Risk Factors for Breast Cancer in Undata Hospital, Palu

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ABSTRACT

Breast cancer is the most common cancer in women, and men have a 1: 1000 chance of developing this disease. One in three people in the world will create some form of cancer in their lifetime, and in women, the most likely is breast cancer. This research is defined as an analytical study which aims to obtain an explanation of the risk factors associated with a disease. The method used was observational with a case-control approach, which is an epidemiological study design that studies the relationship between exposure and disease by comparing the case group and the control group, the sample size in the study, both cases and controls, each of 30 people. Based on the results of the study, age is a protective factor against the incidence of breast cancer at Undata Hospital Palu with an OR = 0.87 95% CI = 0.316-2.14, age of menarche is a risk factor for breast cancer with an OR = 1.52 CI 95% = 0.53-4.36, age at first gestation is a risk factor for the incidence of breast cancer in Undata Palu Hospital OR = 1.31 95% CI = 0.47-3.65, a history of breast cancer is a risk factor for the incidence of breast cancer in RSUD Undata Palu OR = 1.30 95% CI = 0.47-3.61. The hospital should cooperate with the city and provincial health offices in terms of promotion and prevention of breast cancer so that people know about breast cancer risk factors and people can carry out early detection so that breast cancer can be prevented or detected early and people living with breast cancer can be reduced by checking your breasts (BSE).

Keywords - Age of Menarche, Age of First Pregnancy, Family History, Incidence of Breast Cancer.

INTRODUCTION

Breast cancer is the most common cancer in women, and men have a 1: 1000 chance of developing this disease. One in three people in the world will create some form of cancer in their lifetime, and in women, the most likely is breast cancer. Cancer is one of the leading causes of death worldwide and the largest cause of death every year (1).

According to data from GLOBOCAN (Global Burden of Cancer), the International Agency for Research on Cancer (IARC), shows that in 2018 there were 18.1 million new cases of cancer with a mortality rate of 9.6 million deaths, of which one in five is male. And one in six women in the world experience cancer incidence. The data also stated that one in eight men and one in eleven women died of cancer. Breast cancer ranks first as the most

common type of cancer affecting women in the world. Breast cancer has a contribution of 24.2% of the total new cases of cancer, and breast cancer ranks first of cancer deaths in women with a gift of 15% of all unique patients of cancer overall diagnosed in 2018 (2).

Based on data from the International Agency for Research on Cancer (IARC) 2018, the incidence rate of cancer in Indonesia is 136.2 per 100,000 population in the 8th position in Southeast Asia, while in Asia it is at 23rd, the highest incidence rate for men is lung cancer, namely of 19.4 per 100,000 population with an average death rate of 10.9 per 100,000 people. While the incidence rate for women, breast cancer is the highest case at 42.1 per 100,000 people with an average death rate of 17 per 100,000 population followed by cervical cancer at 23.4 per 100,000 with an average death rate of 7.6 per 100,000 people (3).

Based on data from Basic Health Research (Riskesdas) in 2018, the prevalence of tumours/cancer in Indonesia shows an increase of 1.4 per 1000 population in 2013 to 1.8 per 1000 people in 2018. The province with the highest cancer prevalence is DI Yogyakarta 4, 86 per 1000 people, followed by West Sumatra 2.47 per 1000 people, Gorontalo 2.44 per 1000 people and Central Sulawesi 2.33 per 1000 population (3)

The Regional General Hospital (RSUD) Undata Palu is a national referral hospital located in Central Sulawesi Province. Medical Record Data of the Undata Hospital Palu at the Surgical Polyclinic, the number of breast cancer cases was 160 cases in 2016,152 instances in 2017, 109 points in 2018 and 2019 in November the number of breast cancer cases was 30 cases.

More than 25% of women diagnosed with cancer (one in four) are breast cancer. Until now it is not sure what causes this cancer to occur, but several risk factors cause a woman to be more likely to suffer from breast cancer, namely age at diagnosis by a doctor, age at menstrual menarche, age at first pregnancy and family history. Almost all breast cancer can be identified by identifying existing risk factors, knowing these risk factors will make it easier for us to determine whether the woman is classified as high risk or not, so that breast cancer can be detected early (4).

