Research Article
E-ISSN : 3048-1368
Volume 49, Issue No. 02. 2026
P-ISSN : 3048-1376

The International Journal of Medical Science and Health Research



EFFECTIVENESS OF INJECTABLE KETOROLAC FOR ACUTE EXACERBATIONS OF SCIATIC PAIN WITH A HISTORY OF LONG-TERM ADJUVANT PIROXICAM THERAPY: A CASE REPORT

Virdo Novian Firnako[1], Irda Rein Christina[2]

[1]General Practitioner, Bhayangkara Pusdik Brimob Watukosek Hospital, Pasuruan, Indonesia.

[2]General Practitioner, RSUD Ibnu Sina Hospital, Gresik, Indonesia.

Corresponding Email : Virdo.pedro@gmail.com

Article History :

Received date : 2026/07/21
Revised date : 2026/08/04
Accepted date : 2026/09/12
Published date : 2026/10/26

Copyright: *© 2024 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (BY NC) license (https://creativecommons.org/licenses/by-nc/4.0/).*

E-ISSN :
ISSN 3048-1368

P-ISSN
ISSN 3048-1376

ABSTRACT

Background: Acute pain exacerbations in chronic sciatica patients previously controlled with long-term oral NSAIDs present a unique clinical challenge, as they require rapid-acting analgesia while taking into account prior NSAID exposure. Ketorolac is a non-selective parenteral NSAID with analgesic potency comparable to opioids, frequently utilized as rescue therapy for moderate-to-severe acute pain in emergency and inpatient settings. **Objective:** This report aims to evaluate the effectiveness of ketorolac injection in an acute exacerbation of sciatic pain with a history of long-term piroxicam therapy. **Case Report:** A 62-year-old female presented with sudden low back pain accompanied by tingling radiating down both legs, rendering her unable to walk properly, following a bending motion to lift heavy groceries. The

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

patient had a 10-year history of chronic ischialgia/sciatica controlled with oral piroxicam. On examination, her blood pressure was 148/96 mmHg, and her heart rate was 107 bpm. The pain score upon arrival was 8–9/10 on the Numeric Rating Scale (NRS), accompanied by an antalgic gait requiring assistance to walk. The Straight Leg Raise (Lasegue) test, Patrick's test, and Contra-Patrick's test were positive bilaterally. AP/LAT lumbosacral X-rays revealed paravertebral muscle spasm and spondylosis with mild intervertebral space narrowing at the L5–S1 level. The patient received an injection of ketorolac along with supplemental oxygenation. Results: The patient showed improvement, with the NRS pain score decreasing to 4–5/10, blood pressure normalizing to 126/84 mmHg, and heart rate decreasing to 92 bpm. The improvement in hemodynamic parameters aligned with the reduction in subjective pain scores, objectively reflecting the resolution of sympathetic responses (hypertension and tachycardia) initially triggered by severe acute pain. **Conclusion:** Ketorolac injection provides rapid and significant pain relief in acute exacerbations of chronic sciatica.

Keywords: *sciatica, acute exacerbation, ketorolac.*

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

INTRODUCTION

Sciatica (ischialgia) is pain radiating along the course of the sciatic nerve resulting from irritation or compression of the lumbosacral nerve roots, defined as chronic when it persists or recurs for more than 12 weeks. In clinical practice, chronic sciatica patients commonly receive long-term intermittent oral NSAID adjuvant therapy, such as piroxicam, to manage symptoms between flare-ups.[1,2] Nevertheless, the clinical course of chronic sciatica can be interrupted by acute exacerbations—sudden severe worsenings of pain that no longer respond to the patient's routine oral regimen—thus requiring rapid-acting parenteral analgesics as rescue therapy.[3,7]

Ketorolac tromethamine is a non-selective acetic acid-derived NSAID with potent analgesic properties, reported to be comparable to standard doses of opioids such as morphine and meperidine for moderate-to-severe pain, but without the sedation, respiratory depression, or addiction potential associated with opioids.[1,6] These characteristics make ketorolac an attractive option for managing acute musculoskeletal pain exacerbations, including those with radicular components like sciatica.[1,2,3]

The clinical scenario becomes more complex when patients experiencing an acute exacerbation have a history of long-term oral NSAID use (in this case, piroxicam), as administering ketorolac as a second NSAID poses a risk of therapeutic duplication and cumulative gastrointestinal, renal, and cardiovascular adverse effects, particularly in elderly patients.[4,5,8] This case report aims to describe the effectiveness and safety considerations of injectable ketorolac in an acute exacerbation of chronic sciatica against a background of long-term adjuvant piroxicam therapy.

CASE REPORT

Clinical History and Examination

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

A 62-year-old female presented with lower back pain accompanied by tingling radiating to both legs, severely impairing her ability to walk. The symptom onset was sudden, occurring 3 hours prior to evaluation after bending over to lift heavy groceries. The patient immediately took oral piroxicam and rested, but experienced no relief. She reported a 10-year history of lower back pain, regularly attending routine specialist follow-ups and physiotherapy sessions. While she had no known systemic comorbidities, she reported a history of frequent falls approximately 15 years ago, predominantly onto a seated position while working. The patient works as a grocery vendor involving repetitive heavy lifting over many years.

