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Histopathological Description of Invasive Breast Carcinoma Patients at Dr.M.Djamil Hospital 2019-2020

Azzahra Saidah Ramadhani[1*], Yenita[2], Yaslinda Yaunin[3]

[1]Faculty of Medicine, Universitas Andalas, Padang, 25127, Indonesia

[2]Departement of Anatomical Pathology, Faculty of Medicine, Universitas Andalas, Padang, 25127, Indonesia

[3]Departement of Psychiatry, Faculty of Medicine, Universitas Andalas, Padang, 25127, Indonesia

* Corresponding author.
E-mail address: azzahra.saidah@gmail.com

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Abstract

Background: Breast carcinoma is a type of malignancy originating from the epithelium cells of the breast. There are several risk factors that are often associated with this disease, such as : genetics, age, gender, obesity, hormonal, etc. The aim of this study is to describe the histopathological description of invasive breast carcinoma patients based on age and body mass index at Dr. M. Djamil Padang hospital in 2019-2020.
Methods: This research is descriptive observational using secondary data from the results of histopathological examination and medical records in May 2022-June 2022. The data were analyzed using univariate analysis.
Results: The results showed that the majority of patients were in the group of age between 46 to 55 years old (33.1%), obesity (33.8%), Invasive Carcinoma of No Special Type (54, 9%), and grade III (69%). Most patients with Invasive Carcinoma of No Special Type are in the group of age between 46 to 55 years old (28,2%) with obesity (35,9%). Patients with grade III mostly in the group of age between 46 to 55 years old (39,8%) with obesity (35,7%).
Conclusion: The conclusion of this study is that the majority of invasive breast carcinoma patients are Invasive Carcinoma of No Special Type, grade III, in the group of age between 46 to 55 years old age, with obesity.

Keywords: *Invasive Breast Carcinoma, Histopathological Types, Histological Grading, Age, Body Mass Index.*

Introduction

Breast carcinoma is a type of malignancy that originates from the breast epithelium. Breast carcinoma is generally divided into two categories, namely carcinoma in situ or non-invasive carcinoma and invasive carcinoma or infiltrative carcinoma.[1] In 2016, breast carcinoma ranked second as the disease that caused the most deaths worldwide. In the age range of 15-49 years, breast carcinoma (13%) is the most common malignancy.[2] Approximately 2.3 million women were diagnosed with breast carcinoma in 2020 with 685,000 deaths globally. By the end of 2020, there were 7.8 million women living with a diagnosis of breast carcinoma in the last 5 years. This makes breast carcinoma the most common malignancy in the world.[3]

The prevalence of breast carcinoma in Indonesia showed an increase from 2013 to 2018. The highest prevalence was in the province of Yogyakarta 4.86 per 1000 population, followed by West Sumatra 2.47 per 1000 population, and Gorontalo 2.44 per 1000 population.[4] At the Central General Hospital (RSUP) Dr. M. Djamil Padang, the incidence of breast carcinoma is increasing from year to year. In 2010 there were 180 new cases reported and in 2013 there were 235 new cases. Of the 235 cases in 2013, the average age of the patients was 47 years old.[5]

The incidence of breast carcinoma increases with age. Breast carcinoma is rarely found at the age of <20 years, the incidence is about 2% of all cases of breast carcinoma.[2] World Health Organization (WHO) data shows that 75% of breast carcinomas occur in women aged 50 years and over.[6] Invasive ductal carcinoma or what is now known as Invasive Carcinoma of No Special Type often occurs in women aged >50 years, while invasive lobular carcinoma is more common at a younger age, namely >40 years.[7] Based on data from The Global Cancer Observatory (GLOBOCAN) in 2020, in Indonesia the incidence of breast carcinoma is mostly in the age range of 55-64 years, which is 18,000 cases. Meanwhile, the age range of 45-54 years is 17,000 and the age above 65 years is 13,000 cases.[6]

The Indonesian Breast Cancer Foundation states that there is a downward trend in the age of breast carcinoma patients in Indonesia, especially in adolescents. This trend is thought to be due to lifestyle, especially unhealthy food, lack of consumption of vegetables and fruit, smoking and alcohol. This is because nutrition is one of the factors that affect estrogen and estradiol levels in the body. Data shows that the incidence of carcinoma in adolescence is 0.6%. Research conducted at Prof. Dr. H. Aloei Saboe Hospital in Gorontalo city in 2012 found 7 cases of breast carcinoma in adolescents aged 16 years and 18 years. While data from RSUD Dr. Pirngadi from 2011 found 2 cases of breast carcinoma in adolescents aged 17 years and 18 years. In 2018, there was a breast carcinoma patient who was a 15-year-old teenager in Yogyakarta.[4]

