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OVERVIEW PRESCRIBING WITH DUPLICATED NSAID THERAPY WITHOUT GASTRIC PROTECTIVE AGENTS AT A HOSPITAL IN INDONESIA

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Abstract

Pain is a defence mechanism for the body that arises when the tissues in the body are being damaged. Pain therapy can be used in the form of NSAIDs. In prescribing NSAIDs, there is a risk of *drug-related problems* in the form of treatment duplication without gastroprotective. This study aims to determine the description of the type of duplication of NSAIDs without gastroprotective and explain pharmacist intervention efforts in reducing *drug-related problems* in prescribing NSAIDs. This retrospective observational study is conducted on all incoming prescriptions at the pharmacy satellite in March-June 2022 at one of the hospitals in Indonesia. The results of this study found 53 cases of duplication of NSAID therapy without gastroprotective from a total of 3,200 prescriptions, with the most duplication of NSAID therapy between Ibuprofen 400 mg and Mefenamic Acid 500 mg 24 cases. Pharmacist intervention in the form of clinical prescription screening is beneficial to avoid the risk of *drug-related problems* in prescribing NSAIDs.

Keywords: duplication of therapy, ibuprofen, gastric protective agents, mefenamic acid, NSAIDs

Introduction

Pain is a defence mechanism for the body that arises when the tissues in the body are damaged, which can cause a person to react by moving the pain stimulus.[1] A pain response is caused by several factors, namely a mechanical, thermal, and electrical trauma, a result of neoplasm, either benign or malignant, an inflammation or inflammation, a blood circulation disorder and the presence of a vascular disorder and psychological trauma.[2] Pain based on the attack time is divided into acute and chronic pain. Chronic pain is pain whose occurrence lasts continuously for six months or more.[1]

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Chronic pain cannot be predicted, and this pain cannot be attributed to a specific cause, such as injury. In contrast, acute pain can be recovered after an intervention and pharmacotherapy. Acute pain can occur suddenly, can be associated with a specific problem, and can trigger a person to act immediately to eliminate a pain response. Pharmacotherapy for the treatment of acute pain can be used drugs of the NSAID or NSAID class.[2] NSAIDs are anti-inflammatory drugs whose molecular structure is different from that of steroid drugs. Regarding chemical structure, the NSAID class of drugs consists of compounds derived from propionic acid, acetic acid, pyrazole, and other chemicals that work by inhibiting the action of the cyclooxygenase enzyme.[3]

This enzyme plays an essential role in the arachidonic acid metabolic pathway by catalysing the conversion of arachidonic acid into prostaglandins and thromboxane.[3] In outpatient treatment in hospitals, NSAIDs are often used for complaints such as low back pain, osteoarthritis, and rheumatoid arthritis. Pain treatment sometimes does not have an effect, so there are often drug-related problems in NSAID prescribing,[4] such as excessive doses of NSAIDs or duplication of NSAIDs. Duplication of therapy is when two drugs with the same effect are given, which can increase the side effects of the drug. Therefore, it is necessary to screen clinical prescribing of NSAID Drug prescriptions to determine whether there is a potential for duplication of therapy or not.[5] Previous research related to drug-related problems of NSAID drugs in the form of a drug overdose of etoricoxib in outpatients at the hospital showed the results of etoricoxib overdose incidents in as many as 92 cases.[6] Hospital outpatient pharmacy installations with many visitors can potentially cause duplication of NSAID therapy. Therefore, a review of the incidence of Prescribing with duplication of therapy in the outpatient pharmacy satellite in one of the Type C hospitals in Banyuasin Regency in March-June 2022 was conducted with a retrospective observational descriptive study. This study aims to determine the percentage and type of duplication of NSAID therapy without gastroprotective and to determine the pharmacist intervention efforts in reducing duplication of NSAID therapy without gastroprotective.

Method

This research was conducted with a retrospective observational descriptive study, with the population and sample of all total prescriptions that entered the pharmacy satellite in the period March 2022 - June 2022, with the category of cases of duplication of NSAID therapy seen in the form of two or more classes of NSAIDs in one outpatient prescription sheet at one type C hospital in Banyuasin Regency. Data taken from outpatient prescription files include patient characteristics and pain treatment procedures received by patients. Patient characteristics include age, disease and gender. Patient treatment management consists of the type of analgesic given in therapy and the variation of analgesic use.

