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Factors Affecting Breast Cancer Incidence in Murni Teguh Memorial Hospital Medan

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ABSTRACT

This type of research is analytic observational with case-control approach. The population in this study were all breast cancer patients in Murni Teguh Memorial Hospital in 2016 as many as 2536 cases. The sample of this research is a case that amounted to 50 respondents that all affected by breast cancer taken by purposive sampling and control of 50 respondents not cancer. This study was conducted at Murni Teguh Memorial Hospital with an estimated time of 8 weeks. The results showed that there was a correlation between age of menarche and incidence of breast cancer (p=0.003; OR=2.638 95% CI 0.735-9.644), there was parity correlation with incidence of breast cancer (p=<0.001; OR=5.3 95% CI 3.720-23.415), It is important to regularly eat foods that contain fiber. Avoid alcohol and cigarettes, control weight with a balanced diet and exercise, and use drugs or contraceptives should be with doctor’s instructions.

Keywords: Breast Cancer, Age of Menarche, Parity, Smoking, Family Breast Cancer History.

INTRODUCTION

Breast cancer is an important public health problem, because of its high mortality and morbidity. The number of cases of breast cancer in the world ranked second after cervical cancer. It is estimated that worldwide over 508,000 women die in 2011 due to breast cancer. Based on research data Harianto et al at Dr. Hospital. Cipto Mangunkusumo in 2005, breast cancer risk factors include family history with breast cancer (15.79%), early menarche (8.77%), nullipara (7.02%) and long-term estrogen-containing pills (42.11%). The etiology of breast cancer cannot be explained. However, many studies have shown that there are several factors related to the increased risk or the likelihood of breast cancer. These factors are risk factors that include reproductive factors such as menarche or first menstrual age of less than 12 years, menopause at the age of more than 50 years, giving birth to the first child aged over 35 years; Endocrine factors such as long-term use of oral contraceptives; Diets such as fatty foods, alcohol; Genetic or family history, exposure to ionizing radiation during breast growth.

In addition there are several other factors that allegedly increase the incidence of breast cancer is socio-demographic factors that include age, socio-economic status, and factors of sexual activity that includes the age of first time having sex, smoking, family history of disease, and the use of oral contraceptives in the long term More than 4 years¹. There’s other risk factors are suspected to affect the incidence of breast cancer that is late menopause, history of breastfeeding, and obesity, while according to a research that there is a relationship between age, height, family history, menstrual age First, the age of first pregnancy with the incidence of breast cancer but the history of breastfeeding has nothing to do with the incidence of breast cancer.² Based on the results of previous studies on breast cancer, the authors want to see these factors correctly affect the occurrence of breast cancer and see the possibility of new risk factors that may be related to the type of personality in patients who visit the Murni Teguh Memorial Hospital, Medan Year 2017. Based on the above background, it can be formulated that the problem in this study are the risk factors that affect the incidence of breast cancer in Murni Teguh Memorial Hospital Medan in 2017. To know the risk factors that affect the incidence of breast cancer in Murni Teguh Memorial Hospital Medan 2017.
MATERIALS AND METHOD

This research is analytic observational with case-control approach. The case control study is a research design comparing case and control groups to determine the proportion of events based on the history of presence or absence of exposure. In other words, the effects/dependent variables are identified today, and then the risk factors are identified in the past.

RESULTS

Results of Bivariate Analysis

Table 1 Cross tabulation Menarche Age Relation with Breast Cancer Incidence at Murni Teguh Hospital Medan Year 2017

<table>
<thead>
<tr>
<th>Menarche age</th>
<th>Breast Cancer Incidence</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Case</td>
<td>Control</td>
<td>$p$ value</td>
<td>OR</td>
<td>95%CI</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>$\leq$12 year</td>
<td>36</td>
<td>72.0</td>
<td>42</td>
<td>84.0</td>
<td>0.003</td>
</tr>
<tr>
<td>$&gt;$12 year</td>
<td>14</td>
<td>28.0</td>
<td>8</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td>50</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows that in the case group there were 36 people (72%) with menarche age $\leq$12 years and 14 people (28%) with age $>$ 12 years. While in the control group there were 42 people (84%) aged $\leq$12 years and 8 people (16%) $>$ 12 years old. The results of statistical tests showed that there was a correlation between age of menarche and incidence of breast cancer ($p = 0.003; OR = 2.638$ 95% CI $0.735-9.644$) meaning that menarche age at risk of enhancing incidence of breast cancer. Women with age menarche $\leq$ 12 Years have a risk 2,638 times higher for breast cancer.

