**Correlation Between Chemotherapy Response and Degree of Depression Using The Hemilton Depression Rating Scale (HDRS) Method in Stage III Breast Cancer Patients at Abdul Moeloek Hospital Bandar Lampung**

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Breast cancer is the most common cancer in women, the incidence is about 12% of all newly diagnosed cancer cases and breast cancer is 25% of all cancers in women. Breast cancer therapy modalities vary, depending on the stage and condition of the patient. Neoadjuvant chemotherapy is chemotherapy before surgery. Depression is common in breast cancer patients undergoing neoadjuvant chemotherapy. Depression can reduce therapeutic outcomes, therefore it is necessary to give early intervention in the management of depression to improve treatment outcomes.

The research method is descriptive analytic cross sectional, the independent variable is the response to chemotherapy and the dependent variable is the degree of depression using the Hemilton Depression Rating Scale (HDRS) method in stage III breast cancer patients. The study was conducted at the Surgical Oncology Polyclinic and chemotherapy treatment room for the research period from March to August 2021.

Results showed a significant relationship with a correlation coefficient of 0.951 between the response to chemotherapy and the degree of depression using the HDRS method in stage III breast cancer patients at Abdul Moeloek Hospital Bandar Lampung.

Conclusion is that there is a close relationship between chemotherapy response and the degree of depression using the HDRS method, the worse the chemotherapy response, the higher the degree of depression. Therefore, psychotherapeutic support is needed in patients who have a poor response to chemotherapy.

Keywords: Degree of Depression, Breast Cancer, Chemotherapy Response

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**Background**

 Breast cancer is the most common cancer in women and the second most common cancer of all malignant tumors. There were about 2 million new cases in 2018. According to global data, breast cancer is the cancer with the highest incidence of new diseases, which is 24.5% of all cancers in women with a proportion of 25 - 94 among 100,000 population. Breast cancer is also a disease with the second largest mortality rate after lung cancer.1 In Indonesia, breast cancer is a cancer with the highest incidence of 42.1 per 100,000 population with an average death rate of 17 per 100,000 cases.2 Data from the National Cancer Prevention Committee also showed that the number of breast cancer patients increased compared to cervical cancer. This is because early detection of cervical cancer is easier using the Visual Acetic Acid (IVA) and Pap smear methods, and cervical cancer can be prevented by using the Human Papilloma Virus (HPV) vaccine.3

The death rate from breast cancer is quite high because many patients come with the condition late. Many studies prove that with an early detection, breast cancer can save thousands of lives every year. Based on data from the Dharmais National Cancer Center Hospital, the number of breast cancer patients who came in the early stages (stages I and II) was 13.42%, stage III was 17% and more (29.98%) came with an advanced stage ( stage IV). Most of the patients came with recurrence, which was 39.66%. Diagnostic delays can be caused by patient delays, doctor delays, or hospital delays.4

Breast cancer consists of various complex and heterogeneous subtypes that have different clinical characteristics. These various subtypes require individualized treatment. In addition to treatment based on conventional prognostic factors such as menopausal status, age and stage, currently treatment is also based on biomolecular examination.5 Several modalities of breast cancer therapy show possible variations in treatment. The development of surgical techniques, radiation therapy, hormonal therapy, target cell therapy and chemotherapy to alternative or complementary medicine.6

Locally advanced breast cancer (LABC) is stage III breast cancer, the presentation or incidence in Indonesia is still quite high and varies from various education centers, ranging from 40-80%. Included in stage III breast cancer are stage IIIA, IIIB and IIIC breast cancer. Therapy at stage III is recommended in the form of neoadjuvant chemotherapy, neoadjuvant hormonal therapy and neoadjuvant radiation. The role of surgical modalities in LABC is limited, especially in stage IIIA, and in some studies, the administration of neoadjuvant chemotherapy at this stage is still the benchmark. The surgery recommended after neoadjuvant chemotherapy is Modified Radical Mastectomy (MRM) or standard radical mastectomy (Halstedt mastectomy). Postmenopausal patients with hormone receptor positive can be given neoadjuvant hormonal therapy. Assessment of response to neoadjuvant hormonal therapy can be performed 4 months after administration. If unresponsive or progressive, neoadjuvant chemotherapy is given.6

Depression is a medical condition in the form of feelings of sadness that have a negative impact on a person's thoughts, actions, feelings, and mental health. As many as 16% - 25% of patients suffer from cancer as well as depression.7 After the patient was diagnosed with breast cancer in the first year, 48% of women experienced anxiety and depression. Increased levels of anxiety and depression in women with breast cancer cases even reached the pathological clinical phase. There are 3 levels of depression, namely mild, moderate and severe depression. Depression is a painful, sad, hopeless experience accompanied by slowed movement and body function.8

