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Relationship between the use of antibiotics and anti-pain in breast cancer patients (ca mammae)

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ABSTRACT

The most common cancer detected in women is breast cancer. After lung cancer, it is the most frequent reason for cancer-related mortality. This is because patients who have advanced breast cancer seek medical attention. The lack of understanding about breast cancer and how to do breast self-examination (BSE) for early identification of breast cancer among the general population contributed to the delay in treatment. This research aimed to ascertain how patients with Camamae used antib iotics and painkillers in connection to one another. This kind of research is retrospective, descriptive, and utilizes secondary data. Patients diagnosed with breast cancer between January 2019 and December 2023 were selected from medical records at the Regional General Hospital dr. Hasri Ainun Habibie as a research subject. The results obtained from medical records show that the relationship between painkillers and antibiotics is very important where giving painkillers to breast cancer patients is to improve the patient's quality of life, especially for patients who have experienced arrest or removal of breast tissue while giving antibiotics is to prevent exposure to bacteria when it will be carried out profit and after done.

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INTRODUCTION

Breast cancer is a disease that results in cells losing their usual regulatory and control systems, causing rapid and uncontrolled proliferation (Nurhayati et al., 2019). Breast cancer, sometimes referred to as *mammary carcinoma*, is a malignant tumor that appears as an abnormal lump in breast tissue. Breast fat and connective tissue are both potential tumor growth environments, in addition to glands and milk ducts. This tumor also has the potential to spread to other organs. The term "metastasis" describes this spread (Iqmy et al., 2021; Nurrohmah et al., 2022).

Hero (2021) posits "breast cancer is the most common cancer in women globally, accounting for 22% of all new cancer cases in women, and second only to lung cancer in terms of cancer-related deaths" (Hero, 2021). Less than 5% of breast cancer cases occur in those aged <35, with women aged 40 to 49 seeing the highest prevalence. Male breast cancer accounts for only one

percent of all cases (Cardoso et al., 2019; Nurrohmah et al., 2022). Changes in people's lifestyles and improved methods of diagnosing malignant breast tumors are the causes of the dramatic increase in reported breast cancer cases (Momenimovahed &; Salehiniya, 2019). Breast cancer has an incidence rate of 38 per 100,000 women, making it the most common cancer in women worldwide in 2015, according to data from the *International Agency for Research on Cancer* in 2015. There are 40 new cases of breast cancer for every 100,000 women in Indonesia. Breast cancer affects 50 out of every 100,000 Indonesian women. Central Java, East Java, and West Java are estimated to have the highest number of breast cancer patients, while Gorontalo and West Papua have the lowest. This is in line with the estimated number of women diagnosed with breast and cervical cancer in each province in 2013 and 2018. With 1,869 new cases of breast cancer in 2013, Aceh has an average prevalence rate.

Treatment of breast cancer often involves complex therapies that can cause pain and risk of infection. The main complaint of postoperative patients is pain. The goal of painkillers is to reduce or eliminate discomfort, such as that felt due to tumors, chemotherapy, or surgery. The most widely used surgical technique is mastectomy. Mastectomy is one of the procedures for the removal of the entire breast. At the time of surgery, the role of antibiotics is needed as a form of prevention of infection that will occur. Antibiotics are chemicals that prevent bacteria from multiplying or killing them. The effectiveness of antibiotics may be reduced or lost altogether if not taken exactly as prescribed. The use of antibiotics must be completed in a course of treatment (must be exhausted). Antibiotics can be used to treat bacterial infections if there are signs or symptoms of infection in the surgical area or surgical wound (Purwidyaningrum et al., 2019). Therefore, the use of painkillers and antibiotics is an important consideration in the management of *patients with mammae*. In *patients with ca mammary* (breast cancer), the use of pain agents and antibiotics may become relevant depending on the patient's condition and needs. In addition to pharmacological therapy, namely the provision of antibiotics and anti-pain, the management of non-pharmacological therapy is also needed.

The research gap in research on the relationship between antibiotic use and pain in breast cancer patients (ca mammae) is that although it has been discussed that antibiotics are used as a preventive measure for postoperative infections, there has been no in-depth study of the relationship or effect of antibiotic use in breast cancer patients on postoperative pain experience or the use of anti-pain medications. Research may need to explore whether antibiotic use in breast cancer patients affects the use of painkillers or the effectiveness of postoperative pain treatment. In addition, psychological aspects of the patient, such as the level of discomfort and quality of life, in the context of antibiotic and painkiller use, may also need further investigation. Thus, this study can provide deeper insights into post-operative pain management in breast cancer patients and the effects of antibiotic use.