Breast cancer can occur at any age, although nearly two-thirds of all breast cancers in women are experienced by women aged 50 years and over. The risk of breast cancer is 2-4 times greater in women who experience early menarche, namely before the age of 12 years. First pregnancy 35 years or more giving birth to the first child has a higher risk of breast cancer. If the mother, younger siblings, and sisters have breast cancer (especially before the age of 40 years), then the risk of breast cancer is higher (5).

Women aged> 50 have a risk with an OR = 13,600, which means that respondents aged> 50 years have a chance of 13,600 times experiencing breast cancer when compared with respondents aged ≤ 50 years (6). The age at birth for the first child ≥ 30 years had a risk of developing breast cancer by 4.99 times higher than the age at birth for the first child <30 years (OR = 4.99) and menarche <12 years had a risk of developing cancer. Breasts were 6.66 times higher than menarche ≥ 12 years (OR = 6.66) (7). According to the results of research by Yulianti et al. In 2016, women with a family history of breast cancer had a

risk of 1.148 more than women without a family history of breast cancer (OR = 1.148). The purpose of this study was to determine the Risk Factors for Breast Cancer in Undata Hospital, Palu.

METHODOLOGY

This type of research is the method used is observational with a case-control approach, which is an epidemiological study design that studies the relationship between exposure and disease by comparing the case group and the control group based on their exposure status. Where in this study, the authors wanted to know the risk factors for the incidence of breast cancer at Undata Hospital Palu. This research was conducted in June-July 2020 and was carried out at Undata Hospital Palu.

RESULT

Table 1. Age risk factors with the incidence of breast cancer at RSUD Undata Palu.

Age	Breast Cancer Incidence				Total		OR (95% CI)
	Case		Control				
	F	%	F	%	N	%	
Risky	16	53,3	17	56,7	33	55,0	0,87(0,316-2,418
Not Risky	14	46,7	13	43,3	27	45,0	
Total	30	100	30	100	60	100	

Based on table 1, it shows that the distribution based on age factors in the case group has a risk proportion of 16 (53.3%) who are not at risk 14 (46.7%), while the control group at risk 17 (56.7%) who is not at risk 13 (43.3%). With the results of the OR calculation, the OR = 0.87 results with 95% Confidence Interval (CI) = 0.31-2.418.

From the results, it can be interpreted that age is a protective factor against the incidence of breast cancer.

Table 2. Risk Factors for Menarche Age with Breast Cancer Incidence at Undata Hospital, Palu.

Age	Breast Cancer Incidence				Total		OR (95% CI)
	Case		Control				
	F	%	F	%	N	%	
Risky	20	66,7	17	56,7	37	61,7	1,52(0,53-4,36
Not Risky	10	33,3	13	43,3	23	38,3	
Total	30	100	30	100	60	100	

Based on table 2, it shows that the distribution based on the age factor of menarche in the case group has a risk proportion of 20 (66.7%) who is not at risk 10 (33.3%), while the control group who is at risk 17 (56.7%) is no risk 13 (43.3%). With the results of the OR calculation, the OR = 1.52 results with 95% Confidence Interval (CI) = 0.53-4.36.

From these results, it can be interpreted that people with menarche age <12 years have a risk of developing breast cancer 1.5 times greater than people whose menarche age is ≥12 years.

Table 2. Risk Factors for Age of First Pregnancy with the Incidence of Breast Cancer at Undata Hospital Palu.

Age of First Pregnancy	Breast Cancer Incidence				Total		OR(95% CI)
	Case		Control				
	F	%	F	%	N	%	
Risky	14	46,7	12	40,0	26	43,3	1,31(0,47-3,65
Not Risky	16	53,3	18	60,0	34	56,7	
Total	30	100	30	100	60	100	

Based on table 2, it shows the distribution based on the first gestational age factor in the case group having a risk proportion of 14 (46.7%) who were not at risk 16 (53.3%), while the control group at risk was 12 (40.0%) who were not at risk 18 (60.0%). With the results of the OR calculation, the OR = 1.31 results with 95% Confidence Interval (CI) = 0.47-3.65.