Table 2 Cross tabulation of Parity Relationship with Breast Cancer Incidence at Murni Teguh Hospital Medan Year 2017

<table>
<thead>
<tr>
<th>Parity</th>
<th>Breast Cancer Incidence</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Case</td>
<td>Control</td>
<td>$p$ value</td>
<td>OR</td>
<td>95%CI</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>$&lt;$1 and $&gt;$3 person</td>
<td>40</td>
<td>72.7</td>
<td>15</td>
<td>27.3</td>
<td>0.000</td>
</tr>
<tr>
<td>1-3 person</td>
<td>10</td>
<td>22.2</td>
<td>35</td>
<td>77.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td>50</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows that in the case group there were 40 people (72.7%) parity $<$1 and $>$ 3 people, and 10 people (22.2%) parity 1-3 people. While in the control group there were 15 people (27.3%) parity $<$1 and $>$ 3 people, and 35 people (77.8%) parity 1-3 people. The results of statistical tests showed that there was a parity relationship with the incidence of breast cancer ($p = <0.001; OR = 5.3$ 95% CI $3.720-23.415$) meaning that parity $<$1 and $>$ 3
people had a 5.3% greater risk of developing breast cancer compared with the parity of 1-3 people.

Table 3 Cross tabulation of Obesity Relationship with Breast Cancer Incidence at Murni Teguh Hospital Medan Year 2017

<table>
<thead>
<tr>
<th>Obesities</th>
<th>Breast Cancer Incidence</th>
<th>Case</th>
<th>Control</th>
<th>p value</th>
<th>OR</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>IMT &gt;25 kg/m²</td>
<td></td>
<td>47</td>
<td>82.5</td>
<td>10</td>
<td>17.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>IMT ≤25 kg/m²</td>
<td></td>
<td>3</td>
<td>7.0</td>
<td>40</td>
<td>93.0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>50</td>
<td>100.0</td>
<td>50</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows that in the case group there were 47 people (82.5%) of respondents with BMI>25 kg/m², and 3 people (7.0%) respondents with IMT≤25kg/m². While in the control group there were 10 people (17.5%) respondents with IMT≤25kg/m², and 40 people (93.0%) respondents with IMT≤25kg/m². The results of statistical tests showed that there was an association of obesity with breast cancer incidence (p=<0.001 OR=8.7 95% CI 3.127-43.516). This means that respondents who have BMI>25kg/m² have an 8.7% greater risk of breast cancer than IMT≤25kg/m².

DISCUSSION

Menarche Age with Breast Cancer Incidence

Breast cancer is the most common cancer in women, and sex hormones can also influence its development. The earlier start menstruation, and the more menopause, in other words the earlier the period menstruation greater risk of breast cancer. The results showed that there was a correlation between age of menarche and incidence of breast cancer with value (p=0.003; OR=2.638 95% CI 0.735-9.644) meaning that menarche age at risk of enhancing incidence of breast cancer. Women with age menarche ≤12 Years have a risk 2.638 times higher for breast cancer. The results of this study are in line with the results of research conducted. Which states that there is a relationship between age factor menarche with incidence of breast cancer in RSU Dadi Keluarga Purwokerto.

Estrogen can serve as a promoter for certain cancers such as breast cancer. High estrogen levels in women who experience menstruation, the risk of breast cancer is increased in women who menstruated earlier and reach menopause slow. Early menstruation age is associated with prolonged exposure to estrogen and progesterone in women who affect tissue proliferation including breast tissue. Early menarche will lead to a large number of menstrual cycles and repeated estrogen closure having a stimulating effect on the mammary epithelium thus increasing Possible breast tissue abnormalities.

Parity with Breast Cancer Incidence at Murni Teguh Hospital Medan Year 2017

The results showed that in the case group there were 40 people (72.7%) parity <1 and> 3 people, and 10 people (22.2%) parity 1-3 people. While in the control group there were 15 people (27.3%) parity <1 and> 3 people, and 35 people (77.8%) parity 1-3 people. The results of statistical tests showed that there was a parity relationship with the incidence of breast cancer (p=<0.001; OR=5.3 95% CI 3,720-23,415) meaning that parity <1 and> 3 people had a 5.3% greater risk of developing breast cancer Compared with the parity of 1-3 people. The results of this study are in line with the results of research conducted by Prabandari, et al (2014) in RSU Dadi Keluarga Purwokerto stating there is a relationship between parity factors with the incidence of breast cancer.

Parity is a state that shows the number of children ever born. Women who have never had a child (nullipara) have an incidence 1.5 times higher risk than women with multiple children (multiparas). In women who already
have children, various hormones will appear in the body and act as a buffer in the body. Thus, when the hormone estrogen is not balanced, it is likely to trigger the formation of cancer in the breast. The result of logistic regression analysis showed that \( p=0.027; \ OR=7.2 \ 95\% \ CI \ 1.258-41.713 \) means that parity <1 and > 3 people had a 7.2% greater risk of developing breast cancer compared to 1-3 persons.

