Breast Cancer Patient Characeristics By Menarche In Adam Malik Hospital 2014-2017

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Abstract. Background. Breast cancer is one of the most diagnosed cancer in the world. Breast cancer starts when the breast cell grows abnormally and turns malignant. In Indonesia, breast cancer is the most diagnosed cancer in women. Up to now, the cause of breast cancer has not been identified yet. There are many factors that increase the risk of breast cancer, one of them is the early age of menarche. **Objective**. This study aim was to obtain characteristics of breast cancer patients based on age of menarche in RSUP Haji Adam Malik over 2014 -2017. **Method.** The study designed is observational with descriptive method. We used total sampling technique to get sampels. **Results**. Based on general characteristics, the majority of breast cancer patients are in the range of 40-49 years old (38,5%), graduated high school (45,2%), unemployed (66,3%), and do not have family history (94,2%). Majority of patients have stadium IIIB breast cancer (41,3%). The most diagnosed histopathology is Invasive Ductal Carcinoma (78,8%). Majority of breast cancer patients have negative estrogen receptor (67,3%), negative progesterone receptor (67,3%), negative her2 (66,3%) and positive ki-67 (67,3%). Fifty three breast cancer patients (51%) have early menarche. Based on the age of menarche, the patient with early menarche mostly has stage three breast cancer, but the age of menarche does not give a specific characteristic in histopathology and immunohistochemistry. **Conclusio**n. Age of menarche gives specific characteristic in staging but not in histopathology and immunohistochemistry.

Keyword: *Breast cancer, Characteristic, Histopathology, Immnohistochemistry, Menarche, Sociodemographic, Staging*

1   Introduction

Breast cancer is the most diagnosed cancer in woman. It is the most common new cases cancer in the world, second only to lung cancer. (1) In 2018, there were estimated 2.1 million brast cancer cases among women in the world and aproximately 627.000 women died from breast cancer (2). Breast cancer is one out of four cancer that caused the deatth of women in the world, (3) In Indonesia, breast cancer has the highest prevalence in women with 42,1 cases per 100.000 citizen and estimation of 17 death per 100.000 patients. (4) The etiology of breast cancer is still unclear,but studies has shown that the risk of breast cancer is combination of factors such as age

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above 55 years old, obesity, smoking, genetic factor, and hormonal factor. (5) The hormonal factor is related to estrogen hormone. This hormone is responsible for the development and regulation of female reproductive system. This hormone can also act as the promotor of breast cancer. (6) One of the hormonal risk cancer is the age of menarche. Even though the age of menarche is one of the well-established factor of breast cancer, some study has shown that there are no significant relation between them. (7). In this study we try to find out the evidence of breast cancer with menarche.

2　　Methods

This study was an observational descriptive study with cross-sectional methods. We collected secondary data from medical records. Data were collected at Haji Adam Malik General Hospital Medan. The population in this study is hospitalized breast cancer patients from January 2014-December 2017. The samples that were included in this study are breast cancer patient with confirmed histopathology examination and has complete data in characteristics that are needed in this study, such as age of menarche, staging, histopathology and immunohistochemistry . All collected data were performed in distributive frequency tables..

3　　Results

From January 2014 untill December 2017 periode, there are 1222 hospitalized breast cancer patients. Among 1222 patients, there are only 104 patients who are suitable in the criteria of this study. General characteristic of Brest Cancer Patients can be seen at table 1

Table 1. Distribution of General Characteristic of Breast Cancer Patients

Characteristic	Frequency	Percentage
Gender		
Female	104	100%
Male	0	0%
Age		
<30	0	0%
30-39	8	7,7%
40-49	40	38,5%
50-59	35	33,7%
60-69	17	16,3%
70-79	4	3,8%
>80	0	0%
Education		
Primary School	24	23,1%
Junior high school	14	13,5%
Senior high school	47	45,2%
University	19	18,3%
Occupation		
Unemployed	73	70,2%
Civil service employee	21	20.2%
Farmer	6	5,8%
Businessman	4	3,8%

Family History		
Yes	6	5,8%
No	98	94,2%

From the table above, we found that there was no male who got breast cancer in this study. Prevalence of breast cancer mostly over 40 years old, and 94,2% of them didn't have family history.

