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Original Article

The Nature of Opioids Used as Pain Management in A Public Hospital in Bali

Profil Pengunaan Opioid untuk Mengelola Nyeri di Rumah Sakit Negeri di Bali

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Abstract

Opioids are the mainstay of pain management, particularly in chronic pain-related and nonrelated cancer. Studies have shown that the number of opioids used globally varies. It was used excessively in some parts, while in others, it was underused. Little study is known on how opioids are used in Indonesia. This study aimed to identify indications of opioids prescribed and types of opioids used, as well as assess the nature of opioid therapy as pain management for chronic and non-related cancer. This retrospective study was conducted in a public hospital in Bali, Indonesia. Data was collected from all inpatients who received opioids in the hospital from 2018 to 2020. Patients' age, gender, as well as opioid information such as types of opioids and used for treatment for cancer or non-cancer patients, were pooled and analyzed descriptively. This study found that fentanyl injection was the most opioid prescribed by anesthesiologists as preoperative medications. Opioids were prescribed mostly for non-cancer patients, and limited opioids were prescribed for cancer patients. Future research is required to evaluate factors that influence opioid prescriptions in hospitals.

Abstrak

Opioids masih merupakan obat yang digunakan untuk mengelola nyeri terutama nyeri kronik baik yang berhubungan maupun tidak dengan kanker. Penelitian telah menunjukkan bahwa jumlah penggunaan Opioid di seluruh dunia berbeda-beda. Di beberapa belahan dunia, Opioids digunakan terlalu banyak, sedangkan di belahan dunia lain digunakan sangat terbatas. Belum banyak peneltian yang pernah dilakukan di Indonesia tentang penggunaan Opioid. Penelitian ini bertujuan untuk mengidentifikasi indikasi peresepan Opioid, jenis Opioid yang digunakan serta rasional penggunaan Opioid untuk mengatasi nyeri baik untuk kanker maupun bukan untuk kanker. Penelitian ini merupakan penelitian retrospektif yang dilakukan di Rumah Sakit Negeri di Bali. Data diambil dari penggunaan Opioid pada pasien rawat inap di rumah sakit dari 2018 sampai 2020. Data yang dikumpulkan antara lain umur, jenis kelamin, jenis Opioid, serta penggunaannya untuk pasien kanker dan tidak. Data dikumpulkan dan dianalisis secara deskriptif. Penelitian ini menemukan bahwa Fentanil Injeksi adalah golongan Opioid yang paling sering diresepkan oleh Dokter Anestesi untuk obat premedikasi operasi. Opioid Sebagian besar diberikan pada pasien non-cancer dan terbatas digunakan pada pasien kanker. Penelitian lebih lanjut dibutuhkan untuk mengevaluasi faktor yang mempengaruhi peresepan Opioid di Rumah Sakit.

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INTRODUCTION

Opioids are narcotics drugs that can be used for moderate to severe pain management. This class of drugs is highly regulated across the globe particularly in Indonesia due to high addiction and potentially abuse by certain populations. In the United Kingdom (UK), an observatory study found that over a decade there has been an increase in the use of codeine, tramadol and oxycodone for non-cancer pain.[1] Prescribing factors, patient's age, higher socioeconomic status, fibromyalgia and rheumatoid diseases were contributed to the long-term used of opioids. A narrative review conducted in Indonesia in 2015 showed that opioids were underused to manage pain in cancer patients.[2]

Some barriers discussed were the complicated regulation on morphine procurement in Indonesia, lack of competency in assessing pain, patient's reluctance to describe their pain, fear of addiction, and lack of competency in prescribing opioids amongst prescribers. The major problem from government regulation was also identified by a study involving medical specialists who treated cancer pain.[3] Indriyani *et al.*, also found that lack of training and lack of access to the medicine as barriers to opioids used for cancer pain.[3]

Opioids has analgetics activities by influencing some receptors particularly mu receptor. [4]Opioids are classified into three categories based on its potency and affinity to Opioids receptors; Agonist Opioid, Antagonist Opioid and Mixed Agonist -Antagonist Opioid. Strong agonist opioids bound strongly to opioids receptors such as Morphine and Fentanyl. Currently, little is known how opioid is used in Indonesian setting. A study conducted in Banjarbaru found that no morphine tablet was received to the patients and mostly pethidine and fentanyl injections in used in an emergency department, intensive care unit, operation theatre, neurology polyclinic and orthopedy surgery.[5] This study also indicated the opioids used were minimum due to lack of training and concerns of addictions as well as abuse. To obtain more information on how opioids are used in Indonesia, a medication review from electronics patients' medical records was conducted in a public hospital in Bali.