Research states that high Body Mass Index (BMI) is associated with an increased risk of breast carcinoma, especially in postmenopausal women. The risk increases by 2% for every 5 kg weight. The exact mechanism behind the association of BMI and breast carcinoma risk is still unknown, but there are several hypotheses that suggest that this is related to increased estrogen levels in postmenopausal women.[8] In a normal cycle or before menopause for women, the hormone estrogen is synthesized mainly in the ovaries, but estrogen is also produced in fat tissue. After menopause, when the ovaries stop producing hormones, fat tissue (breasts, abdomen, thighs, and buttocks) becomes the most important source of estrogen, where estrogen levels in obese postmenopausal women are 50 to 100 percent higher compared to normal weight women.[9]

Research conducted at Bangkinang Riau Hospital in 2017 showed that the proportion of breast carcinoma was higher in patients with obesity, which amounted to 61.2% with a risk of 2.19 times higher in obese patients than those without. In line with research conducted at Banda Aceh City Hospital and Dr. H. Abdul Moeloek Bandar Lampung Hospital which also showed that the incidence of breast carcinoma was higher in obese patients.[10]

The prevalence of obesity in Indonesia and West Sumatra is quite high. According to the Indonesian Ministry of Health in 2019 as many as 28.7% of adults in Indonesia were obese. And in West Sumatra it is no less high, where it is stated that as many as 37% of adults in West Sumatra are obese.[11] Obesity is also associated with the histopathologic type of breast carcinoma. An increase in BMI can affect estrogen precursor levels so that when BMI is high, the production of the hormone estrogen will also increase as well as estrogen receptors which can trigger proliferation of ductal epithelial cells in the breast which can cause the growth of breast carcinoma.12

Research conducted at Adam Malik Medan Hospital in 2018 showed that 68 patients with obese BMI (66%) with Invasive Carcinoma of NST subtype and as many as 38 people (36.9%) with grade II breast carcinoma. This study also showed that the risk of getting breast carcinoma of the Invasive Carcinoma of NST subtype was 7.6 times greater and the risk of developing breast carcinoma with grade II was 3.57 times and grade III was 3.27 times greater in patients with obese BMI.[7] In line with research conducted at Al-Islam Bandung Hospital in 2016 which showed that there was a significant relationship between BMI and the type of histopathology of breast carcinoma.[12] And in a study conducted at RSUD dr. Moewardi Surakarta in 2017 which showed that there was a tendency that BMI in the overweight to obese category was more at risk of high grades in grading breast carcinoma.[9]

The data and results of previous studies obtained by researchers show how the histopathological picture of invasive breast carcinoma patients based on age and BMI. The histopathological features referred to by researchers in this study are histopathology types and histology grading, not including other histopathological features such as cell mitosis, cell invasion, and intercellular relationships. Due to the large amount of data

obtained by researchers linking age and BMI with histopathology type and histology grading, the researchers took the histopathology picture only in the form of histopathology type and histology grading.

Based on preliminary studies that researchers conducted in July 2021 at Dr. M. Djamil Padang General Hospital, 246 patients were diagnosed with breast carcinoma in 2019-2020. Due to the high prevalence of breast carcinoma in Indonesia, especially at Dr. M. Djamil Padang General Hospital, the high prevalence of invasive breast carcinoma in certain age ranges, the high prevalence of obesity in Indonesia, especially in West Sumatra, to the hypothesis that BMI is related to the type of histopathology and grade of invasive breast carcinoma, so the authors are interested in conducting research on the Histopathological Features of Invasive Breast Carcinoma Patients Based on Age and Body Mass Index at Dr. M. Djamil Padang General Hospital 2019-2020.

Based on the above background, this study was conducted with the aim of knowing the histopathological features of invasive breast carcinoma patients based on age and body mass index at Dr. M. Djamil Padang General Hospital in 2019-2020.

Methods

This study used descriptive observational method using secondary data from the results of histopathological examination obtained from the Anatomical Pathology Laboratory and medical records obtained from the Medical Record Installation of Dr. M. Djamil Padang Hospital. The population in this study were all patients with invasive breast carcinoma at Dr. M. Djamil Padang Hospital in 2019-2020. The sampling technique used in this study was total sampling where the number of samples was the same as the population. The data analysis used is univariate analysis on each research variable. The research data will be presented descriptively in the form of a table containing the frequency distribution and percentage of each variable. The ethical review permit number in this study is No: LB.02.02/5.7/172/2022, and the institution that issued the ethical review permit number was the Ethics and Health Research Committee of Dr. M. Djamil Hospital Padang.