Through this study, the hope is an increased understanding of the relationship between antibiotic use and changes in pain levels in breast cancer patients. The results are expected to provide clearer guidance for medical practitioners in treating patients, enabling more precise clinical recommendations and personalized care. In addition, if research finds that antibiotic use is effective in reducing pain, the implication is the development of better painkillers. Conversely, if not effective, the study could help reduce unnecessary antibiotic use, reduce the risk of antibiotic resistance, and optimize patient care costs. Finally, positive research results will also have an impact on improving the quality of life of breast cancer patients by reducing the pain experienced during treatment.

The research described has a variety of important implications, both in the understanding and management of breast cancer and in the context of health practice more generally. First, the results of this study are expected to improve pain management in breast cancer patients. If it is proven that antibiotic use has a significant association with postoperative pain reduction, it will allow the development of more effective strategies to relieve pain, which can reduce patient

suffering. Furthermore, this research can help in optimizing the use of antibiotics. If antibiotics are found to be effective in reducing pain, then the use of more cost-effective antibiotics will help overcome the growing problem of antibiotic resistance. This will benefit the health care system as a whole. In addition, the results of this study can provide clearer clinical guidance for medical practitioners in treating breast cancer patients, create a more personalized treatment plan, and remind the importance of considering the psychological needs of patients in treatment. Other implications include the potential development of more effective painkillers, reduced health care costs, and improved quality of life for breast cancer patients. Finally, this research also has the potential to reduce the risk of antibiotic resistance, which poses a serious threat in the world of global health. Thus, this study has a broad and positive impact in the context of breast cancer treatment and overall health care.

RESEARCH METHOD

The study was retrospective and descriptive, utilizing secondary data from patients diagnosed with breast cancer between January 2019 and December 2023 at dr. Hasri Ainun Habibie Regional General Hospital. The initial step involves collecting the patient's medical record data, which includes age, pain scale, disease history, and received therapy. Once the data is collected, a cleansing stage is required to ensure its accuracy and integrity. The data is then categorized based on relevant variables, such as age, pain level, disease history, and therapy. The analysis process begins with descriptive statistics, including calculations of mean, median, standard deviation, and frequency distribution. Data is also visualized using appropriate graphs and diagrams. Next, a comparative analysis is performed to identify the relationship between different patient groups. The results of the analysis are then interpreted and used to answer the research question. The results of this study are then compiled into a report that includes methodology, findings, interpretation, and implications, with consideration of limitations that might affect the validity of the results. During the data analysis process, attention continues to be directed to maintaining the confidentiality of patient data in accordance with ethical standards of medical research. Collaboration with statisticians or medical research experts may be necessary to ensure proper data analysis.

RESULTS AND DISCUSSIONS

Based on the results of medical record data from patients at the regional general hospital dr. Hasri Ainun Habibie, it was found that the average age of patients suffering from breast cancer has an age range between 33 to 55 years. According to research reported by Manoharan et al (2017), breast cancer rates are lowest in the youngest age group, continue to increase between the ages of 25 and 29 years, and reach the highest point between the ages of 70 and 74 years (Huzaimah &; Pratiwi, 2020). This is because, as stated by Maria et al. (2015), breast cancer strikes fear in the hearts of all women, especially middle-aged women (Maria et al., 2017).

Patients with breast cancer often report experiencing pain. Cancer patients often experience pain, especially during and immediately after treatment. Approximately 5-10% of patients experience chronic pain, making long-term pain management a clinically significant problem (Glare et al., 2014). Many people with cancer report a lower quality of life and greater depression and insomnia due to cancer-related pain (Pachman et al., 2012). In breast cancer patients, pain occurs when cancer cells enlarge, form scars, or appear to have metastasized to the bone. Pain in cancer is a subjective phenomenon. Various medical interventions, including chemotherapy, surgery, and radiation therapy, can cause or aggravate pain in different areas of the body. Pain of breast cancer patients comes from two sources, namely direct organ impact and direct soft tissue impact (Fadilah et al., 2018).