Table 2. Sample Distribution of Breast Cancer Patients Based on Menarche

Characteristic	Freruency by Age of Menarche (years)					
	≤12	%	13-15	%	>15	%
Total Case	53	(51%)	47	45,2%	4	3,8%
Staging						
0	0	(0%)	0	(0%)	0	(0%)
IA	0	(0%)	0	(0%)	0	(0%)
IB	1	(1,9%)	0	(0%)	0	(0%)
IIA	0	(0%)	1	(2,1%)	0	(0%)
IIB	5	(9,4%)	11	(23,%)	0	(0%)
IIIA	5	(9,4%)	2	(4,2%)	0	(0%)
IIIB	22	(41,5%)	18	(38,3%)	3	(75%)
IIIC	1	(1,9%)	2	(4,2%)	0	(0%)
IV	19	(35,8%)	13	(27,7%)	1	(25%)
Histopathology						
Ductal Carcinoma In Situ	1	(1,9%)	0	(0%)	0	(0%)
Invasive Breast Carcinoma No Special Type	4	(7,5%)	7	(14,9%)	1	(25%)
Invasive Ductal Carcinoma	45	(84,9%)	34	(72,3%)	3	(75%)
Invasive Lobular Carcinoma	3	(5,6%)	3	(6,4%)	0	(0%)
Mucinous Carcinoma	0	(0%)	1	(2,1%)	0	(0%)
Tubular Carcinoma	0	(0%)	2	(4,3%)	0	(0%)
Estrogen Receptor						
Positive	19	(35,8%)	13	(27,7%)	2	(50%)
Negative	34	(64,2%)	34	(72,3%)	2	(50%)
Progesterone Receptor						
Positive	25	(47,2%)	10	(21,3%)	1	(25%)
Negative	28	(52,8%)	37	(78,7%)	3	(75%)
HER2						
1 Positive	37	(69,8%)	29	(61,7%)	2	(50%)
2 Positive	0	(0%)	1	(2,1%)	0	(0%)
3 Positive	16	(30,2%)	17	(36,2%)	2	(50%)
Ki-67						
Positive	28	(52,8%)	28	(59,6%)	2	(50%)
Negative	25	(47,2%)	19	(40,4%)	2	(50%)

From the data above, we found that breast cancer mostly happened in earlier menarche (≤12 years), with histopatholgical type is invasive ductal carcinoma.

4   Discussion

In this study, the breast cancer patients in Haji Adam Malik General Hospital is 100% female which is correspondent with Global Cancer Observatory data.(8) Even though all of the breast cancer patients are female, it does not mean that male cannot be at risk of breast cancer. In 2019, American Cancer Society estimated about 2670 new cases of male breast cancer and approximately up to 500 male die because of breast cancer in America. (9) The breast cancer

patints in this study is 30-79 years old. Most of the patients are in the range of 40-49 years old. This result is simmilar with breast cancer profile in Manado. (10) But this result does not go along with the surveilance study in America which says the incidence of breast cancer will inceased along with the age. (11) Majority of the breast cancer patients in this study are graduated from high school. This result is simmilar to breast cancer profile in Manado where 61% of the breast cancer patients are graduated from high school. (10) This result also go along with the demography data of Neighborhood and Breast Cancer (NABC) where the breast cancer patient has finished post secondary. (12) The majority of breast cancer patient in Haji Adam Malik General Hospital is unemployed. This result goes along with the study by Dewi and Hendrati (13) but not with the study by Fenga which say that mstly breast cancer paient is employed and have work night shifed and their occupation is increasing the risk of breast cancer. (14) Even though that family history is one of the well established risk factor in breast cancer, only six patients in this study has family history and the rest 94,2% do not have any family history (94,2%). (5)

