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Interconnection between injectable omeprazole and clopidogrel tablet: a comprehensive analysis of clinical and pharmacological implications

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1 INTRODUCTION

Therapeutic synergy is a sought-after goal in contemporary medical practice, aiming to maximize therapeutic benefits while minimizing pharmacological adverse effects (Chowdhury et al., 2020). However, the drug interaction between injectable omeprazole and clopidogrel tablet emerges as a crucial clinical and pharmacological concern. Clopidogrel, a widely used antiplatelet agent in cardiovascular event prevention, and omeprazole, a proton pump inhibitor often prescribed for gastrointestinal disorders, are frequently co-administered in patients with elevated cardiovascular risk (Bhurke et al., 2018). Nevertheless, recent studies suggest that this combination might compromise the antiplatelet efficacy of clopidogrel due to potential pharmacokinetic and pharmacodynamic interactions.

The interaction between omeprazole and clopidogrel has been subject to intense investigation, yielding divergent results and contentious interpretations. While some studies indicate a significant reduction in clopidogrel's antiplatelet activity when co-administered with omeprazole, others report a less pronounced or even absent interaction (Kawasaki et al., 2019). This discrepancy raises critical questions regarding the underlying mechanisms of this interaction, as well as its clinical implications in daily practice.

A comprehensive understanding of this interaction is essential to ensure the safety and efficacy of pharmacological treatments in patients with cardiovascular diseases. Therefore, a comprehensive analysis of the clinical and pharmacological implications of the interaction between omeprazole and clopidogrel is warranted. This review aims to provide a critical analysis of the existing literature on

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this topic, exploring the effects of this interaction on pharmacokinetics, pharmacodynamics, and clinical response, while identifying knowledge gaps and guiding future research in this area.

With a deeper understanding of this interaction, clinicians can make more informed and individualized therapeutic decisions, ensuring the best possible management for patients with elevated cardiovascular risk.

2 OBJECTIVES

This study aims to investigate and critically analyze the interaction between injectable omeprazole and clopidogrel tablet, exploring its effects on pharmacokinetics and pharmacodynamics, as well as its clinical implications. Additionally, it intends to examine the existing literature to identify knowledge gaps and direct future research in this field. As described by Johnson et al. (2022) and Wang et al. (2021), a complete understanding of this interaction is essential to ensure safe and effective clinical practices.

3 METHODOLOGY

The adopted methodology consists of a systematic literature review, involving the search for relevant articles in the databases of SciELO, PubMed, and Google Scholar. Specific search terms were used to identify studies investigating the interaction between omeprazole and clopidogrel. Inclusion criteria were rigorously applied to select studies published in peer-reviewed scientific journals. Critical analysis of the obtained results was performed to identify patterns, trends, and gaps in the existing literature on the topic.

4 RESULTS AND DISCUSSION

The systematic review of selected studies revealed a range of results and divergent interpretations regarding the magnitude and nature of the interaction between omeprazole and clopidogrel. While some studies indicate a significant reduction in clopidogrel's antiplatelet efficacy when co-administered with omeprazole (Li et al., 2017; Qamar et al., 2019), others point to a less pronounced or even absent interaction (Yusuf et al., 2020). Potential mechanisms underlying this interaction include inhibition of clopidogrel metabolism by omeprazole, particularly through CYP2C19 inhibition (Li et al., 2017). However, the clinical interpretation of these findings is complex, and the actual clinical impact of the interaction may be influenced by a variety of factors, including dose, treatment duration, and individual patient characteristics (Yusuf et al., 2020).

The literature presents some limitations that should be considered when interpreting the results. Observational studies are often affected by confounding bias and may not fully control for all

confounding factors (Li et al., 2017). Additionally, heterogeneity among studies in terms of studied population, methodology, and outcome definitions may hinder result comparison and generalization (Qamar et al., 2019).

5 CONCLUSION

In conclusion, the co-administration of injectable omeprazole and clopidogrel tablet requires careful and individualized approach, especially in patients with high cardiovascular risk. Although the literature provides valuable insights, there is an urgent need for additional studies to fully elucidate the mechanisms and clinical implications of this interaction. As emphasized by Li et al. (2017) and Yusuf et al. (2020), a thorough understanding of these aspects is essential to guide safe and effective clinical practices.

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