Table 1. Number of patients getting anti-pain drugs for cancer patients

Anti-pain medication during treatment	Anti-pain medication when the patient goes home	Number of patients
Ketorolak	Mefenamic acid	2 patients
Santagesik	Simtram	1 patient
Paracetamol + tramadol	Simtram	3 patients
Paracetamol	Paracetamol	3 patients

The use of analgesics such as ketorolac, tramadol, santagesik, paracetamol, and mefenamic acid is documented in the medical records of breast cancer patients treated at Hasri Ainun Habibie Hospital. Ketorolac pain medication and mefenamic acid were given to 2 patients, while tramadol and paracetamol pain medication were given to 3 patients, 3 patients who only got paracetamol and 1 patient who only got santagesic anti-pain drugs.

Based on the medical record of breast cancer patients from Asri Ainun Habibie Hospital, the use of anti-pain drugs given, namely ketorolac, tramadol, santagesik, paracetamol and mefenamic acid. The class of pain drugs is divided into two, namely opioids and non-opioids. Similar to opiates and morphine in how they work, opioid analgesics are painkillers. Opioid analgesics, despite their beneficial effects, carry risks of dependence, tolerance, and addiction (Paice & Ferrell, 2011). Opioid analgesics are powerful pain relievers due to their Central Nervous System (CNS) mechanism of action. In most cases, it causes a state of happiness (euphoria) and impaired consciousness. Opioid analgesics are the most effective painkillers available, especially when dealing with chronic or severe pain (Raphael et al., 2010).

In 2 patients who received ketorolak painkillers and mefenamic acid, the two drugs were given at different times, namely ketorolak drugs were given during treatment and mefenamic acid was given after the patient went home. One of the therapeutic activities carried out in the hospital is the administration of pain relievers also called analgesics to patients who have just undergone surgery. Some analgesic drugs that are still used today are ketorolac, mefenamic acid and so on. Ketorolac injection is used as part of postoperative care management (Ihsan et al., 2019). The analgesic effect of ketorolak is thought to outweigh the anti-inflammatory effect because it works by peripherally inhibiting prostaglandin synthesis through inhibition of COX-1 and COX-2 (Gems et al., 2014). The use of ketorolac is recommended for a maximum duration of five days in doses of 10 to 30 mg per day, because the longer ketorolak is used, the higher the risk of side effects, especially if the drug is given in excessive amounts or in very susceptible people, such as the elderly. The risk posed can be gastrointestinal bleeding if used in the long term (Tooley &; Vickers, 2014).

Nonsteroidal anti-inflammatory drugs such as mefenamic acid are useful for treating moderate pain and reducing inflammation. One of the most common reasons for prescribing this medication is to reduce postoperative pain. Depending on how long the pain lasts after surgery, mefenamic acid can be prescribed from two to four days after the procedure. Mefenamic acid can cause liver damage, so it should not be given more than 7 days at a time. Mefenamic acid is the only phenamate with central and peripheral action, making it effective as an analgesic. Mefenamic acid taken orally is absorbed first in the stomach and intestines, then in the liver, and finally in the blood, where it is transported to the workplace. Within 2-4 hours, plasma mefenamic acid concentrations are at their highest (Gilman, 2012).

In the next case, there were 3 patients who received a combination of tramadol and paracetamol. *The Three Step Analgesic Ladder* (WHO) categorizes pain treatment accordingly. Paracetamol and tramadol, when used in conjunction with analgesics, are effective treatments for moderate to severe pain. In the analgesic ladder (WHO), paracetamol and tramadol together

represent the second rung (Syahputra &; Nugroho, 2017). Tramadol and fixed-dose paracetamol work together effectively as fast-acting and long-lasting multimodal analgesics for patients suffering from moderate to severe pain. Some clinical studies have found that patients taking tramadol or paracetamol alone or in combination experienced a significant reduction in pain associated with postoperative procedures, musculoskeletal injuries (acute, subacute, or chronic), diabetic peripheral neuropathy, or migraines. In addition, the analgesic effect of fixed-dose combinations of tramadol and acetaminophen, hydrocodone and acetaminophen, codeine and acetaminophen, or codeine and ibuprofen is almost the same as paracetamol and ibuprofen for patients with postoperative pain or low back pain (Hudyarisandi, 2016).