RESEARCH METHODS

This was a retrospective study on Opioids prescriptions in a mid-tier public hospital in Bali Indonesia. This hospital has electronic medical record systems. Data of patients who received opioids as pain managements both in cancer or non-cancer patients who admitted to the hospitals from January 2018 to June 2020 was included. Incomplete data from the medication records was excluded. Information collected from the medical records were gender, types of Opioids in used, dose, dosage forms, indication, and medical specialists who prescribed the prescriptions. Data was analyzed descriptively to understand the nature of Opioids medication in used in the studied hospital. Ethical approval to this study was granted from Health Research Ethics Committe Faculty of Medicine Udayana University No 1092/UN l4.2.2.Vll.14/LT/2022.

RESULT AND DISCUSSIONS

There were 2584 patients' medication records reviewed in the study period. More than 50,4% of the patients were female (1303/2584), and 49.6% were male. This study found that 2420 (93,6%) non cancer patients and only 165 (6,4%) cancer patients received Opioids. **Figure 1** illustrates that the majority of patients (57%) received Fentanyl 100mg and 93,5% of those were for non cancer patients (as seen on **Figure 2**). MST 15 mg tab were the least Opioid prescribed (2%). Interestingly, MST 10mg were prescribed for more than 50% of cancer patients (**Figure 2**). **Figure 3** shows that of the Opioids used in the study hospital, Anaesthesiologist mostly prescribed Fentanyl 100mcg injection (83%) and Morphine 10mg Injection (67%), meanwhile Internists prescribed MST 15mg tab (97%), MST 10mg tab (89%), and Codeine 10mg tab (60%). General practitioners, pulmonary and neurologist prescribed less than 25% of the Opioids prescribed in the study hospital.

This study found that Fentanyl 100 mcg injection was the most prescribed by Anesthesiologists in the study hospital. Fentanyl can used as preoperative anesthesia and analgesia.[6, 7] However, unexpected adverse reactions of Fentanyl used has been claimed to improve the risk of death due to high potency and rapid onset. Its high potency may be related to Fentanyl's affinity similar to that of Morphine.[7] In preoperative patients, Fentanyl is used as an adjuvant in the anesthesia process. Cherng examined the onset of epidural anesthesia using pure ropivacaine compared with a combination of ropivacaine plus 100 µg fentanyl adjuvant.[8] They found that the onset of sensory block in patients with epidural ropivacaine plus Fentanyl is much faster than without Fentanyl. Currently, fentanyl is a drug that is very often used by anesthetists because of the effects of Fentanyl which can be used as an anesthetic drug in pre-operative patients.[6] It was also found in this study that 83% of fentanyl use was administered by anesthesiology specialists (**Figure 1**) and 93,5% was used in patients without cancer (**Figure 2**). Fentanyl has 50 to 100 times potency than Morphine.[7] Their used in pain management particularly for cancer patients only for patients who shown tolerance to Opiates. Findings to this study showed that Fentanyl was not used for cancer patients in the study hospital.