Patients who cannot adjust to their illness will experience anxiety and depression which will lead to decreased immunity, and worsen the disease.9 Risk factors that influence depression in cancer patients include advanced stages, poor pain control and complaints, previous history of depression, alcoholism, endocrine disorders, neurological disorders, and drugs, one of which is chemotherapy. had depression or a previous thought disorder, had difficulty accepting or adjusting to a cancer diagnosis, was young, had problems with alcohol and drugs, cancer occurred while experiencing another stressful event, did not receive family or social support, had previously experienced bad experience when another family member or close friend has cancer, has no confidence in the effectiveness of the treatment, physical changes or physical disabilities, treatments that can cause unpleasant side effects.7

 **Method**

 Analytical descriptive research with cross sectional approach. The researcher wanted to know the relationship between chemotherapy response and the degree of depression using the Hemilton Depression Rating Scale (HDRS) method in stage III breast cancer patients. The study was carried out at the oncology surgery poly and chemotherapy treatment room at the Abdul Moeloek Hospital during March to August 2021.

 **Results**

The study was conducted at the oncology surgery polyclinic and the integrated chemotherapy treatment room at Abdul Moeloek Hospital Bandar Lampung. A total of 52 cases of stage III breast cancer who underwent neoadjuvant chemotherapy and met the research criteria in the period from March to August 2021 were included in this study.

Table 1. Characteristics of the research sample



Characteristics of the study sample, the mean age was 51.29 years, most cases of breast cancer occurred in the left breast (53.8%) with the most stage of breast cancer being Stage III B (84.6%). More than 70% of the subjects in this study suffered from moderate depression and 82.7% of breast cancer cases. in this study had a partial response after undergoing neoadjuvant chemotherapy. To find the relationship between the two research variables, the researcher used the Somers'd correlation test, as presented in table 2 below. The relationship between variables, namely the response to chemotherapy and the degree of depression was said to be statistically significant if the p value <0.05.

Table 2. The relationship between chemotherapy response and the degree of depression



The table above shows the correlation coefficient (r) from the correlation test of 0.951, indicating a close relationship between the chemotherapy response and the degree of depression, while the p-value of 0.000, indicating that there is a significant relationship between the chemotherapy response and the degree of depression using the Hemilton depression rating scale method. stage III breast cancer patient at the Abdul Moeloek Regional General Hospital Bandar Lampung. It can be interpreted that the better the response to therapy, the lighter the degree of depression, on the contrary, the worse the response to chemotherapy, the more severe the degree of depression of the patient.

**Discussion**

The results showed that there was a relationship between chemotherapy response and the degree of depression using the HDRS method in stage III breast cancer patients undergoing neoadjuvant chemotherapy at Abdul Moeloek General Hospital. This is in accordance with the research of Chintamani et al, 2011 which stated that the chemotherapy response had a direct correlation with the degree of depression and anxiety levels that occurred in the respondents. There are several risk factors that can increase the potential for depression in breast cancer patients. One of the risk factors is medication, there are many types of drugs that have side effects of depression. Examples are: analgesics, anticonvulsants, antihistamines, anti-inflammatory agents, anti-malignants, chemotherapeutic agents, hormones, immunosuppressive agents and steroids.11

Long treatment processes, long treatment queues, periodic laboratory examinations, chemotherapy treatments, polypharmacy chemotherapeutic drugs and the unfinished Covid-19 pandemic can also increase the potential for depression in breast cancer patients. Many cancer patients who are undergoing chemotherapy therapy sessions, experience depression or emotional instability also because the expected results are not in line with expectations. This causes a lot of stress or pressure because the patient has to repeat the chemotherapy that has been done with the replacement of chemotherapy drugs of various types and the side effects of chemotherapy are very many.

Depression is more common in adults, the cause is thought to be related to genetic factors, hormones and chemicals in the brain. Some of the triggering factors include having experienced life trauma, having a chronic/serious disease, taking certain drugs, having mental stress, having the wrong mindset and having other mental disorders. In chemotherapy patients whose chemotherapy response is not as expected is one of the stressors that triggers the onset of depression.

Depression is a mood disorder characterized by feelings of deep sadness and indifference. A person is said to be depressed if he has felt sad, hopeless, or worthless for 2 weeks. Depression that is allowed to continue and does not get treatment can lead to a decrease in work productivity, disruption of social relations, and even the desire to commit suicide.

The treatment for depression can be done in the following ways: doing psychotherapy, giving antidepressant drugs, giving shock therapy and even being treated in a hospital. Therefore, the researcher recommends that stage III breast cancer patients undergoing neoadjuvant chemotherapy whose response is not as expected, to consult a psychiatrist so that the degree of depression can be suppressed or minimized. So that the patient will not fall into a more severe degree of depression because of the stressor factor that was triggered.8,9

 **Conclusion**

In stage III breast cancer patients undergoing neoadjuvant chemotherapy at Abdul Moeloek Hospital Bandar Lampung, the response to chemotherapy was 82.7% partial response, 11.5% stable disease and 5.8% progressive disease. The degree of depression using the Hemilton depression rating scale (HDRS) method was 9.6% mild, 71.2 moderate, 17.3% severe and 1.9% very severe. There is a significant relationship with a correlation coefficient of 0.951 between the response to chemotherapy and the degree of depression.

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