The addition of paracetamol to tramadol did not increase its tolerability, and overall, the tolerability of both drugs was on par with other active comparators (such as fixed-dose or single-drug combos). Some side effects were less common in the tramadol and paracetamol groups compared to the active control group. Tramadol or paracetamol is an excellent choice for multimodal analgesia in individuals with moderate to severe pain, as shown in a number of long-term comparative studies (Hudyarisandi, 2016).

Furthermore, there are patients who are given anti-pain drugs only during treatment. Santagesik containing Metamizole is also commonly used as an effective analgesic for postoperative pain, as stated by Yasir Mustafa (2019) (Banadji, 2019). In addition, according to Caliskan (2013), Metamizole as a derivative of pyrazolin, has been widely used as an effective antipyretic and analgetic drug (Caliskan et al., 2013). The cyclooxygenase enzymes -1, -2, and -3 (COX = cyclooxygenase) are what impart analgesic properties to metamizole. The active metabolites 4-acetyl-amino-antipyrine (AA) and 4-methyl-amino-antipyrine (MAA) of metamizole bind to cannabinoid receptors and produce analgesia. By binding to cannabinoid receptors, MAA and AA are able to reduce GABAergic transmission in the periaqueductal gray zone and, as a result, reduce pain. Metamizole's antispasmodic effect is triggered in part by the binding of MAA and AA to cannabinoid receptors. When compared to other non-narcotic analgesics, this effect also helps relieve pain (de Leeuw et al., 2017).

In the next case, there were 3 other patients who were only given the anti-pain drug paracetamol. Paracetamol is a non-narcotic analgesic that is widely used in various countries, either singly or in combination with other drugs, as stated by Nugroho (2019) (Edy &; Nugroho, 2019). Paracetamol is a non-opioid analgesic that exerts a pain-relieving effect on the peripheral nervous system. Mild to moderate acute pain can be treated very successfully with nonopioids. In the case of 3 patients who only received paracetamol painkiller therapy because the scale of pain in each patient varied. In the medical records of the 3 patients, it is illustrated that the pain scale of each patient is still in the category of mild to moderate pain, so that for the use of a single anti-pain, paracetamol is very effective compared to patients with moderate to severe pain scales, a combination of anti-pain must be needed. According to Hudyarisandi (2016), paracetamol works well as a stand-alone analgesic for mild to moderate pain and as a second drug for moderate to severe pain (Hudyarisandi, 2016). In the table above, it can also be seen that the provision of anti-pain when patients go home is still given oral paracetamol where according to Hudyarisandi (2016), patients recovering from surgery, especially those who choose to be outpatient, can use oral paracetamol, a non-opioid analgesic, to treat mild to moderate pain (Hudyarisandi, 2016).

Opioids and non-opioids are two types of pain medications. Opioid analgesics are pain medications that work in a similar way to opiates and morphine. Opioids are often prescribed to treat pain, but their use comes with a risk of tolerance and dependence (Paice &; Ferrell, 2011). Opioid analgesics are powerful pain relievers due to their central nervous system (CNS) mechanism of action. In most cases, it causes a state of happiness (euphoria) and impaired consciousness. When it comes to relieving severe pain, these opioid analgesics have no equal in their effectiveness (Raphael et al., 2010).

Pain can be reduced without loss of touch, proprioception, or consciousness when natural opioid compounds are used. All opioids function by binding to opioid receptors in the central nervous system, such as naturally occurring peptide neurotransmitters (endorphins, enkephalins, dynorphins). Three different types of opioid receptors—described as δ (delta), μ (mu), and κ (kappa)—each play different functions and have different affinities for endogenous peptides (Schumacher et al., 2015). Opioids play an important role in the treatment of cancer-related pain. Different people will react differently to this drug. Opioid analgesics can be divided into two categories: low-potency ones and high-potency ones. Codeine, dihydrocodeine, and oxycodone are examples of mild opioids. This low-potency opioid is often used as part of the second rung in the *WHO Analgesic Ladder,* alongside acetaminophen, as a moderate to severe pain medication (Paice &; Ferrell, 2011; Raphael et al., 2010).