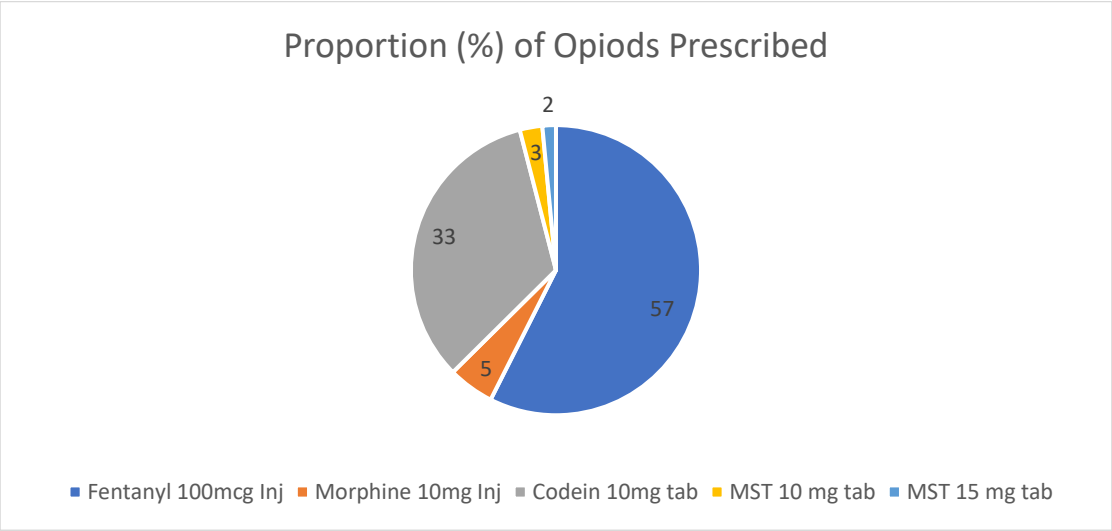

Figure 1. The Proportion of Opioids Prescribed

Codeine was the second most Opioids prescribed in the study hospital but not used in cancer patients. It was found that 33% patients used Codeine 10 mg tablet prescribed by the Internal medicine specialists, general practitioners and pulmonologist. Codeine has a sedative effect which helps reduce the pain sensation. The drug may also combine with Acetaminophen or Aspirin for more effective pain relief. Codeine is useful in the treatment of various disease that produce chronic cough by decreasing the cough frequency and severity in these patients.[9] This study identified Internists prescribed more than 50% of MST 10mg tablet and almost 30% of MST 15mg tablet for cancer patients. The National Formularium in 2019 stated that Morphine tablet may be given for pain management in cancer patients.[10] This may indicate that only Morphine tablet were available for cancer patients in the study hospital. A review article on breakthrough cancer pain found that rapid onset of opioids was more effective than sustained released tablet.[11] In the study hospital, morphine sustained released tablets were prescribed to the cancer patients not the fast rapid onset tablet. This may indicate that patients in the study hospital may suffer more. Additionally, patients with cancer may require palliative care which entails pain managements. A national census on drug availability in Indonesia in 2024 found that access medicine for palliative care was not available in the country. [12] Fanda et al., urged that this required attention particularly in rural area and Eastern Indonesia where access to essential medicine is limited.[12]

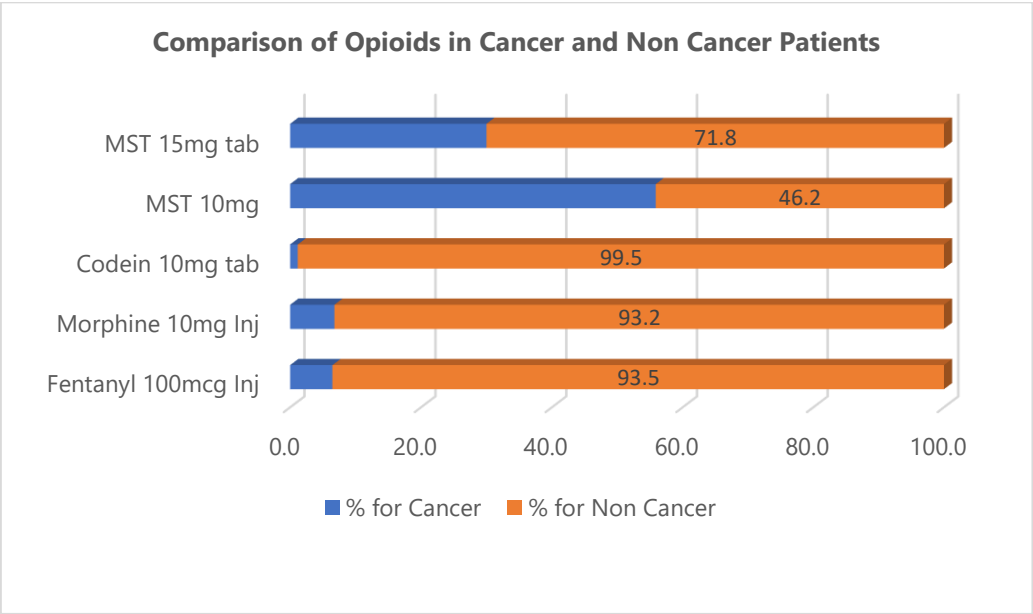

Figure 2. Comparison of Opioids Prescribed for Cancer and Non Cancer Patients

The results of the study showed the majority of Opioids prescribed for non-cancer compared to cancer patients. In malignancy, pain caused by activation of nociceptors is called nociceptive pain; while pain caused by disorders of the nervous system is called neuropathic pain. Nociceptive pain occurs due to potential tissue damage which can be caused by direct pressure on the tumor, trauma, inflammation, or infiltration of healthy tissue and can be in the form of somatic or visceral pain. The used of Opioid for nociceptive pain needs to consider the patients' clinical utility in cancer patients particularly impacting on their immune systems and quality of life.[13] A recent systematic review and network meta analysis suggested to propose Metadone as the first line for cancer pain management although they warranted for further research is required to confirm their recommendation. [14]