Results

This study was conducted on patients diagnosed with invasive breast carcinoma from histopathological examination at the Anatomical Pathology Laboratory of Dr. M. Djamil Padang Hospital in 2019-2020. The number of research subjects obtained was 142 samples that met the inclusion criteria. Furthermore, the collected data were processed and data presentation was carried out in the form of frequency distribution tables.

Table 1. Characteristics Frequency Distribution of Invasive Breast Carcinoma Patients

Characteristics	Frequency (n)	Percentage (%)
Age (year)		
17-25	0	0
26-35	12	8.5
36-45	37	26.1
46-55	47	33.1
56-65	31	21.8
>65	15	10.6
Total	142	100
BMI		
Underweight	11	7.7
Normal	47	33.1
Overweight	36	25.4
Obese	48	33.8
Total	142	100
Histopathological Type		
Invasive Carcinoma of No Special Type	78	54.9
Invasive Lobular Carcinoma	52	36.6
Tubular Carcinoma	1	0.7
Medullary Carcinoma	1	0.7

Characteristics	Frequency (n)	Percentage (%)
Mucinous Carcinoma	4	2.8
Invasive Micropapillary Carcinoma	1	0.7
Mucinous Cystadenocarcinoma	1	0.7
Metaplastic Carcinoma	1	0.7
Mixed Type Carcinoma	3	2.1
Total	142	100
Histological Grading		
Grade I	0	0
Grade II	44	31
Grade III	98	69
Total	142	100

Table 2. Frequency Distribution of Histopathological Type of Invasive Breast Carcinoma Patients based on Age

Histopathological Type	Age (n[%])						Total (n[%])
	17-25	26-35	36-45	46-55	56-65	>65	
Invasive Carcinoma of No Special Type	0	9 [6.3]	17 [12]	22 [15.5]	19 [13.4]	11 [7.7]	78 [54.9]
Invasive Lobular Carcinoma	0	2 [1.4]	15 [10.6]	22 [15.5]	9 [6.3]	4 [2.8]	52 [36.6]
Tubular Carcinoma	0	0	0	1 [0.7]	0	0	1 [0.7]
Medullary Carcinoma	0	0	0	1 [0.7]	0	0	1 [0.7]
Mucinous Carcinoma	0	0	1 [0.7]	1 [0.7]	2 [1.4]	0	4 [2.8]
Invasive Micropapillary Carcinoma	0	0	1 [0.7]	0	0	0	1 [0.7]
Mucinous Cystadenocarcinoma	0	0	1 [0.7]	0	0	0	1 [0.7]
Metaplastic Carcinoma	0	0	1 [0.7]	0	0	0	1 [0.7]
Mixed Type Carcinoma	0	1 [0.7]	1 [0.7]	0	1 [0.7]	0	3 [2.1]
Total (n[%])	0	12 [8.4]	37 [26.1]	47 [33.1]	31 [21.8]	15 [10.5]	142 [100]

Table 3. Frequency Distribution of Histopathological Type of Invasive Breast Carcinoma Patients based on BMI

Histopathological Type	BMI (n[%])				Total (n[%])
	Underweight	Normal	Overweight	Obese	
Invasive Carcinoma of No Special Type	8 [5.6]	22 [15.5]	20 [14.1]	28 [19.7]	78 [54.9]
Invasive Lobular Carcinoma	3 [2.1]	21 [14.8]	13 [9.2]	15 [10.6]	52 [36.6]
Tubular Carcinoma	0	1 [0.7]	0	0	1 [0.7]
Medullary Carcinoma	0	0	0	1 [0.7]	1 [0.7]
Mucinous Carcinoma	0	1 [0.7]	0	3 [2.1]	4 [2.8]
Invasive Micropapillary Carcinoma	0	0	1 [0.7]	0	1 [0.7]
Mucinous Cystadenocarcinoma	0	1 [0.7]	0	0	1 [0.7]

Histopathological Type	BMI (n[%])				Total (n[%])
	Underweight	Normal	Overweight	Obese	
Metaplastic Carcinoma	0	0	1 [0.7]	0	1 [0.7]
Mixed Type Carcinoma	0	1 [0.7]	1 [0.7]	1 [0.7]	3 [2.1]
Total (n[%])	11 [7.7]	47 [33.1]	36 [25.4]	48 [33.8]	142 [100]

Table 4. Frequency Distribution of Histological Grading of Invasive Breast Carcinoma Patients based on Age

