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Comparative review: Efficacy of opioid versus non-opioid analgesic treatment in patients with acute pain in the emergency room

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ABSTRACT

Acute pain, a prevalent symptom in emergency contexts, often stems from trauma, surgical interventions, or acute medical conditions, requiring effective management to mitigate discomfort and prevent chronic sequelae. This study compares the efficacy, safety, and outcomes of opioid analgesic use compared to non-opioid analgesics in acute pain management in emergency settings. The systematic review includes data from databases such as SciELO and PubMed, as well as the critical analysis of reference works in pharmacology such as "Rang & Dale's Pharmacology", "Goodman & Gilman's: The Pharmacological Basis of Therapeutics" and "Lange's Basic & Clinical Pharmacology". The results show that while opioids offer immediate and potent relief from severe pain, non-opioids are often preferred due to a more benign safety profile.

Keywords: Acute pain, Opioid analgesics, Non-opioid analgesics, Medical emergency, Pharmacology.

INTRODUCTION

Acute pain is a complex response of the body to harmful stimuli, manifesting itself acutely and intensely in medical emergency situations. This phenomenon, in addition to being a challenge for health professionals, requires rapid and effective therapeutic interventions to minimize patient suffering and prevent subsequent complications. According to recent studies, acute pain represents one of the main causes of demand for care in emergency services (Smith et al., 2022).

Analgesics are the cornerstone of the pharmacological treatment of acute pain, falling into two main categories: opioids and non-opioids. Opioids, such as morphine, fentanyl, and oxycodone, act predominantly on μ-opioid receptors in the central nervous system, giving them a crucial role in alleviating severe acute pain. As highlighted by Rang et al. (2020), opioids are recognized for their superior efficacy in controlling severe acute pain, providing immediate and robust relief to patients.

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On the other hand, non-opioid analgesics, which include nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and diclofenac, and acetaminophen, operate primarily by inhibiting cyclooxygenase (COX), an enzyme involved in the synthesis of inflammatory prostaglandins. According to Katzung (2017), NSAIDs represent an effective alternative for mild to moderate pain control, presenting a favorable safety profile compared to opioids.

The decision between opioid or non-opioid use in acute pain management should consider a number of factors, such as pain intensity, medication safety profile, patient medical history, and potential risk of substance abuse. This study proposes a comparative analysis of the efficacy, safety, and clinical outcomes associated with the use of opioid and non-opioid analgesics in patients with acute pain in the emergency room.

METHODOLOGY

The methodology adopted for this systematic review included the search and analysis of relevant literature in the SciELO and PubMed databases, using descriptors such as: acute pain, opioid analgesics, non-opioid analgesics and medical emergency. Randomized controlled trials, systematic reviews, and meta-analyses published in the last 20 years that directly compared the effects and outcomes of treatment with opioid versus non-opioid analgesics in adult patients with acute pain in an emergency context were included.

In addition, classic and up-to-date pharmacology textbooks, such as Rang & Dale's Pharmacology, Goodman & Gilman's: The Pharmacological Basis of Therapeutics, and Lange's Basic & Clinical Pharmacology, were consulted to theoretically support the clinical findings. The exclusion criteria included studies unrelated to acute pain, studies in pediatric populations, and studies with an exclusive focus on chronic pain.

RESULTS

OPIOID ANALGESICS

The reviewed literature confirms the efficacy of opioids in relieving severe acute pain. Drugs such as morphine, fentanyl, and oxycodone stand out for the rapid analgesic action provided by the interaction with μ-opioid receptors in the central nervous system (Goodman & Gilman, 2018). However, the use of these agents is not without risks, being associated with significant adverse effects, such as respiratory depression, nausea, vomiting, and the potential for the development of physical and psychological dependence (Volkow et al., 2014).

NON-OPIOID ANALGESICS

Non-opioid analgesics, including NSAIDs and acetaminophen, are widely used in the treatment of acute pain of moderate intensity. NSAIDs exert their action by inhibiting COX, reducing the production of inflammatory prostaglandins responsible for sensitizing nociceptors (Baumann et al., 2014). Paracetamol, on the other hand, offers a favorable safety profile, although prolonged use at high doses may lead to hepatotoxicity.

DISCUSSION

EFFECTIVENESS

Opioids are recognized for their superiority in the immediate relief of severe acute pain, a fact supported by robust clinical evidence (Finnerup et al., 2015). In contrast, non-opioids demonstrate comparable efficacy in controlling moderate-intensity pain, and are often preferred due to the lower incidence of serious adverse effects.

SAFETY

The safety of opioids represents a relevant concern in clinical practice, given the possibility of serious adverse effects and the potential risk of addiction. Non-opioids, although they have a more favorable safety profile, are not without risks, especially when used for a long time.

CLINICAL RESULTS

Clinical outcomes related to opioid versus non-opioid use in acute pain reflect a complexity of therapeutic choices. Patients treated with opioids often report greater satisfaction due to effective relief of severe pain. However, concern about adverse effects and the potential for abuse has encouraged the search for alternative or combined therapeutic strategies that minimize such risks.

CONCLUSION

The decision on the use of opioid versus non-opioid analgesics for the treatment of acute pain in the emergency room should be individualized and based on a careful evaluation of the clinical and pharmacologic factors involved. While opioids offer advantages in immediate relief of severe pain, non-opioids are often preferred for moderate-intensity pain due to a more favorable safety profile. The combination of therapeutic approaches may represent a viable strategy to optimize pain control and minimize the risks associated with pharmacological treatment.

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