Tramadol is one of the most popular analgesics that functions as a moderate to severe pain reliever. Tramadol is an opioid agonist (with opiates/morphine-like properties) and a central-acting analgesic that can be used orally, intravenously, intramuscularly, or parenterally. Intravenous Tramadol has been associated with side effects such as nausea, dizziness, hyperventilation, vomiting, dry mouth, itching, as well as sweating. Tramadol is a safer alternative to morphine and other opioid pain relievers. According to Satoto et al (2020), Tramadol is an analgesic that is quite effective for treating post-cesarean section pain even when given singly (Satoto et al., 2020). Meanwhile, according to a study by Yasa et al (2017), tramadol can also reduce pain after 24 hours and reduce VAS scores (Yasa et al., 2017).

The chemical composition of non-opioid drugs, such as *Nonsteroidal Anti-Inflammatory Drugs* (NSAIDs), differs from opioids. However, it has become clear that these drugs have much in common in their intended purpose and negative effects. Inhibition of prostaglandin (PG) biosynthesis has shown similar therapeutic efficacy and side effects across this diverse population, according to research conducted over the past decade (Syarif et al., 2016).

Pain can be reduced with non-opioid analgesics through the peripheral nervous system. When it comes to chronic inflammatory diseases like arthritis and mild acute pain, the non-opioid group shines. Drugs in the NSAID group, such as ibuprofen, aspirin, naproxen, diclofenac, mefenamic acid, and pyroxicam, are examples of non-opioid pain relievers. Inhibiting prostaglandin synthesis from arachidonic acid precursors is how non-opioid analgesics dull pain at the injury site. Prostaglandins are highly reactive and work in conjunction with other inflammatory products such as bradykinin and histamine at the site of injury to produce an exaggerated pain response. No prostaglandins are produced to stimulate nociceptors if this process is blocked. In Lovell & Ernst (2017) it is mentioned that "NSAIDS is one such group. NSAIDs inhibit cyclooxygenase-1 and -2 enzymes (COX-1 and COX-2) to reduce the production of vasoconstrictor inflammatory mediators prostaglandins (PGE2) and prostacyclins (PGI2). Inhibiting prostaglandin production has the additional effect of increasing sodium retention, in addition to causing vasoconstriction" (Lovell &; Ernst, 2017).

Ketorolac, epheenamic acid, metamizole and ketoprofen suppositories are non-opioid NSAID drugs that function as drugs of choice in the management of pain and inflammation. This drug is useful one of them to provide analgesic effects in postoperative with moderate pain intensity and acute pain, both used as a single drug and a combination drug. Ketorolac is available in approved injection formulations on the intramuscular (IM) and intravenous (IV) routes of administration in addition to oral and intranasal administration. While stomach side effects from selective NSAIDs are reduced, long-term use still carries the risk of cardiovascular and cerebrovascular disease as well as the more common side effects of peptic ulcers, kidney dysfunction, and platelet aggregation disorders. Pain from inflammation, such as that caused by metastatic cancer, responds well to nonsteroidal anti-inflammatory drugs (NSAIDs), and their use may reduce the risk of psychological complications associated with opioid treatment. Liver disease, kidney disease, and gastrointestinal bleeding are reasons to avoid taking it. An analgesic rather

than anti-inflammatory, ketorolak works by blocking COX-1 and COX-2, enzymes responsible for prostaglandin synthesis in the peripheral nervous system. When used alone or in combination with opioids, these drugs are very effective in preventing postoperative pain (Gems et al., 2014).

Treatment of breast cancer often involves complex therapies that can cause pain and risk of infection. In the medical record data of 9 patients at Dr. Hasri Ainun Habibie Hospital, all of these patients were surgically removed. After cancer surgery, fine blood vessels in the skin become blocked and damaged, as stated by Maryunani (2016) (Maryunani, 2016). Therefore, the skin tissue dies (dies) due to lack of oxygen. Bacteria thrive in the decomposition products of necrotic tissues. By blocking the flexibility of the capillary channels, the bacteria infect the cancerous wound substrate and cause it to excrete a lot of fluid. At the time of surgery or after surgery, antibiotics need to be given to prevent infection. The role of antibiotics is needed as a form of prevention of infection that will occur. Patients who do not currently have the disease but are suspected to have a significant risk of infection are given prophylactic antibiotics or when infection can negatively affect the patient, can be given to naïve or postoperative patients. Prophylactic antibiotics, according to a review of Bunn F, Bell-Syer SV, and Jones DJ greatly reduce the occurrence of IDO (Surgical Area Infection). Patients receiving non-reconstructive breast cancer surgery have reported infection rates for surgical therapy between 3% to 15%, which is greater than typical for clean surgery (Amelia et al., 2019).