Result

From a total population of 3,200 outpatient pharmacy satellite prescriptions for the March-June 2022 period, the results of prescriptions with duplication of NSAID therapy were 53 prescription sheets with the following characteristics: 19 male patients and 34 female patients with the characteristics of patients aged 20-30 years six patients, 31-50 years 12 patients, 51-59 years 20 patients and 60-80 years 15 patients, the results of these characteristics are in table 1.

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Table 1. Characteristics of the Incidence of Duplication of NSAID Therapy without Gastric Protective Agents at Polyclinic Outpatients at One of the Hospitals in Indonesia

Characteristics	Duplication NSAIDs without Gastric Protective Agent
Gender	
Male	19 (35,8%)
Female	34 (64,2%)
Ages (year olds)	
20 – 30	6 (11,3%)
31 - 50	12 (22,6%)
51 – 59	20 (37,7%)
60 – 80	15 (28, 3%)

In a study conducted, male patients had the highest incidence of duplication of NSAID, namely 50.2%, and the aged 60-69 years had an incidence of duplication of NSAID therapy, 50.5%.[5] Among 53 prescriptions with duplication of NSAID therapy without gastric protective agents, duplication data were obtained between ibuprofen 400 mg and mefenamic Acid 500 mg with 24 duplication cases, ketoprofen100 mg and mefenamic acid 500 mg with 14 duplication cases, sodium diclofenac 50 mg and mefenamic acid 500 mg with 10 cases of duplication, ketoprofen 100 mg and sodium diclofenac 50 mg with 3 cases of duplication, and potassium diclofenac 50 mg and mefenamic acid 500 mg and ketoprofen 500 mg and Ibuprofen 400 mg each with one case of duplication Some common risk factors for high-risk use of over-the-counter NSAIDs include age over 65, history of peptic ulcers, use of corticosteroids or anticoagulants, and the presence of cardiovascular disease or risk factors for it.[7] The results of this duplication of NSAIDs are in Table 2.

Table 2. Medications with Duplication of NSAIDs Therapy without Gastric Protective Agents at Polyclinic Outpatients at One of the Hospitals in Indonesia

Medications	Duplication NSAIDs without a Gastric Protective Agent
Ibuprofen and mefenamic acid	24 (45,3%)
Ketoprofen and mefenamic acid	14 (26,4%)
Sodium diclofenac and mefenamic acid	10 (18,9%)
Ketoprofen and sodium diclofenac	3 (5,7%)
Potassium diclofenac and mefenamic acid	1 (1,9%)
Ketoprofen and ibuprofen	1 (1,9%)

Discussion

From a total population of 3,200 outpatient pharmacy satellite prescriptions for the March-June 2022 period, the results of prescriptions with duplication of NSAID therapy were 53 prescription sheets with the following characteristics: 19 male patients and 34 female patients with the characteristics of patients aged 20-30 years six patients, 31-50 years 12 patients, 51-59 years 20 patients and 60-80 years 15 patients. In a study conducted, male patients had the highest incidence of duplication of NSAID, namely 50.2%, and the aged 60-69 years had an incidence of duplication of NSAID therapy, 50.5%.[5] Among 53 prescriptions with duplication of NSAID therapy without gastric protective agents, duplication data were obtained between ibuprofen 400 mg and mefenamic Acid 500 mg with 24 duplication cases, ketoprofen100 mg and mefenamic acid 500 mg with 14 duplication cases, sodium diclofenac 50 mg and mefenamic acid

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500 mg with 10 cases of duplication, ketoprofen 100 mg and sodium diclofenac 50 mg with 3 cases of duplication, and potassium diclofenac 50 mg and mefenamic acid 500 mg and ketoprofen 500 mg and Ibuprofen 400 mg each with one case of duplication Some common risk factors for high-risk use of over-the-counter NSAIDs include age over 65, history of peptic ulcers, use of corticosteroids or anticoagulants, and the presence of cardiovascular disease or risk factors for it.[7] Previous studies have shown that the number of medications used is the most significant risk factor for various prescribing problems, including potential drug interactions. Patients who take more medications, including NSAIDs, have a higher risk of experiencing these problems. Although this study did not specifically address NSAID duplication, it could be hypothesised that elderly patients who take more medications may also be more prone to NSAID duplication.[8] Polypharmacy, the concurrent use of multiple medications, is a significant challenge in the management of elderly patients, particularly those with chronic conditions. One of the most prevalent issues associated with polypharmacy is the risk of therapy duplication, such as the concurrent use of non-steroidal anti-inflammatory drugs (NSAIDs), which can lead to adverse drug events and increased healthcare costs.[9] The implication is that therapeutic duplication of NSAIDs and polypharmacy would expose elderlies to severe or potentially fatal adverse effects, including nephrotic syndrome,[10] acute renal failure,[11] heart failure[12] and gastrointestinal problems.[11] Furthermore, concurrent use of some NSAIDs like ibuprofen can interfere with the antiplatelet effect of low-dose aspirin by blocking aspirin's irreversible cyclooxygenase-1 inhibition.[12] NSAID-related complications could also compromise adherence to other therapeutic agents used for chronic diseases.

