle relaxant for

acute low back pain at Neurosurgery Outpatients Department, were enrolled in this study. The decrease in pain scores was recorded on 5th and 10th days of follow-up and pain scores were calculated. Descriptive statistics were used for analysis.

Results and Statistics

Total Participants 60 patients 8 patients were excluded due to one of the following causes:

Table 1: Inclusion Exclusion Criteria

Inclusion criteria	Exclusion criteria
Age 15-60	Age <15 or >60
No other related chronic illness L.B.P. < 6weeks	Cancer metastasis Steroid use HIV Organ transplant Drug abuse Recent UT / spine surgery Pregnancy

Numeric Rating Scale, (NRS-11)

This scale was used in pain assessment at patient's first visit and in monitoring response to medication

Table 2: Numeric Rating scale

Rating	Pain Level
0	No Pain
1-3	Mild Pain (nagging, annoying, interfering little with ADLs)
4-6	Moderate Pain (interferes significantly with ADLs)
7-10	Severe Pain (disabling; unable to perform ADLs)

Activities of daily living (ADLs or ADL) is a term used in healthcare to refer to people's daily self-care activities.

Common ADLs include feeding ourselves, bathing, dressing, grooming, work, homemaking, cleaning oneself after defecating and leisure.

Table 3: Age groups

Age group	Frequency
15-19	1
20-29	8
30-39	18
40-49	20
50-59	5

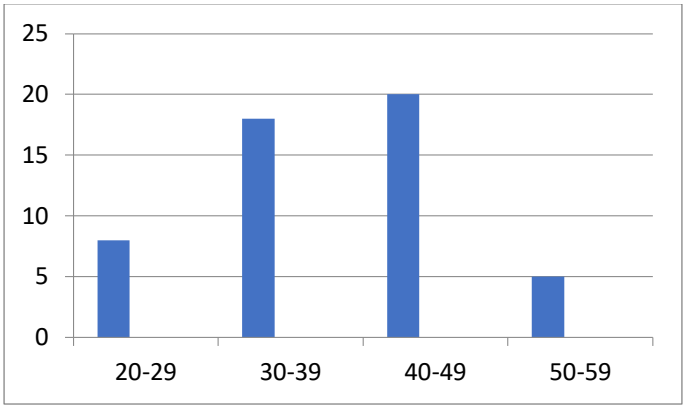

Fig 1: incidence of acute low back pain among age groups.

Mean Age = 36,33

Table 4: Male : Female ratio

Male	Female
24	28

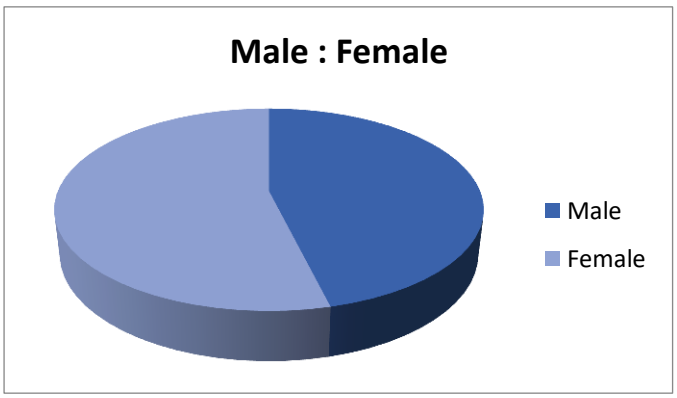

Fig 2: male : female ratio

H/O Heavy work or lifting heavy object.

Table 5: History of lifting heavy object or recent heavy work

Yes	No
27	25

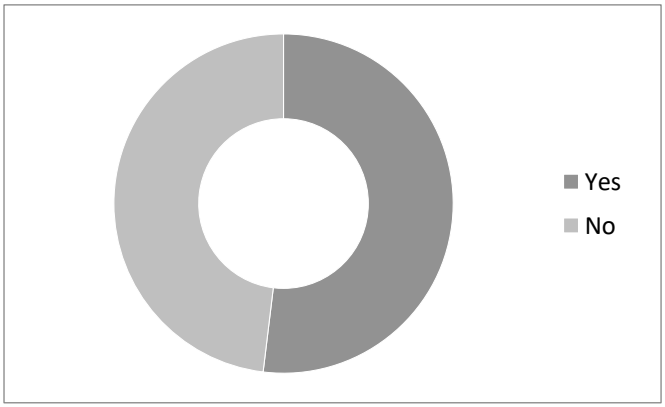

Fig 3: History of lifting heavy object or recent heavy work

Body Mass Index

Table 6: Incidence of acute LBP according to BMI

BMI	Number of Cases
Underweight <18.5	2
Normal Weight 18.5-24.9	8
Overweight 25-29.9	13
Obese > 30	17
Not available	12