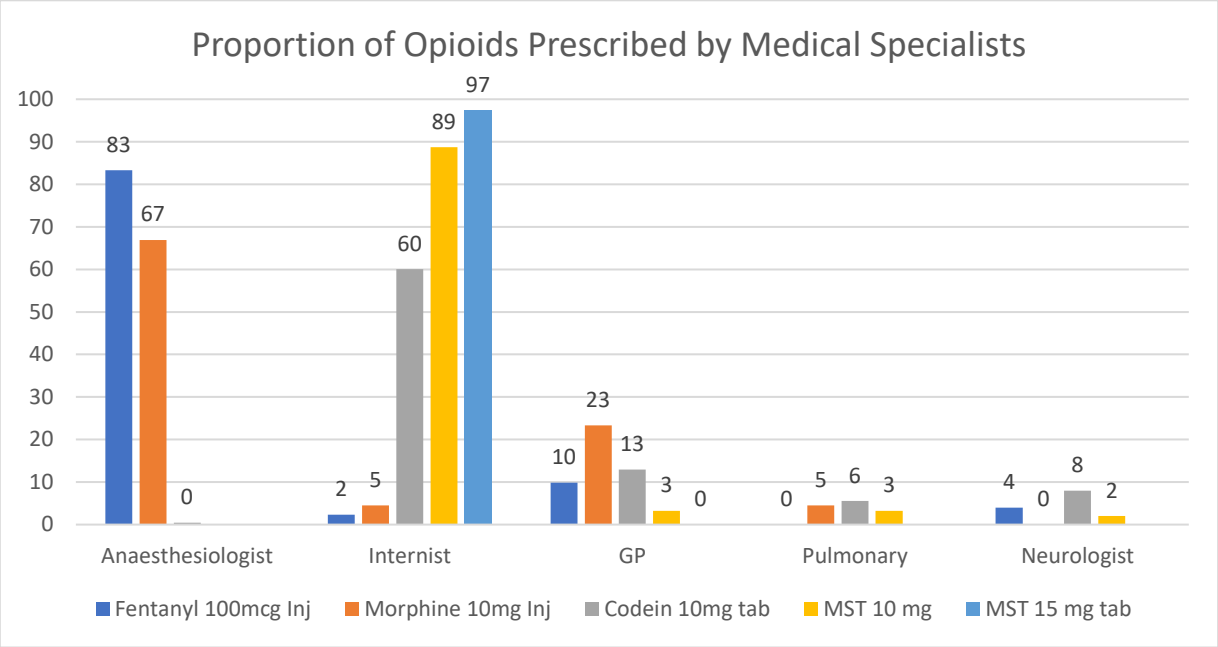

Figure 3. Types of Opioids Prescribed by Medical Specialists

In general, pain management includes pharmacological and non-pharmacological therapy. The World Health Organization (WHO) has provided a stepladder guidelines for pharmacological therapy for pain.[15] For mild pain, non-steroidal anti-inflammatory drugs (NSAIDs) and paracetamol are used. If the pain is not resolved, weak opioids can be given, such as tramadol and NSAIDs. If the pain remains unresolved, then giving an opioid such as morphine should be considered. This study identified that fewer opioids were given to cancer patients compared to non-cancer patients. This result was similar to that of Chenaf et al. findings.[16] They found that the most Opioids were given to non-cancer pain than cancer pain. This may be due to the WHO principle of using anti-pain medication, where only patients whose pain is not resolved with tramadol or NSAIDs are given opioids. However, this cannot be fully concluded because there is no information regarding the severity of pain experienced by patients, especially patients with cancer in the current study due to the nature of retrospective study.

CONCLUSION

This study found that Anaesthesiologist mostly prescribed Opioids Fentanyl 10 mcg as pre-operative medication and Internists prescribed Morphine tablets for cancer patients . The majority of Opioids were given to non-cancer patients compared to cancer patients. It is hoped that the results of this study will provide opportunities for further research into the factors that influence the use of opioid drugs in hospital patients.

CONFLICT OF INTEREST

None declared.

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