Table 2. Number of patients getting antibiotic drugs for cancer patients

No	Drug name	Number of patients
1	Ceftriakson + Cefixin	3
2	Cefixim	2
3	Ceftriakson	2

Based on table 2 regarding the use of cephalosporin class III antibiotics for breast cancer patients treated at RSUD dr. Hasri Ainun Habibie, it was found that the number of patients received 3 patients who received ceftriaxone and cefixim antibiotics, 2 patients only received cefixim antibiotics and 2 more patients only received ceftriaxone antibiotics

In the first table, ceftriaxone and cefixim antibiotics were given to 3 patients, where the two drugs were given at different times where ceftriaxone drugs were given during treatment. On exit, third-generation cephalosporins such as cefixime and ceftriaxone are administered. Although structurally and functionally similar to penicillins, cephalosporins have a wider spectrum of activity due to their increased stability in the presence of β-Lactamase. To treat bacterial infections, doctors prescribe antibiotics such as cefoperazone, cefdinir, cefotaxime, ceftazidime, ceftriaxone, cefixime, cefbutan, cefizoxime, and mosanetan, all of which belong to the third-generation cephalosporin group. The β-Lactamase producing bacteria Haemophilus and Neisseria are susceptible to the killing power of this antibiotic. Ceftriaxone is the first-line treatment for serious infections caused by pneumococcus, meningococcus, and Haemophilus influenzae and is the cephalosporin most effective against penicillin-resistant pneumococci. Dose adjustment is not required for ceftriaxone in renal insufficiency because it is eliminated through the biliary system. In addition, the kidneys are responsible for secreting other third-generation cephalosporins, so dose adjustment may be necessary for renal insufficiency (Katzung, 2018; Marek & Timmons, 2019). While the antibiotic given when the patient goes home is oral cefixime where between cefrtiaxone and cefixime are antibiotics that are still in the same group, namely cephalosporins and still in the same generation, namely the third generation. Due to its stability as a β-Lactamase, its activity and efficacy, and its longest half-life, cefixime was chosen as the first-line oral cephalosporin antibiotic therapy. The way Cefixime works is similar to other cephalosporins, with the exception that it is its vinyl group at position 3 that causes absorption.(Arshad et al., 2012).

Furthermore, there were 2 patients who only received cefixim antibiotic drugs, where the first-line treatment with oral third-generation cephalosporin antibiotics was cefixime because it

was the most efficacious, had the longest half-life, and was resistant to beta-lactamase (Vitaloka et al., 2019). Harahap (2019) mentions "Gram-positive and Gram-negative bacteria can be effectively treated with cefixime. With respect to gram-negative bacteria such as Branhamella catarrhalis, Proteus species, Escherichia coli, and Haemophilus influenzae, cefixime has very strong antibacterial activity, as well as positive bacteria and salts such as Streptococcus sp. and Streptococcus pneumoniae. Cefixime is bactericidal and shows excellent activity against β-lactamase-producing microorganisms while being very stable against these various kinds of bacteria" (Harahap, 2019).

In the next case, there were 2 patients who only received ceftriaxone antibiotics during treatment, where according to Sani Nurlela et al (2018), ceftriaxone had wider efficacy against certain Gram-positive bacteria, as often seen in surgery, and against Gram-negative bacteria, such as Escherichia coli intestinal bacteria. The antibiotic ceftriaxone works against Gram-positive and Gram-negative bacteria; it is a 3rd generation cephalosporin (Tjay &; Rahardja, 2015). Twenty patients were treated with the antibiotic ceftriaxone, with an average hospitalization of four days, and twenty patients were treated with the antibiotic cefotaxime, with an average hospitalization of five days, according to the study of Ainun and Ester (2019). Ceftriaxone and cefotaxime were used as treatment options in this study. Patients treated with ceftriaxone had the shortest average length of hospital stay after the study was completed (Wulandari &; Purba, 2019). Echa and Mardiati's (2017) study, conducted a study on 60 patients in which antibiotic prophylaxis with ceftriaxone was given to 30 patients, and 30 other patients also received ceftriaxone prophylaxis. Acute surgery (cito) was more common among the group receiving the prophylactic antibiotic ceftriaxone (53.2 percent), among other interesting findings from the data set. In contrast, 61.5% more effective surgeries were performed in the group given ceftriaxone prophylactic antibiotics (Aisyah &; Nadjib, 2019).