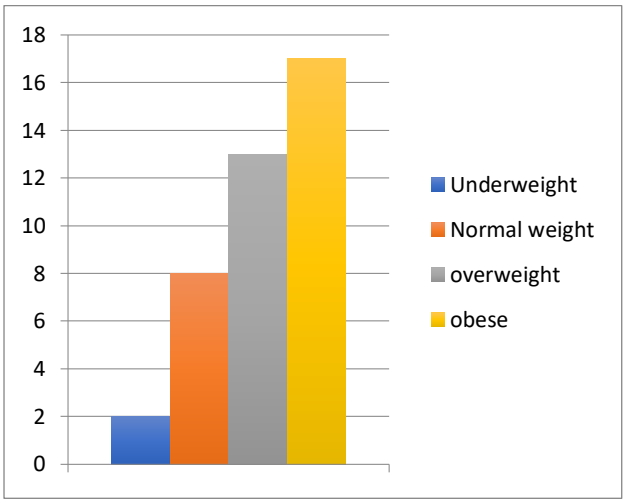

Fig 4: Incidence of acute LBP according to BMI

Associated sciatica

Table 7: Incidence of radicular pain among patients with acute LBP

	Male	Female
Radicular Pain	2	6
No Radicular Pain	22	22

(2+6) X 100 ÷ 52 = 15.4% of patients with LBP complained of radicular pain

X-Ray changes

Table 8: Incidence of x-ray changes among patients with acute LBP

	Male	Female
Yes	10	19
No	14	9

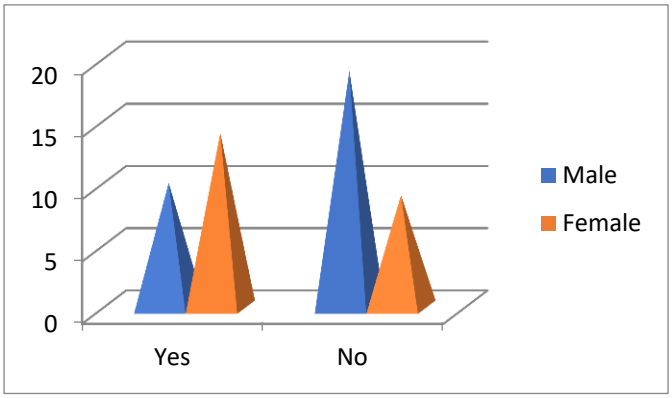

Fig 5: Incidence of x-ray changes among patients with acute LBP

(10+19) X 100 ÷ 52 = 55.77% of patients had abnormal X-ray films.

Medication used and patient's response

Table 9: Medication used and patient's response

	Response				Total number
	Full	Mild	Moderate	No	
Diclofenac 150mg\day	12	-	1	-	13 (25%)
Celecoxib 200mg\day	12	-	-	2	14 (25.9%)
Arcoxia 120mg\day	10	-	1	-	11 (21.2%)
Paracetamol chlorzoxazone	13	1	-	-	14 (25.9%)