**Obesity with Breast Cancer Incidence**

Obesity is an increase in body weight beyond the needs of the order and physical, as a result of excessive accumulation of fat in the body, thus showing an imbalance between high and weight because of body fat in the body. The result of logistic regression analysis showed that \( p=0.027; \ OR=7.2 \ 95\% \ CI \ 1.258-41.713 \) means that parity <1 and > 3 people had a 7.2% greater risk of developing breast cancer compared to 1-3 persons.

The results showed that in the case group there were 47 people (82.5%) respondents with BMI>25kg/m2, and 3 people (7.0%) respondents with IMT≤25kg/m2. While in the control group there were 10 people (17.5%) respondents with IMT≤25kg/m2, and 40 people (93.0%) respondents with IMT≤25kg/m2. The results of statistical tests showed that there was an association of obesity with breast cancer incidence \( p=<0.001; \ OR=8.7 \ 95\% \ CI \ 3.127-43.516 \). This means that respondents who have BMI>25kg/m2 have an 8.7% greater risk of breast cancer than IMT≤25kg/m2.

The results of this study are in line with research at the Hospital PKU Muhammadiyah Yogyakarta, that there is a relationship between obesity with breast cancer incidence. Low physical activity will increase the risk of breast cancer. It is related to the hormone estrogen produced by fat cells. The more a person’s fat cells, the higher the level of estrogen in the body. The hormone estrogen in the body will trigger the growth of cancer cells in the breast thus increasing the risk of breast cancer.

A study published by Science Translation Medicine shows that obesity affects changes in breast tissue consistency. When the extracellular matrix is hardened and rigid then this will create the optimal state for the growth of cancer cells.

The results showed that the value \( p=<0.001; \ OR=8.9 \ 95\% \ CI \ 2.079-49.406 \), means that respondents who had BMI>25kg/m2 had an 8.9% greater risk of developing breast cancer than IMT≤25Kg/m2. The body will make some of the estrogen in the fat tissue so that fat women have higher levels of estrogen hormone than normal estrogen levels. High levels of estrogen can trigger an increased risk of cancer.

The results of this study are in line with research that states that there is an increased risk of breast cancer in women with a large Body Mass Index, the risk of obesity will increase because of increased estrogen synthesis in fat deposits that affect the proliferation of breast tissue. Breast cancer risk factors are almost entirely directly or indirectly associated with unused and remaining estrogens in the body or estrogen that are not matched by progesterone.

**Family History with Breast Cancer Incidence**

The results showed that in the case group there were 13 people (26.0%) of respondents who have family history and 37 people (74%) of respondents with no family history. While in the control group there were 8 people (16.0%) of respondents who have family history and 42 people (84%) of respondents with no family history. The results showed that there was no association between family history and incidence of breast cancer \( p=0.326; \ OR=1.8 \ 95\% \ CI \ 0.699-4.941 \), meaning that respondents who have a family history risk 1.8 more suffering from breast cancer compared with Respondents who do not have a family history with 95% CI means research can be trusted truth is 95%.

The stronger the alleged family history at risk is a risk factor for breast cancer. Women of childbearing age with a family history are at risk (there is a family history of having blood relations with respondents who have or are suffering from breast cancer having a 1.8 times higher risk of developing breast cancer compared to women of childbearing age without a family history at risk of breast cancer. Epidemiologically the tendency of cancer is familial, meaning that a woman with breast cancer mothers is more likely to suffer from breast cancer than women of mothers who do not suffer from the disease. The risk of breast cancer is higher in women with close blood relationships having this disease. Having a relative first degree (mother, sister, or girl) with breast cancer is about twice the risk of a woman. Having the first 2 levels of relatives increases her risk by about 3-fold. The discovery that breast cancer is genetically inherited has raised questions about genetic screening. Breast cancer cases are considered hereditary, meaning that they result directly from a gene defect (called a mutation) inherited.
The most influential risk factors for the incidence of breast cancer is obesity which has the value of Odds Ratio of 8.9 which means increase the risk of breast cancer by 8.9 times higher than women who are not obese. Obesity becomes one of the risk factors of breast cancer incidence continues to increase every year. It is related to the hormone estrogen produced by fat cells. The more a person’s fat cells, the higher the level of estrogen in the body.

CONCLUSIONS

Exposure (age of menarche) has a protective effect or reduces the risk of breast cancer incidence.

There is a parity relationship with the incidence of breast cancer, parity <1 and > 3 people have a 7.2% greater risk of developing breast cancer than the 1-3-person parity.

There is an association of obesity with breast cancer incidence, respondents who have BMI>25kg/m2 have an 8.7% greater risk of breast cancer than IMT≤25kg/m2.

Respondents who have a family history risk 1.84 more suffering from breast cancer compared with respondents who do not have a family history.

Respondents who had BMIs>25kg/m2 had an 8.9-percent greater risk of developing breast cancer than BMI≤25kg/m2.

Conflict of Interest : None

Ethical Clearance : From Research Institute of Sumatera Utara University and the Faculty of Public Health University of Sumatera Utara.

Funding : Self

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