From table 4.2, we can see that 53 patients have early age of menache (≤12 years old), 47 patients with age of menarche between 13-15 yearls old and 4 patients with late menarche (> 15 years old). Majority of the breast cancer patient in Haji Adam Malik General Hospital has an early age of menarche which is the risk factor of breast cancer. (5) Early age of menarche make an individual has longer time interacted with estrogen which proliferate the breast cells and also produce metabolites which can lead to breast cancer by mutation.

In staging, the majority of breast cancer is in stage III B. Based on the study by Qoyyimah and Yuliyani, the patient with early age of menarche mostly is in stage III which is simillar to this study. (14) But it is different with the study by Aini which says the most patient in early age of menarche is in stage IV (60,4%). (15) In histopathology, in all group of menarche invasive ductal carcinoma (IDC) is mostly diagnosed. This result does not go along wih the study in 2012 by Collaborative Group on Hormonal Factors in Breast Cancer in which invasive lobular carcinoma (ILC) is mosly found, but this result is simillar to Chen in 2017 which says the most diagnosed and found in breast cancer patient is invasive ductal carcinoma.

In immunochemistry, age of menarche does not give a specific characteristic as mostly the result is the same in every group. By estrogen receptor, most patient in Haji Adam Malik General Hospital has negative result. The study by Ambrosone says that the risk of breast cancer with ER-negative will decrease in the later of menarche. (18) But this result does not fo along with the patient in Adam Malik as the percentage of ER-negative breast cancer increase in the later group of menarche age. In progesterone receptor, HER-2 and Ki-67, there is no study which link them with the age of menarche. In this study, mostly breast cancer patient has negative receptor progesterone, negative Her2 and positive Ki-67 in all group of menarche age.

5   Conclusion

The breast cancer patients in Haji Adam Malik General Hospital are mostly in the range age of 40-49 years old, finished high school, unemployed, have no famly history. Generally, the breast cancer patients are on stage III B (41,3%), with invasive ducal carcinoma finding (78,8%), negative estrogen receptor (67,3%), negative progesterone receptor (65,4%), negative her2 (66,3%) and positive ki-67 (55,7%). Majority of the breast cancer patients have early age of menarche ($\leq$12 years old). The age of menarche doesnot give specific charcteristic finding in staging, histopathology and immunohistochemistry

6   References

[1] World Cancer Research Fund (WCRF). 2018, *Worldwide cancer data*, accessed 5 April 2019 Available at: https://www.wcrf.org/dietandcancer/cancer-trends/worldwide-cancer-data

[2] World Health Organization (WHO), Breast Cancer, Accessed 5 April 2019 Available at: https://www.who.int/cancer/prevention/diagnosis-screening/breast-cancer/en/

[3] International Agency for Research on Cancer (IARC). 2018, Breast Cancer Awareness Month 2018, accessed 5 April 2019 Available at: https://www.iarc.fr/news-events/breast-cancer-awareness-month-2018/

[4] Badan Litbangkes Kementerian Kesehatan RI. 2018, Hasil Utama RISKESDAS 2018

[5] American Cancer Society (ACS). 2019, Cancer Facts and Figures 2019. American Cancer Society, Atlanta

[6] Yayasan Kanker Indonesia. 2011, Faktor Risiko, Accessed 5 April 2019, Available at: http://yayasankankerindonesia.org/faktor-risiko

[7] Ozsoy. A., Barca. N., Dolek A.B.,Aktas. H., Elverici. E. 2017. The relationship between breast cancer and risk factors: a single-center study, Eur J Health, vol.13, no.3, pp. 145-149

[8] Global Cancer Observatory. 2018, *New Global Cancer Data: GLOBOCAN 2018*, accessed 5 April 2019. Available at: https://www.uicc.org/news/new-global-cancer-data-globocan-2018