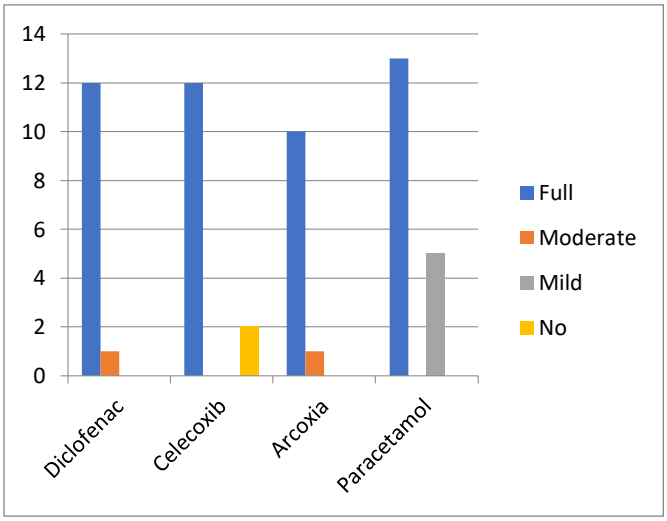

Fig 6: Medication used and patient's response

Discussion

In our study we found low back pain is most common in the age group 30-49 Fig:1, defined here as middle-aged people. People in this age group are highly active in daily life and are exposed to various stresses. Unlike in the elderly, however, the aging-related changes are minimal in this age group. Due to these circumstances, therefore, low back pain in this age group is characterized by high incidence of "so-called inorganic low back pain", or nonspecific low back pain without any clear-cut diagnosis being specified.

In this study the overall incidence of LBP is higher in women than in men. Women are also affected by many chronic pain conditions and painful conditions of the musculoskeletal system in greater numbers than men are. A biopsychosocial model of chronic pain attributes sex differences in pain to interactions between biological, psychological, and sociocultural factors[3,4]. The heightened pain sensitivity among women can also partially explain greater reports of pain by women compared to men. Menstrual cycle fluctuations in pain sensitivity may help to explain sex differences in pain reporting in younger adults). Biologic response to pregnancy and childbearing, physical stress of child-rearing, perimenopausal abdominal weight gain are additional causes for LBP. Population-based studies have shown that the prevalence of widespread pain increases with age, peaking in the seventh and eighth decades. Recently, it has been show that genetics also played a role in the development of LBP[5,9,10,13].

It is often suggested that lifting an unexpectedly heavy object may be a major risk factor for low-back pain[16,18,20]. This may lead to an increase in muscle activation, stretch of ligaments and posterior disc, and loss of balance. A one-time injury that damages a muscle, tendon, or ligament is considered an acute muscle strain. These injuries usually occur after sudden, jarring impacts or during activities that include heavy lifting or excess pressure placed on the spine. Chronic strains, on the other hand, are caused by repetitive movements that gradually overstretch or tear a muscle. Chronic muscle strain is more common in athletes or people with physically demanding jobs. Heavy lifting: Strain from heavy lifting, twisting the spine, lifting from the ground, or an item overhead are common causes of low back strain. Safe lifting practices include tactics such as keeping the item close to the chest and avoiding twisting the upper body while lifting. Repetitive motions: Stressful, repeated motions can cause muscles to tighten or tear. Sports such as rowing, golf, or baseball may cause chronic strain due to repeated, forceful motions. Chronic strain may gradually become painful over time, or pain can suddenly worsen if a muscle is already sore and then put under intense stress[1,2,17,21,22].

In our study there has been few increase in the number of patients Fig:3, (27 as opposed to 25), who have been exposed to heavy work or lifting heavy objects, and we totally excluded people who had history of trauma to the lower back.

Obesity as a causal factor for low back pain has been controversial with no definitive answer to this date[9,10,11,23]. One of the objectives of this study was to determine whether obesity is associated with low back pain. There is a lack of a clear dose-response relationship between body mass index (BMI) and low back pain. Further, studies on the relationship between obesity and

related lumbar osteoarthritis, knee pain, and disc herniation are also problematic. There is little doubt that future studies with controlled variables are needed to determine the existence of an unambiguous link.[7,8,12,23]

One question, which arises from the discussion concerning obesity, is whether obesity is a risk factor for low back pain[12,13,19]. "Buckwalter et al contended that a number of medical conditions including obesity, along with diabetes and hypertension, may influence the pathophysiology of diseases of the tendons and ligaments during the process of aging thus potentially leading to low back pain. Along with low back pain, the conventional wisdom is that overweight persons are at risk of osteoarthritis in weight-bearing joints such as the knee, the hips, and feet.[15,16,18]

A significant difficulty in ascertaining cause and effect between obesity and low back pain is undoubtedly the term "low back pain" itself. Low back pain is a symptom not a diagnosis. A specific diagnosis, instead of the generalized form of "low back pain" may help separate out the association between LBP and obesity.

