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PROCEEDINGS ABSTRACT

Efficacy of non-steroidal anti-inflammatory drugs in the pain management of acute renal colic and irritable bowel syndrome: evidence from an Iraqi emergency department

Ali Jalil Al-Saigh, Hala Saad Bash, Suhad Hussein Atshan, Rafal J. Al-Saigh, and Sally H. Al-Humadi

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Pain is a primary driver of emergency department (ED) visits. Two high-burden but pathophysiologically distinct causes of pain are acute renal colic (ARC) and the irritable bowel syndrome (IBS). Of these, ARC presents with acute, prostaglandin-mediated inflammatory pain as a result of ureteral obstruction [1], whereas IBS features functional pain driven by visceral hypersensitivity and gut-brain dysregulation [2]. Despite these differences, both require a rapid, effective, opioid-sparing analgesia in the ED. The intravenous non-steroidal anti-inflammatory drugs (NSAIDs), such as ketorolac, are standard first-line therapies that effectively target the prostaglandin synthesis that is central to the pathophysiology of the ARC-induced pain. However, their efficacy in treating the non-inflammatory pain of IBS remains poorly defined. Currently, there is a significant lack of comparative clinical data evaluating the NSAID performance across these two distinct clinical entities; addressing this knowledge gap is essential, particularly in resource-constrained healthcare systems where most treatment decisions heavily depend on drug availability, cost, and speed of onset. This prospective study has aimed at evaluating and comparing the clinical efficacy of intravenous NSAIDs in managing acute abdominal and flank pain among patients presenting with ARC *versus* IBS. The investigation was conducted within an Iraqi ED setting at the Imam Al-Hujjah Hospital (Karbala, Iraq) over a 12-month period (from June 2024 to May 2025). The primary objective was to quantify the exact temporal dynamics of the analgesic response. A total of 178 adult patients was prospectively enrolled and stratified into two groups based on confirmed clinical diagnosis. The first comprised 91 patients presenting with ARC (52 males and 39 females, with a mean age of 42.4 years), while the second cohort included 87 patients with an established diagnosis of IBS experiencing acute exacerbations (35 males and 52 females, with a mean age of 39.1 years). Pain intensity was objectively assessed using a standardized 100-mm paper-based visual analogue scale (VAS). Baseline pain scores were recorded upon the ED arrival, followed by serial evaluations at continuous 15-min intervals immediately following pharmacological intervention. All participants received a uniform protocol of intravenous ketorolac as the definitive first-line analgesic agent, and the primary outcome measured was the median time required to achieve clinically significant pain relief, defined *a priori* as a minimum 50% reduction in the initial VAS score.

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Secondary outcomes included the absolute magnitude of pain score reduction at 1 h and the cumulative proportion of patients successfully achieving predefined pain relief thresholds. Results demonstrated that intravenous ketorolac provided rapid and clinically meaningful analgesia across both diagnostic cohorts; however, statistically significant variations were also observed regarding the onset speed and trajectory of pain relief. Patients with IBS exhibited a significantly faster analgesic response [3], with 82.8% achieving substantial pain reduction within the 15- to 30-min observation window (p<0.001). Furthermore, the mean VAS reduction for the IBS group at 30 min was notably higher compared to that of the ARC group. In distinct contrast, the analgesic effect in the ARC cohort was significantly delayed, as 90.2% of these patients required between 30 and 45 min to reach comparable levels of clinically significant relief (p<0.001). The absolute reduction in baseline VAS scores measured at the 60-min mark was substantial in both groups, yet marginally superior in the ARC group. In conclusion, intravenous ketorolac serves as a highly effective, opioid-sparing analgesic for managing acute pain presentations in the ED across both the ARC and IBS populations, though the distinct temporal response dynamics necessitate tailored clinical expectations so as to optimize outcomes.

Keywords

acute renal colic; emergency department; irritable bowel syndrome; NSAIDs; pain management

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Conflicts of interest statement

None to declare.

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Affiliation(s)

Al-Hilla Teaching Hospital, Babel Health Office, Hillah, Iraq *(AJA)* ▪ Department of Pharmacognosy, College of Pharmacy, University of Babylon, Hillah, Iraq *(HSB)* ▪ Department of Clinical Pharmacy, College of Pharmacy, University of Babylon, Hillah, Iraq *(SHAt)* ▪ Department of Clinical Laboratory Sciences, College of Pharmacy, University of Babylon, Hillah, Iraq *(RJA)* ▪ College of Medicine, University of Babylon, Hillah, Iraq *(SHAl)*

Correspondence

Rafal J. Al-Saigh
Department of Clinical Laboratory Sciences
College of Pharmacy
University of Babylon
Hillah, Iraq
phar.rafal.jalil@uobabylon.edu.iq