NSAIDs are anti-inflammatory drugs that can be used in pain therapy, but this has a risk of peptic ulcer disorders, bleeding risk, and increased blood pressure. NSAID groups with a relatively low risk of peptic ulcer disorders are NSAIDs such as celecoxib and ibuprofen, while those that have a moderate risk for peptic ulcer disorders are NSAIDs such as meloxicam, diclofenac, and ketoprofen and NSAIDs that have a high risk in peptic ulcer disorders are NSAIDs such as naproxen, indomethacin, diflunisal, and those with the highest risk for the incidence of peptic ulcer side effects are NSAIDs in the form of piroxicam and ketorolac.[13]

A strategy is needed to reduce the incidence of drug side effects and the risk of gastrointestinal disorders in the form of dyspepsia, bleeding, and ulcers, namely by using NSAIDs with other drugs such as misoprostol, H2-Blockers or PPIs or by using selective NSAIDs, namely the COX-2 selective inhibitor group.[14] The above strategy is very useful in preventing the risk of side effects of NSAID drugs on the digestive tract, especially in geriatric patients (elderly). The risk factors that can exacerbate the side effects of NSAID drugs are as follows: age over 65 years, having a history of peptic ulcer disease, heart disease, and concurrent use of other drugs such as antiplatelets, anticoagulants, and corticosteroids.[15] This is because the non-selective NSAID class works by inhibiting the work of COX1. This enzyme produces pain mediators in the form of prostaglandins, which also act as natural protective agents in the stomach.[12]

Long-term inhibition of gastric acid secretion is necessary for the prevention of drug side effects in the form of gastroduodenal ulcers during the use of NSAID-class drugs.[16] In the event of patients with a high risk of adverse drug effects on the gastrointestinal tract, it is recommended to combine with other drugs such as misoprostol or high doses of PPIs and or use selective NSAIDs. The concurrent use of NSAIDs with gastroprotective drugs is more cost-effective than NSAID monotherapy. The most recommended combination is NSAIDs with PPIs, which proved to be the most cost-effective compared to other gastroprotective drugs.[15]

From the research that has been done, the duplication of NSAID therapy without the most gastric protective agents is between ibuprofen 400 mg and mefenamic acid 500

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mg. The combination of the two is a combination of non-selective NSAIDs without the presence of gastric protective agents such as PPIs, so this combination can increase the risk of gastrointestinal disorders (peptic ulcers) and heart disorders (hypertension). This is because Non-selective NSAID agents can affect cytoprotective agents (gastric mucosa) of the stomach in the form of prostaglandins and can encourage vasoconstriction in the heart to increase the risk of increased blood pressure and other heart disorders. Therefore, the role of a clinical pharmacist as a professional who has the task of screening prescriptions must be observant in seeing the possibility of duplication of therapy for NSAIDs, especially for treatment duplication without gastric protective agents, so that it can be communicated to the prescribing physician so that rational prescribing is obtained on patient treatment. Pharmacist interventions have been shown to have a significant impact on improving patient outcomes and reducing healthcare costs. In the context of non-steroidal anti-inflammatory drugs (NSAIDs), pharmacist involvement can play a crucial role in identifying and addressing issues related to duplication therapy, which can lead to increased adverse events and healthcare utilisation.[17]

Clinical pharmacists have a crucial role in minimising drug-related problems. Mainly, there should be a greater emphasis on patient counselling and patient follow-up,[18] and the study shows that specially designed services such as pharmacotherapy clinics run by clinical pharmacists are necessary to detect and resolve DRPs effectively. The high patient compliance rate indicates patients' confidence in the clinical pharmacist services provided in the pharmacotherapy clinic. The low acceptance rate of physicians highlights the need to improve interprofessional collaboration between clinical pharmacists and physicians in an outpatient setting.[19]

Conclusion

There were 53 cases of duplication of NSAIDs therapy without gastroprotective from a total of 3,200 outpatient prescriptions, with the most cases being duplication of therapy between ibuprofen and mefenamic acid at 45.3%, and the pharmacist's intervention is crucial in clinically screening prescriptions aspect to avoid duplication of NSAID therapy without gastric protective agents.

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