In this study most of our patients fell in the overweight or obese groups Fig:4. Further research and epidemiologic data is needed to continue the search for a definitive answer.

Radiculopathy

One of the aims of this study was to assess the prevalence of neuropathic pain among patients suffering from acute low back pain. We found that 15.4% of the acute low back pain patients had neuropathic pain.

X-Ray

The most commonly ordered spinal imaging test is X-ray because of ready availability and low cost. As most cases of mechanical low back pain resolve with conservative treatment, an X-ray is rarely indicated as part of initial workup. There is no evidence to prove that obtaining X-rays is associated with better patient outcomes. X-rays are helpful for evaluation of fracture, bony deformity including degenerative changes, sacroiliitis, disk and vertebral body height, and assessment of bony density and architecture. X-rays are part of initial workup, if the history and physical exam suggests non mechanical cause of back pain or if red flags are present.

In most cases, anteroposterior (AP) and lateral views are the first line of approach, as higher radiation exposure is associated with oblique films. Plain AP and lateral radiographs are also the initial imaging study obtained for a suspected compression fracture. The compression fractures tend to occur at multiple levels, so it is important to radiograph the entire spine. Oblique films are ordered when there is suspicion of spondylolysis, as suggestive from history and physical examination[6,14].

Oblique views show the pars interarticularis in profile and thus helps in the diagnosis of spondylolysis. In these images the defect in the pars may become evident by looking for the fracture of the neck of the “Scottie dog”. In patients with possible spondylolisthesis or prior spinal surgery, flexion, or extension films should be obtained.

A drawback of lumbar radiography is exposure of gonads to ionizing radiation, especially with oblique view or multiple exposures. Another drawback of lower back X-ray in acute back pain are the identification of certain abnormalities, like facet joint abnormality or mild scoliosis, that are only incidental findings and are unrelated to the back symptoms as most of these conditions are seen in persons without back pain. Plain radiographs can not visualize disks, are not sensitive for herniated disk, and are not helpful in diagnosing nerve root impingement. Despite these limitations, radiographs are commonly recommended prior to proceeding with more advanced imaging.

In this study 55.77% of patients had abnormal X-Ray films Fig:5.

Treatment of Nonspecific Pain

Many treatments are available for acute low back pain, but strong evidence for their benefit is lacking.

Nonsteroidal anti-inflammatory drugs (NSAIDs) are often first-line therapy for low back pain. Low-quality evidence suggests that they are effective for short-term symptom relief, compared with placebo. No patient characteristics at baseline can predict the success of NSAID therapy. Moderate evidence suggests that no one NSAID is superior, and switching to a different NSAID may be considered if the first is ineffective. Whether NSAIDs are more effective than acetaminophen is unknown, but the addition of an NSAID to acetaminophen therapy is no more beneficial than acetaminophen alone.

Moderate-quality evidence shows that muscle relaxants are beneficial in the treatment of acute low back pain. Most pain reduction from these medications occurs in the first seven to 14 days, but the benefit may continue for up to four weeks. However, muscle relaxants do not affect disability status. Because all muscle relaxants have adverse effects, such as drowsiness, dizziness, and nausea, they should be used cautiously. There is also moderate-quality evidence that muscle relaxants combined with NSAIDs may have additive benefit for reducing pain.

In this study all patients treated with different NSAID and "Paracetamol+Muscle relaxant" improved dramatically within few days Fig:6, with comparable effectiveness, the only two cases that failed to improve happened to fall in the group treated by Celecoxib. This clearly indicates equal effectiveness of medications used and homogenously and carefully selected study sample.

Conclusions

1- Pain in the lower back or low back pain is a common concern, affecting up to 90% of people at some point in their lifetime. Up to 50% will have more than one episode. Low back pain is not a specific disease, rather it is a symptom that may occur from a variety of different processes. In up to 85% of people with low back pain, despite a thorough medical examination, no specific cause of the pain can be identified.

2- Low back pain is second only to the common cold as a cause of lost days at work. It is also one of the most common reasons to visit a doctor's office or a hospital's emergency department. It is the second most common neurologic complaint in the United States, second only to headache. Low back pain accounts for approximately 15% of the sick leave, and is the most common cause of disability in persons less than 45 years of age. The prognosis for most cases of low backache is good. For 90% of people, even those with nerve root irritation, their symptoms will improve within two months no matter what treatment is used, and even if no treatment is given.