On general examination, the patient appeared in moderate-to-severe distress but remained alert and fully conscious (compos mentis). Vital signs revealed a blood pressure of 148/96 mmHg and a heart rate of 107 bpm. The initial pain score was 8–9/10 on the Numeric Rating Scale (NRS), accompanied by a pronounced antalgic gait. Physical inspection demonstrated a distinct antalgic posture with lateral trunk leaning and marked difficulty standing upright or transitioning from sitting to standing. Palpation revealed severe tenderness over the bilateral lower lumbar paravertebral regions and bilateral gluteal areas, with palpable paraspinal muscle spasms. Both the Patrick's test and Contra-Patrick's test were positive bilaterally.

Plain AP/LAT lumbosacral X-rays revealed paravertebral muscle spasm and spondylosis with mild intervertebral space narrowing at the L5–S1 level (FIGURE 1).

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved



FIGURE 1. Lumbosacral Spine X-ray (AP/Lateral)

The patient received an injection of ketorolac and supplemental oxygenation. The response to injectable ketorolac combined with 2 L/min oxygen supplementation was favorable: the NRS pain score decreased from 8–9/10 to 4–5/10, blood pressure improved from 148/96 mmHg to 126/84 mmHg, heart rate decreased from 107 to 92 bpm, and respiratory rate decreased from 22 to 20 breaths per minute. The improvement in hemodynamic parameters aligned with the reduction in subjective pain scores, objectively supporting the success of the therapy.

DISCUSSION

In chronic sciatica, bending while lifting heavy loads—as experienced by the patient in this case—represents a classic trigger mechanism for acute exacerbations. Lumbar flexion under axial loading acutely increases intradiscal pressure and mechanical compression on nerve roots that are already vulnerable due to chronic degenerative changes. This sudden increase in compression

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

triggers a rapid surge in local inflammatory mediator release and nociceptor sensitization, resulting in pain that is substantially more severe and not always responsive to conventional oral NSAID doses previously effective for mild-to-moderate chronic pain. Parenteral ketorolac non-selectively inhibits cyclooxygenase enzymes (COX-1 and COX-2), thereby reducing prostaglandin synthesis with a potent analgesic effect often considered comparable to opioids for moderate-to-severe pain. Ketorolac possesses a parenteral onset of action within 30–60 minutes, in contrast to piroxicam, which has a long half-life suited for intermediate-term control of chronic pain.

Severe acute pain physiologically triggers a sympathetic response characterized by tachycardia, tachypnea, and elevated blood pressure, as observed upon the patient's arrival (blood pressure 148/96 mmHg, heart rate 107 bpm, respiratory rate 22 breaths/min). The parallel improvement of these parameters following ketorolac injection and oxygen supplementation provides objective evidence reinforcing the assessment of therapeutic efficacy beyond subjective pain reporting. The restoration of normal gait function further served as a clinically meaningful functional outcome, aligning with the primary goal of acute pain management: restoring function in addition to alleviating pain perception.

In this case, injectable ketorolac with supportive oxygenation proved effective in resolving an acute pain exacerbation of chronic sciatica unresponsive to routine oral piroxicam, as evidenced by the NRS reduction from 8–9 to 4–5, partial normalization of vital signs, and recovery of gait capability. These findings align with clinical evidence demonstrating the opioid-equivalent analgesic potency of ketorolac in acute severe lower back pain. Once the acute phase resolves, a planned transition back to oral therapy and optimization of non-pharmacological modalities remain essential components of long-term management.

CONCLUSION

Injectable ketorolac with supportive oxygenation demonstrated rapid and effective pain relief during an acute exacerbation of chronic sciatica in this case, marked by a reduction in NRS score from 8–9 to 4–5, improvement in hemodynamic parameters (blood pressure, heart rate, and

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

respiratory rate), and recovery of normal ambulation. These outcomes align with the reported opioid-comparable analgesic potency of ketorolac across clinical trials for acute severe low back pain. Following acute stabilization, a structured return to oral regimens and non-pharmacological therapies remains critical for long-term care.

REFERENCES

1. Innes GD, Croskerry P, Worthington J, Beveridge R, Jones D. Ketorolac versus acetaminophen-codeine in the emergency department treatment of acute low back pain. *Journal of Emergency Medicine*. 1998;16(4):549-556.
2. Veenema KR, Leahey N, Schneider S. Ketorolac versus meperidine: ED treatment of severe musculoskeletal low back pain. *American Journal of Emergency Medicine*. 2000;18(4):404-407.
3. Koenig KL, Hodgson L, Kozak R, et al. Ketorolac vs meperidine for the management of pain in the emergency department. *Academic Emergency Medicine*. 1994;1(6):544-549.
4. Irizarry E, Restivo A, Salama M, et al. A randomized controlled trial of ibuprofen versus ketorolac versus diclofenac for acute, nonradicular low back pain. *Academic Emergency Medicine*. 2021;28(11):1228-1236.
5. Weber H, Holme I, Amlie E. The natural course of acute sciatica with nerve root symptoms in a double-blind placebo-controlled trial evaluating the effect of piroxicam. *Spine*. 1993;18(11):1433-1438.
6. Rasmussen-Barr E, Held U, Grooten WJ, Roelofs PDDM, Koes BW, van Tulder MW, Wertli MM. Non-steroidal anti-inflammatory drugs for sciatica. *Cochrane Database of Systematic Reviews*. 2016;(10):CD012382.

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

7. Van der Gaag WH, Roelofs PDDM, Enthoven WTM, van Tulder MW, Koes BW. Non-steroidal anti-inflammatory drugs for acute low back pain. *Cochrane Database of Systematic Reviews*. 2020;(4):CD013581.

8. Katzung BG, Trevor AJ. *Basic and Clinical Pharmacology*. 14th ed. New York: McGraw-Hill Education; 2018.

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved