Fentanyl vs. Morphine in Acute Renal Colic: Impact on Emergency Department Length of Stay

Hiba H. Abu Hassan, MD* Samar Albalooshi, MD** Marwan A. Aljanahi, MD*** Wasan H. Alhammadi, MD**** Malaak M. Ebisi****

ABSTRACT

Renal colic is a common urological emergency marked by acute, severe pain, often requiring opioid analgesia in the emergency department (ED) when NSAIDs are ineffective or contraindicated. Despite widespread use, direct comparisons between morphine and fentanyl remain limited. To compare the efficacy of intravenous morphine and fentanyl in adults with renal colic, with ED length of stay as the primary outcome. Secondary outcomes included recurrence of ED visits, discharge, and admission rates. This retrospective study analyzed 1,620 patients aged 16–65 who presented with flank pain at two tertiary hospitals in Bahrain. Inclusion criteria were confirmed renal colic, VAS >4, opioid administration, and adequate documentation. Patients were grouped based on the initial opioid received. Variables analyzed included demographics, pain scores, rescue analgesia use, ED length of stay, disposition, and recurrence. Statistical analysis was conducted using SPSS with one-way ANOVA and Tukey HSD tests. In the cohort, 40.8% received morphine and 59.1% received fentanyl, with fentanyl initially linked to a significantly shorter emergency department stay (195 vs. 237 minutes; $p<0.001$), though this difference disappeared after adjusting for factors like pain score, age, gender, and renal stone history. While admission and recurrence rates were comparable, fentanyl was associated with higher discharge rates and morphine with fewer referrals, even after controlling for confounders. Both opioids proved effective for renal colic management. Opioid choice should be guided by clinical context and distinct pharmacokinetic properties. Further prospective studies are warranted to refine opioid selection in this setting.

Keywords: renal colic, opioids, fentanyl, morphine, emergency medicine, retrospective study.

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* Year 4 Resident, Saudi Board Emergency Medicine Residency Program
Emergency Medicine Department, King Hamad University Hospital
Kingdom of Bahrain.
Email: hibaabuhassan@hotmail.com

** Year 1 Resident, Saudi Board Emergency Medicine Residency Program
Emergency Medicine Department, Bahrain Defence Force Hospital
Kingdom of Bahrain.

*** Senior House Officer, Emergency Medicine Department
King Hamad University Hospital, Kingdom of Bahrain.

**** Medical Student, Arabian Gulf University,
Kingdom of Bahrain.