3- Low back pain is most common in the age group 30-49, defined here as middle-aged people. People in this age group are highly active in daily life and are exposed to various stresses.

4- More than half of patients reported being exposed to heavy work or lifting heavy objects, indicating strong correlation.

5- The data for a link between obesity and low back pain appears to be controversial. In this study most of our patients fell in the overweight or obese groups. Further research and epidemiologic data is needed to continue the search for a definitive answer.

6- According to our sample only 15.4% of the acute low back pain patients had neuropathic pain.

7- In this study 55.77% of patients had abnormal X-Ray films

8- NSAIM and "Paracetamol+Muscle relaxant" are equally effective in treating acute low back pain.

References

1. Mark S. Greenberg Seventh Edition, page 428
2. Greenburg 7th edition page 428
3. Motion preservation Surgery of the Spine Page 760
4. © 2000 Lippincott Williams & Wilkins, Inc.
5. This trial was registered with the Australian Clinical Trials Registry, ACTRN012605000036617.
6. http://www.cochrane.org/CD012382/BACK_non-steroidal-anti-inflammatory-drugs-low-back-pain-sciatica
7. https://www.ncbi.nlm.nih.gov/pubmed/10796356
8. https://www.medscape.org/viewarticle/569247
9. https://www.medscape.org/viewarticle/572783
10. Andersson GBJ. The epidemiology of spinal disorders. In: Frymoyer JW, Ducker TB, Hadler NM, Kostuik JP, Weinstein JN, Whitecloud TS, editors. The Adult Spine: Principles and Practice. Philadelphia, PA: Lippincott-Raven; 1997. pp. 93–141.
11. Cassidy JD, Carroll LJ, Cote P. The Saskatchewan health and back pain survey. The prevalence of low back pain and related disability in Saskatchewan adults. Spine. 1998;23:1860–7. [PubMed]
12. Leboeuf-Yde C, Lauritsen JM. The prevalence of low back in the literature: A structured review of 26 Nordic studies from 1954 to 1993. Spine. 1995;20:2112–28. [PubMed]
13. Whitecloud TS, editors. The Adult Spine: Principles and Practice. Philadelphia, PA: Lippincott-Raven; 1997. pp. 143–50.
14. Hart LG, Deyo RA, Cherkin DC. Physician office visits for low back pain. Frequency, clinical evaluation, and treatment patterns from a U.S. national survey. Spine. 1995;20:11–9. [PubMed]
15. Cypress BK. Characteristics of physician visits for back symptoms: A national perspective. Am J Public Health.1983;73:389–95. [PMC free article] [PubMed]
16. Carey TS, Evans AT, Hadler NM, et al. Acute severe low back pain. A population-based study of prevalence and care-seeking. Spine. 1996;21:339–44. [PubMed]
17. Coste J, Delecoeuillerie G, Cohen de Lara A, Le Parc JM, Paolaggi JB. Clinical course and prognostic factors in acute low back pain: an inception cohort study in primary care practice. BMJ. 1994;308:577–80.[PMC free article] [PubMed]
18. Kelsey JL. Epidemiology of musculoskeletal disorders. New York, NY: Oxford University Press; 1992.
19. Cherkin DC, Deyo RA, Street JH, Barlow W. Predicting poor outcomes for back pain seen in primary care using patients' own criteria. Spine. 1996;21:2900–7. [PubMed]
20. Croft PR, Macfarlane GJ, Papageorgiou AC, Thomas E, Silman AJ. Outcome of low back pain in general practice: a prospective study. BMJ. 1998;316:1356–9. [PMC free article] [PubMed]
21. van den Hoogen HJ, Koes BW, van Eijk JT, Bouter LM, Deville W. On the course of low back pain in general practice: a one year follow up study. Ann Rheum Dis. 1998;57:13–9. [PMC free article] [PubMed]
22. Von Korff M, Saunders K. The course of back pain in primary care. Spine. 1996;21:2833–7. [PubMed]
23. Von Korff M, Deyo RA, Cherkin D, Barlow W. Back pain in primary care. Outcomes at 1 year. Spine.1993;18:855–62. [PubMed]