ClinicSearch

Orthopaedics Case Reports

Lázaro Martínez Aparicio *

Open Access

Review Article

Comparing the Effectiveness of Dexketoprofen and Methylprednisolone in Acute Low Back Pain Treatment

Lázaro Martínez Aparicio *, Lázaro Martín Martínez Estupiñan

University General Hospital "Mártires del 9 de Abril", Cuba.

***Correspondence Author:** Lázaro Martínez Aparicio, University General Hospital "Mártires del 9 de Abril", Cuba.

Received Date: February 14, 2025 | Accepted Date: February 24, 2025 | Published Date: March 04, 2025

Citation: Lázaro M. Aparicio, Lázaro M. M. Estupiñan, (2025), Comparing the Effectiveness of Dexketoprofen and Methylprednisolone in Acute Low Back Pain Treatment. *Orthopaedics Case Reports*. 4(2); DOI:10.31579/2835-8465/024

Abstract

Acute low back pain (ALBP) is one of the most frequent musculoskeletal complaints encountered in clinical practice. Effective and timely pain relief is essential to restore mobility and prevent chronicity. Among the commonly used pharmacological options, dexketoprofen—a nonsteroidal anti-inflammatory drug (NSAID)—and methylprednisolone—a corticosteroid—are widely prescribed. This article compares the effectiveness, mechanisms, clinical applications, and safety profiles of dexketoprofen and methylprednisolone in the management of acute low back pain.

Keywords: dexketoprofen; Methylprednisolone; Acute low back pain (ALBP); nonsteroidal anti-inflammatory drug (NSAID); treatment

Introduction

Acute low back pain affects a significant proportion of adults at some point in their lives. It is typically caused by strain, muscle spasm, ligament injury, or acute disc pathology. Pharmacologic intervention plays a central role in reducing pain, enhancing functional recovery, and improving patient quality of life.

Dexketoprofen and methylprednisolone represent two distinct approaches to managing inflammation and pain. Understanding their comparative benefits and limitations is crucial for guiding clinicians toward evidence-based treatment decisions.

Pharmacological Overview

Dexketoprofen

Dexketoprofen is the S-enantiomer of ketoprofen, offering enhanced analgesic and anti-inflammatory effects. It works primarily by inhibiting cyclooxygenase (COX-1 and COX-2), thereby reducing prostaglandin synthesis—key mediators of inflammation and pain.

Key Features:

- Rapid onset of action
- Effective in musculoskeletal pain
- Lower dose requirement compared to racemic ketoprofen
- Suitable for short-term acute pain management

Methylprednisolone

Methylprednisolone is a potent synthetic corticosteroid that suppresses the inflammatory cascade at multiple levels. It inhibits cytokine release, decreases vascular permeability, and reduces immune-mediated inflammatory responses.

Key Features:

- Strong anti-inflammatory effect
- Often used for acute nerve compression or severe inflammatory conditions
- Can be administered orally, intramuscularly, or intravenously

Comparative Effectiveness in Acute Low Back Pain

1. Pain Relief

Studies indicate that dexketoprofen provides rapid pain relief, often within 30 minutes to one hour after administration. It is particularly effective in cases with predominant muscle spasm or soft tissue inflammation.

Methylprednisolone, while not as rapid in analgesic onset, offers profound anti-inflammatory effect—especially beneficial in radicular pain or conditions with nerve root irritation.

2. Functional Improvement

Dexketoprofen has been shown to improve mobility and reduce pain during movement in the early stages of ALBP.

Methylprednisolone may contribute to functional recovery in patients with severe inflammatory responses or acute disc herniation.

3. Duration of Benefit

Dexketoprofen provides effective short-term relief suitable for acute episodes lasting hours to days.

Methylprednisolone's effects extend longer due to its role in suppressing the broader inflammatory process.

