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Case Report

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Safety of metamizole analgesic therapy in patients with dyspepsia syndrome: A case report

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Abstract: The selection of drugs in patients who have experienced dyspepsia syndrome needs to be studied for its use. Non-steroidal anti-inflammatory drugs (NSAIDs) are a class of drugs that are effective in controlling various inflammatory conditions and treating inflammatory symptoms such as pain but are limited in their use in patients with dyspepsia. We report case of patients with metamizole NSAIDs during three days of hospitalization with a diagnosis of dyspepsia. Other side effects such as cardiovascular, neurological disorders and agranulocytosis can also occur with the use of metamizole. There were no side effects that exacerbated dyspepsia symptoms in patients or other side effects during the three days of using metamizol. It can be concluded that short-term metamizole therapy is safe for use in patients with dyspeptic syndrome. Concomitant use with gastric acid blocking agents such as H2 receptor antagonists may also reduce the effects of gastrointestinal disturbances.

Keywords: Metamizole, Gastrointestinal, Adverse effect, Dyspepsia

INTRODUCTION

Dyspepsia is a clinical syndrome consisting of symptoms of pain or burning that primarily occur in the epigastric or upper abdominal area, accompanied by symptoms of early satiety, bloating, nausea, and vomiting.[1–3] About 40% of individuals with dyspepsia complaints seek medical consultation, while 15% of dyspepsia patients are referred for further examination and management.[4] Dyspepsia is categorized into organic/structural dyspepsia and non-organic/functional dyspepsia. Organic/structural dyspepsia is caused by abnormalities such as peptic ulcers, gastritis, stomach cancer, and gastroesophageal reflux disease (GERD), whereas functional dyspepsia shows no abnormalities on physical examination and endoscopy.[5] Functional dyspepsia is associated with abnormal gastrointestinal motility, visceral hypersensitivity, genetic

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factors, H. pylori infection, post-infection factors, psychosocial factors, as well as environmental and dietary factors.[4,6]

Pharmacological therapy for dyspepsia is based on acid-inhibiting drugs, namely proton pump inhibitors (PPIs) and histamine-2 receptor antagonists (H2RAs).[7,8] Prokinetic agents are also administered to accelerate disrupted gastrointestinal motility due to changes in visceral sensitivity.[6,9] The British Society of Gastroenterology (BSG) recommends PPIs as the first-line therapy for dyspepsia with strong recommendations and high-quality evidence. H2 receptor antagonists are also used as first-line treatment, but with weaker recommendations and low-quality evidence.[10] PPIs like omeprazole and lansoprazole, H2RAs like cimetidine, famotidine, ranitidine, and prokinetic agent domperidone are commonly used for dyspepsia therapy in Indonesia (Nabila et al., 2022; Sakaguchi et al., 2012).[11,12] Restricting foods and drugs that can alter gastrointestinal motility is also essential.

The selection of medications for patients who have experienced dyspepsia syndrome requires careful assessment of their use. Non-steroidal anti-inflammatory drugs (NSAIDs) are one effective class of drugs for controlling various inflammatory conditions and alleviating inflammatory symptoms like pain.[13] NSAIDs are widely used; however, the risk of adverse effects on the gastrointestinal tract, especially the gastric mucosa, can occur, warranting limitation or dose reduction of NSAIDs in dyspepsia patients.[14] A meta-analysis demonstrated a significantly higher prevalence of dyspepsia events in NSAID users (OR 1.59, 95% CI 1.27-1.99).[15] Adverse effects such as nausea, vomiting, and gastric irritation can occur with parenteral NSAID administration.[16] This can exacerbate dyspeptic symptoms if administered to dyspeptic patients. A case report is presented involving the use of metamizole, a parenteral NSAID, in a patient with dyspepsia syndrome.