Ranitidine, omeprazole and lansoprazole in this journal are used to treat side effects that can be produced by painkillers such as ketorolac. Where the use of pain such as ketorolak and other anti-pain will cause gastrointestinal disorders. Based on research conducted by Suparlan (2017), nineteen patients received 150 milligrams of ranitidine every 12 hours. Patients are often given ranitidine first to reduce the risk of experiencing gastrointestinal side effects associated with nonsteroidal anti-inflammatory drugs (NSAIDs), especially ketorolac (Syamsu, 2017). As for omeprazole and lansoprazole are a class of PPI drugs that work by inhibiting the final stage of stomach acid formation (Abdullah &; Gunawan, 2012). When cytotoxic chemotherapy or radiation therapy causes nausea and vomiting, ondansetron may be given to relieve those symptoms. However, ondansetron has been shown to be effective in preventing and treating PONV (BPOM RI, 2015). If the patient experiences nausea and/or vomiting after surgery, a single-dose (4 mg) injection of ondansetron given by intravenous injection immediately after surgery may help relieve symptoms.

According to a study by Fadillah & Santy (2016), breast cancer patients reported a retata pain response of 5.09 before getting a relaxing *hand massage* treatment. After undergoing a relaxing method of hand massage, breast cancer patients reported an average discomfort reduction of 3.09 points. Data shows that the relaxation method of hand massage does help breast cancer patients to reduce discomfort ($\rho = 0.000$) (Fadilah et al., 2018). When greeting clients for a hand massage, it is important to do so in a friendly and considerate manner by turning off unnecessary environmental noise. Customer satisfaction may increase as a result. As a result, each respondent who received the massage will feel an increase in comfort and a decrease in pain, although in a unique way depending on the location and expression of that comfort.

CONCLUSION

Based on data from patient medical records at RSUD dr. Hasri Ainun Habibie, the relationship between anti-pain and antibiotics is closely related to breast cancer patients where the provision of

anti-pain to breast cancer patients to improve the quality of life of patients, especially for patients who have undergone surgery or removal of breast tissue while for antibiotics is to prevent bacterial contamination at the time of surgery and after surgery. Where it is determined, through analysis of the patient's medical records that ketorolac, paracetamol and tramadol are the most commonly prescribed pain medications and ceftriaxone and cefixime are antibiotics that are often prescribed. The most percentage of breast cancer patients occurs in women over the age of 45 years and over.

This research makes a valuable contribution in improving understanding around the care of breast cancer patients at dr. Hasri Ainun Habibie Regional General Hospital. Focusing on the relationship between antibiotic use and painkillers, such as ketorolac, paracetamol, and tramadol, the study deepened understanding of how administering such drugs might affect patients' care and quality of life, especially after surgery or removal of breast tissue. The results provide a solid foundation for developing practical guidance for medical practitioners, allowing the use of antibiotics and painkillers to be more precise and detailed, so as to maximize the benefits of these drugs. In addition, a better understanding of drug use can help optimize the overall care of breast cancer patients, reduce treatment costs, and avoid the risk of antibiotic resistance, which is a growing health problem. As such, this study has the potential to provide real benefits for breast cancer patients and the health care system as a whole.

The implications of this study have a significant positive impact in the context of treating breast cancer patients at dr. Hasri Ainun Habibie Regional General Hospital. One is the potential for improved quality of life for patients, especially post-operative patients, through more precise guidance in pain management and the use of appropriate antibiotics to prevent infection. By showing frequently prescribed antibiotics, such as ceftriaxone and cefixime, can be used to reduce the risk of post-operative infection, the study provides a solid foundation for reducing the negative impacts that can occur post-surgery. In addition, a better understanding of drug use can help optimize the use of health resources and reduce the cost of patient care, which is important in managing resources efficiently. Other implications include the potential development of more effective and efficient treatment protocols for breast cancer patients, which could provide greater benefits to patients, as well as increased awareness among medical practitioners of the importance of appropriate drug use in the treatment of breast cancer patients. Thus, the results of this study have the potential to provide substantial improvements in the care of breast cancer patients and in the management of health resources.

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