From these results, it can be interpreted that people whose first gestational age <20-≥35 years have a risk of developing breast cancer 1.3 times greater than people whose early gestation age is 20-30 years.

Table 3. Risk Factors for Family History with the Incidence of Breast Cancer at Undata Hospital Palu.

Age of First Pregnancy	Breast Cancer Incidence				Total		OR (95% CI)
	Case		Control				
	F	%	F	%	N	%	
Risky	15	50,0	13	43,3	28	46,7	1,30(0,47-3,61)
Not Risky	15	50,0	17	56,7	32	53,3	
Total	30	100	30	96,5	60	100	

Based on table 3, the distribution based on the age factor of menarche in the case group has a risk proportion of 15 (50.0%) who is not at risk 15 (50.0%), while the control group who is at risk 13 (43.3%) who is not at risk 17 (56, 7%). With the results of the OR calculation, the OR = 1.30 results with 95% Confidence Interval (CI) = 0.47 - 3.61.

From these results, it can be interpreted that people with a family history have a risk of developing breast cancer 1.3 times greater than people without a family history.

DISCUSSION

Age Risk Factors with Breast Cancer Incidence at Undata Hospital Palu

Based on the bivariate analysis, the results of the calculation of the odds ratio with OR = 0.8 showed that age is a protective factor for breast cancer.

According to the assumptions of the researchers, age is a protective factor for the incidence of breast cancer in women at the Undata Hospital Palu because the older a woman is, the higher the risk of suffering from breast cancer, this is because cancer has had time to develop which occurred many years earlier. The older a woman is, the longer it takes a woman to be exposed to chemicals so cancer can develop.

The results of this study are by the theory that breast cancer can occur at any age, although nearly two-thirds of all breast cancer in women is experienced by women aged 50 years and over. The older a woman is, the higher the risk for breast cancer. The first damage to cells occurs years before, and cancer has time to develop (8).

Risk Factors for Menarche Age with Breast Cancer Incidence at Undata Hospital, Palu

Based on the bivariate analysis, the results obtained were OR = 1.52. This means that people whose menarche age is less than <12 years have a 1.5 times greater risk of developing breast cancer than people whose menarche age is ≥ 12 years.

According to the assumption of researchers that women who experience premature menarche, namely before the age of 12 years, the duration of estrogen exposure is longer, and the risk of developing breast cancer is slightly higher. When a woman experiences her

first menstruation, the ovarian cycle function that produces estrogen begins. The amount of exposure to estrogen and progesterone in a woman during her lifetime is believed to be a risk factor. The longer a woman is exposed, the higher the risk for breast cancer. Apart from the time she was told, the regularity of the menstrual cycle also plays a role. Cycle regularity describes the frequency of exposure, so the sooner a woman has regular menstruation since her first period, the woman will get a higher exposure than women who have slow menstrual regularity or have a long menstrual cycle.

The results of this study are in line with several courses, regarding the risk factors for women's breast cancer that there was a relationship between the age of first menstruation (menarche) and breast cancer with a ρ value of 0.00 and an OR of 6.66 (95% CI: 2, 84-15.65) (9). The analysis of reproductive risk factors associated with the incidence of breast cancer in women, there is a relationship between the age of first menstruation (menarche) and breast cancer with a ρ value of 0.001 and an OR of 5.76 (95% CI: 2.08-15, 97) (10). According to research by Dewi and Hendrati in 2015 regarding breast cancer risk analysis based on a history of hormonal contraceptive use and age of menarche, there was a relationship between the age of first menstruation (menarche) with ρ value 0.031 and OR 3.49 (95% CI: 1.11 -10.91) (11).

The results of this study are by the theory that the earlier the age of the first menstruation (menarche), the greater the risk of suffering from breast cancer. The risk of developing breast cancer is 2-4 times greater in women who experience menarche before the age of 12 years.