[9] American Cancer Society (ACS). 2019, About Breast Cancer in Men: Key Statistics for Breast Cancer in Men, Atlanta. Available at: https://www.cancer.org/cancer/breast-cancer-in-men/about/key-statistics.html

[10] Rondonuwu A.I., Haroen H., Wantania F., 2016 'Profil Kanker Payudara RSUP Prof. dr. R. D. Kandou Manado Tahun 2013-2014', *Jurnal E-Clinic,* vol.4 no.1 Available at: https://doi.org/10.35790/elc.1.2016.10972

[11] BreastCancer.Org.'Risk of Developing Breast Cancer' [Online], accessed 6 November 2019. Available at : https://www.breastcancer.org/symptoms/types/male_bc

[12] Sharif-Marco S., Yang J., John E. M., Sangaramoorthy M., Hertz A.,Koo J., Nelson D. O., Schupp C. W., Shema S. J., Cockburn M., Satariano W. A., Yen I. H., Ponce A., Winkleby M., Keegan T., Gomez S. L. 2014, 'Impact of neighborhood and individual socioeconomic status on survival after breast cancer varies by races/ethnicity: the neighborhood and breast cancer' *Cancer Epidemiology Biomarkers Prev*, vol. 23 no. 5,pp.793-811.

[13] Dewi G.A.T., Hendrati, L. Y. 2015, 'Analisis risiko kanker payudara berdasar riwayat pemakaian kontrasepsi hormonal dan usia *menarche*', *Jurnal Berkala Epidemiologi,* v*ol. 3*, no. 2, pp. 12–23.

[14] Qoyyimah U.A., Yuliyani T., 2016, 'Hubungan Usia *Menarche* Dengan Kejadian Kanker Payudara di RDUD Dr. Moewardi Surakara Tahun 2015', *Jurnal Kebidana, vol.8* Available at: https://doi.org/10.35872/jurkeb.v8i01.200

[15] Aini N.I., Amelia R., Anisa N.F., Banjarmasin M.S., 2016, Hubungan Antara Menstruasi Dini dan Sosial Ekonomi dengan Kejadian Kanker Payudara di Ruang Edelwis RSUD Ulin Banjarmasin   [Online],   accessed   5   November   2019 Available at : http://docplayer.info/62129611-Hubungan-antara-menstruasi-dini-dan-sosial-ekonomi-dengan-kejadian-kanker-payudara-di-ruang-edelwis-rsud-ulin-banjarmasin.html

[16] Collaborative Group on Hormonal Factors in Breast Cancer, 2012, '*Menarche*, menopause, and breast cancer risk: individual participant meta-analysis, including 118 964 women with breast cancer from 117 epidemiological studies'*Lancet Oncology*, vol. 13 no.11 pp,1141-1151   [Online],   accessed   5   November   2019 Available at: https://doi.org/10.1016/S1470-2045(12)70425-4

[17] Chen M.T., He-Fen Sun, Zhao Y., Wen-Yan Fu, Li-Peng Yang, Shui-Ping Gao, Liang-Dong Li, Hong-Iin Jiang, Jin W. 2017, 'Comparison of patterns and prognosis among distant metastasic breast cancer patients by age groups: a SEER population-based analysis', Nature, [Online], accessed 5 November 2019, Available at: www.nature.com/scientificreports

[18] Ambrosone C.B., Zirpoli G., Hong G.C., Yao S., Troester M.A., Bandera E.V., Schedin P., Bethea T. N., Borges V., Park S.Y., Chandra D., Rosenberg L., Kolonel L.N., Olshan A.F., Palmer J.R., 2015, Important Roleof Menarche in Development of Estrogen Receptor-Negative Breast Cancer in African American Women. J National Cancer Instiute, vol.107 no.9, pg. 172 Available at : https://doi.org/10.1093/jnci/djv172