CASE REPORT

A 66-year-old woman was admitted to the hospital with complaints of nausea and breathlessness while walking. The patient was diagnosed with dyspepsia, anemia, and hypertension. She had a history of lung infection and had undergone a blood transfusion one month ago. Using the Visual Analogue Scale (VAS), the patient assessed her pain as a score of 4. Vital signs were blood pressure 117/90 mmHg, heart rate 122 beats per minute, respiratory rate 28 breaths per minute, and body temperature 37.40¬∞C. Laboratory results revealed hemoglobin level of 5.43 g/dL and leukocyte count of 19,800/Cmm. The patient received fluid resuscitation therapy with 0.9% NaCl at a rate of 19 drops per minute, ranitidine injection 2x50 mg, metoclopramide injection 3x10 mg, metamizole injection 3x1 g, and packed red blood cell transfusion. Monitoring on the second and third days of therapy showed a decrease in body temperature to a range of 36-36.70¬∞C. By the third day, the complaints of breathlessness and bloating had improved, and the anemia condition showed improvement with a post-treatment hemoglobin increase of 11.7 g/dL. Pain improvement was also observed with a decrease in VAS scores on the second day (score of 3) and on the third day (score of 2), with no signs of gastrointestinal bleeding. Upon discharge, the patient was prescribed omeprazole 2x20 mg, amlodipine 10 mg, spironolactone 50 mg, nucral syrup 3x15 mL, and rindobion 1x1.

DISCUSSION

Metamizole sodium is classified as a commonly used parenteral NSAID in Indonesia. Metamizole is a pyrazolone derivative with a chemical structure related to amidopyrine. This medication exerts analgesic-antipyretic, spasmolytic, and weak anti-inflammatory effects.[17,18] As a non-selective NSAID, metamizole inhibits the cyclooxygenase (COX) enzymes, namely COX-1 and COX-2, which are

involved in prostaglandin (PG) precursor synthesis.[19] Inhibition of COX-1 results in the suppression of PGE2's gastroprotective function, thus increasing the risk of gastrointestinal disorders like dyspepsia.[18,20] An infrequently but dangerously occurring adverse effect associated with metamizole usage is agranulocytosis. Agranulocytosis is defined as a neutrophil count lower than 0.5 × 109 L-1 (<500 µL-1). In specific patients, metamizole can induce agranulocytosis with an average risk occurrence after one week of usage.[21,22]

Cardiovascular adverse effects of metamizole usage have been reported in systematic reviews and meta-analyses of metamizole's side effects. Administration of parenteral metamizole causes hypotension compared to paracetamol (RR 3.48, 95% CI 1.07-11.27). Meanwhile, compared to other NSAIDs, side effects such as headache, dizziness, and vertigo are most commonly observed (RR 0.75, 95% CI 0.57-0.99).[18]

This case report demonstrates the absence of emerging adverse effects during metamizole usage. Metamizole exhibits good gastric tolerance.[16] Although metamizole strongly inhibits COX-1, very few reports indicate occurrences of duodenal ulcer-related adverse effects. Research conducted by Konijnenbelt et al (2017) revealed that metamizole is the NSAID with the lowest upper gastrointestinal tract side effects compared to other NSAIDs.[23] In line with Konijnenbelt's findings, a meta-analysis conducted by Kotter et al (2015) indicated no difference in side effect occurrences between metamizole and placebo, paracetamol, aspirin, or other NSAIDs. A total of 79 trials involving 4000 patients administered short-term metamizole showed no difference in side effect occurrences and no reports of agranulocytosis.[18] The administration of gastrointestinal protective agents in this case, such as ranitidine, an H2 receptor antagonist, besides alleviating the patient's complaints of nausea and vomiting, can be implemented to prevent gastrointestinal side effects.[24]

CONCLUSION

As a mild analgesic, metamizole exhibits good gastric tolerance. Short-term metamizole therapy is safe for use in patients with dyspepsia syndrome. Administering it concurrently with gastric acid inhibitors like H2 receptor antagonists can also reduce gastrointestinal disturbances.

AUTHORS' CONTRIBUTIONS

Khoirul Anam and Rina Widiyawati collected research data and wrote this journal. Tita Sugesti, M. Hari Pristantiningtyas, Herya Putra Dharma, and Muhammad Muchlis selected the hospital cases that could be used as case reports, and also guided the writing of this journal. Jainuri Erik Pratama, Adji Prayitno Setiadi, and Marisca Evalina Gondokesumo reviewed and supervised the journal. All authors have read and approved the final version of the journal.

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DISCLOSURE STATEMENT

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