Women who experience early menarche, namely before the age of 12 years, experienced higher exposure to estrogen, this is known to increase the risk of developing breast cancer. The risk of breast cancer decreases by about 10% every two years after the first menstrual period (menarche). The sooner a woman menstruates, the longer her breast tissue can be exposed to harmful substances that cause cancer such as chemicals, estrogen, or radiation (12).

Risk Factors for Age of First Pregnancy with the Incidence of Breast Cancer at Undata Hospital Palu

Based on the bivariate analysis, the results were obtained with OR = 1.31. This means that people whose gestational age is less than <20-≥35 years have a 1.3 times greater risk of developing breast cancer than people whose first pregnancy is 20-30 years.

According to the researchers' assumption that women who are pregnant with their first child aged <20-≥35 years will be at risk of developing cancer than women who are pregnant with their first child aged 20-30 years because the older they have their first child, the greater the risk of developing breast cancer. At the age of 30 years of giving birth to a child, the risk of developing cancer will increase. This is thought to be due to the stimulation of pregnancy-induced maturation of breast cells, making these cells more sensitive to changes towards malignancy (13).

The results of this study are in line with Anggorowati's 2013 research on risk factors for breast cancer in women that there is a relationship between age at first pregnancy and breast cancer in women with a ρ value of 0.00 and OR 4.99 (95% CI: 1.90-13, 87) (14).

In one study, it was found that the first gestational age had a more significant impact on the risk of breast cancer than the next gestational age. When a woman becomes pregnant, the breast cells become mature (maturity), thereby reducing the risk of developing breast cancer. Also, pregnancy will decrease the number of menstrual cycles a person has. The hormones estrogen and progesterone play an important role in shaping a person's menstrual cycle. By reducing the number of menstrual cycles, the body's exposure to these hormones will also reduce, this can reduce the risk of breast cancer (15).

Risk Factors for Family History with Breast Cancer at Undata Hospital Palu

Based on the bivariate analysis, the results were obtained with OR = 1.30. This means that people with a history of breast cancer have a 1.3 times greater risk of developing breast cancer than people without a history of breast cancer.

According to the researchers' assumption that women who have a family history will be at risk of developing breast cancer than women who do not have a family history because if the mother, sister, sister, brother have breast cancer (especially before the age of 40 years), the risk of developing breast cancer is higher. The risk can be doubled if there is more than one nuclear family member who has breast cancer, and the younger the family member has cancer, the greater the disease is hereditary.

The results of this study are in line with several courses, regarding the risk factors for breast cancer at the Labuang Baji Makassar Hospital that family history of breast cancer with OR 4.571 (95% CI: 1,383-15,109) which means women with a family history of cancer. Breasts had a 4.571 times greater risk of developing breast cancer compared with no family history of breast cancer.

Women with a family history of having breast cancer in their mother, sister or brother have a 2 to 3 times higher risk. There are mutations in several genes that play an essential role in the formation of breast cancer; the genes in question are several genes that are oncogenes and genes that are tumour-suppressing. Tumor suppression genes that play an essential role in the formation of breast cancer include the Breast Cancer 1 gene (BRCA 1) and the BReast CAncer 2 (BRCA2) gene.

The breast cancer genes BReast CAncer BRCA1 and BReast CAncer BRCA2 showed that this woman had an 80% chance of developing breast cancer and a 50% chance of inheriting this gene. If a woman has one of these genes, the risk of developing breast cancer is considerable.

CONCLUSIONS

From the results of the study and discussion, it can be concluded that: 1) Age is a protective factor against the incidence of breast cancer at Undata Hospital Palu with an OR = 0.87 95% CI = 0.316-2.418. 2) Age of Menarche is a risk factor for the incidence of breast

cancer at Undata Hospital Palu with an OR = 1.52 95% CI = 0.53-4.36. 3) First gestational age is a risk factor for the incidence of breast cancer at Undata Hospital Palu with an OR = 1.31 95% CI = 0.47-3.65. 4) Family history is a risk factor for the incidence of breast cancer at Undata Hospital Palu with an OR = 1.30 95% CI = 0.47-3.61.

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