Safety and Adverse Effects

Dexketoprofen

Common: gastric irritation, nausea, dyspepsia

Less common: renal side effects, gastrointestinal bleeding (higher risk in elderly or with prolonged use)

Methylprednisolone

Common: mood changes, increased appetite, transient hyperglycemia

Less common: immunosuppression, fluid retention, gastrointestinal discomfort

Caution: should be used for short duration in acute cases to minimize systemic effects

Clinical Considerations

1. **Nature of Pain**
   - For mechanical or soft-tissue pain: **Dexketoprofen** is generally preferred.
   - For pain with radicular symptoms or significant inflammation: **Methylprednisolone** may be more effective.
2. **Patient Profile**
   - Patients with gastric issues should use NSAIDs cautiously.
   - Diabetic patients or those at risk of infection should be carefully monitored on corticosteroids.
3. **Combination Therapy**

   In select cases, combining NSAIDs with a short course of corticosteroids may improve outcomes, but this approach should be individualized and monitored by a clinician.

Conclusion

Dexketoprofen and methylprednisolone each provide significant benefits in the management of acute low back pain, but their roles differ based on the underlying cause and clinical presentation. Dexketoprofen is ideal for rapid pain relief in mild to moderate musculoskeletal pain, whereas methylprednisolone is more effective when the inflammatory component is profound or involves nerve root irritation.

Selecting the appropriate medication requires a patient-centered approach, considering both therapeutic benefits and potential adverse effects. Further comparative clinical trials may help refine their roles in individualized treatment strategies for acute low back pain.

Conflict of Interests

The authors of this article declare that they have no conflict of interest.

Declaration of the personal contribution of each author to the research

The authors of this article participated in the diagnosis, treatment, study design, and writing of the first version, as well as the final version of the manuscript in equal parts.

References

1. Guillen Morales JC, Araujo Espinoza GE, Lozano Lurita C, Torres Manrique AD. (2021). Reconstrucción anatómica del ligamento patelofemoral medial con aloinjerto en la luxación patelar recurrente. Artroscopia. 28(3):238-242.
2. Dejour D, Le Coultre B. (2018). Osteotomies in Patello-Femoral Instabilities. Sports Med Arthrosc Rev. 26(1):8-15.
3. Zícaro JP, Yacuzzi C, Chávez M, Costa Paz M. (2017). (Inestabilidad Patelofemoral Asociada a Displasia Severa de Tróclea: Presentación de Un Paciente Tratado con Trocleoplastía. Artroscopia. 24(2):65-68.
4. Laidlaw M, Diduch D. (2017). Current Concepts in the Management of Patellar Instability. Indian J Orthop. 51(5):493-504.
5. Liu et al. (2018). Patellar Instability Management: A Survey of the International Patellofemoral Study Group. Am J Sports Med. 46(13): 3299-3306.
6. Dutton R, Khadavi M, Fredericson M. (2016). Patellofemoral Pain. Phys Med RehabilClin N Am. 27(1):31-52.
7. Duerr R, Chauhan A, Frank D, DeMeo P. (2016). An Algorithm for Diagnosing and Treating Primary and Recurrent Patellar Instability. JBJS Rev. 4(9).
8. Aysin I, Askin A, Mete B, Guvendi E. (2018). Investigation of the Relationship between Anterior Knee Pain and Chondromalacia Patellae and PatellofemoralMalalignment. Eurasian J Med. 50(1):28-33.
9. Félix Omar López. (2020). Contreras: Evaluation and treatment of patellofemoral instability. Journal of American Health. 3(2):10-20.
10. Irrgang JJ, Anderson AF, Boland AL, et al. (2001). Development and validation of the international knee documentation committee subjective knee form. Am J Sports Med. 29:600-613.
11. Howells N. R., Barnett A. J., Ahearn N., Ansari A., Eldridge J. D. (2012). Medial Patellofemoral ligament reconstruction. JBJS Br. 94: 1202–1208.
12. Pérez Candela V, Naranjo Santana P. (2020). Magnetic resonance imaging study of extensor mechanism pathology of the knee in pediatrics. Canarias Pediátrica. 44(2):122-129.
13. Calzado Calderón R, Febles Oviedo JL, Pérez Hernández LM, Arango García G, Labrado Berea G de la C, Fortum Planas P. (2005). Surgical treatment of patellofemoral imbalance. Rev Cubana OrtopTraumatol 19(1):10-14.
14. López Fernández P, Viera González L. Patellar dislocations. (1988). RevEsp de CirOst. 397-403.
15. Figueroa Ramos DV, Cruz Carranza JS, Romero Zambrano EC, Kalil Salinas KT. (2021). Considerations on benign joint hypermobility syndrome. Cuban Journal of Rheumatology. 223(3): 238.