Histological Grading	Age (n[%])						Total (n[%])
	17-25	26-35	36-45	46-55	56-65	>65	
Grade I	0	0	0	0	0	0	0
Grade II	0	5 [3.5]	9 [6.3]	11 [7.7]	10 [7]	9 [6.3]	44 [31]
Grade III	0	7 [4.9]	28 [19.7]	36 [25.4]	21 [14.8]	6 [4.2]	98 [69]
Total (n[%])	0	12 [8.4]	37 [26.1]	47 [33.1]	31 [21.8]	15 [10.5]	142 [100]

Table 5. Frequency Distribution of Histological Grading of Invasive Breast Carcinoma Patients based on BMI

Histological Grading	BMI (n[%])				Total (n[%])
	Underweight	Normal	Overweight	Obese	
Grade I	0	0	0	0	0
Grade II	5 [3.5]	15 [10.6]	11 [7.7]	13 [9.2]	44 [31]
Grade III	6 [4.2]	32 [22.5]	25 [17.6]	35 [24.6]	98 [69]
Total (n[%])	11 [7.7]	47 [33.1]	36 [25.4]	48 [33.8]	142 [100]

Discussions

Frequency Distribution based on Age

Based on data from 142 patients diagnosed with invasive breast carcinoma in this study, it was found that the most cases occurred in the age range of 46-55 years, namely 47 patients (33.1%) and the least age group was 26-35 years as many as 12 patients (8.5%). The youngest age was 29 years old and the oldest age was 86 years old. These results are in line with research conducted in Turkey in 2018, where most breast carcinomas were found in the age group 40-60 years with the highest age being 55 years.[13] However, it is slightly different from the results of research conducted at the Anatomical Pathology Laboratory of the Faculty of Medicine, Andalas University (2015) where most invasive breast carcinoma patients were found in the age group of 40-49 years.[14]

The data has similarities with the previous theory that this disease rarely occurs in women younger than 25 years.[15] As many as 75% of women are affected by breast carcinoma in the age group over 50 years and only 5% of women are affected by breast carcinoma in the age group under 40 years.[1] WHO data shows that 75% of breast carcinomas occur in women aged 50 years and over.[3] Invasive ductal carcinoma or Invasive Carcinoma of No Special Type often occurs in women aged >50 years, while invasive lobular carcinoma is more common at a younger age, namely >40 years.[7] This increase in age is associated with the length of exposure of the body to the hormone estrogen. Estrogen stimulates the production of growth factors, such as transforming growth factor-a, which will trigger tumor development. This prolonged exposure to the hormone estrogen results in an increased risk of genetic mutations that lead to impaired paroliferation of breast tissue.[1,16] BRCA1 gene

mutations increase the risk factor for breast carcinoma by 51% in the 50-year age group and 85% in the 70-year age group.[17]

Frequency Distribution based on BMI

Based on data from 142 patients in this study, it was found that the most cases of invasive breast carcinoma were obese BMI, namely 48 patients (33.8%) and the least was the underweight BMI group, namely 11 patients (7.7%). In line with research conducted at the Anatomical Pathology Center Laboratory of the Faculty of Medicine, University of North Sumatra (2015-2017) where the most invasive breast carcinoma cases were found in obese BMI and the least in underweight BMI.[18] Based on research conducted at Bangkinang Hospital (2017), the p value <0.05 was obtained, thus there is a relationship between obesity and breast carcinoma, and an OR value of 2.199 was obtained, meaning that women who are obese have a 2.199 times greater risk of developing breast carcinoma compared to women who are not obese.[10]

The risk of breast carcinoma increases in obesity due to increased estrogen synthesis in fat deposits. High estrogen will affect the growth of breast tissue. Excessive tissue growth and the absence of cell death limits will cause cells to divide continuously, which can cause abnormal growth and cause breast carcinoma.[10,19] In postmenopausal women where estrogen synthesis mainly occurs in adipose cells, the higher the BMI, the higher the risk of breast carcinoma due to increased estrogen levels and the conversion of androgen to estrogen in excess adipose cells.[20]

Frequency Distribution based on Histopathological Type

In this study, the most common subtype of breast carcinoma was Invasive Carcinoma of No Special Type, namely 78 patients (54.9%) and the least was Tubular, Medullary, Invasive Micropapillary, Mucinous Cystadenocarcinoma, Metaplastic Carcinoma which had the same number of 1 patient (0.7%). The results of this study are in line with research conducted in Warsaw Poland (2016) which showed that out of 776 patients with invasive breast carcinoma, 592 patients were Invasive Carcinoma of No Special Type subtype.[21] These results are also in line with research conducted at the Anatomic Pathology Center Laboratory of the Faculty of Medicine, University of North Sumatra (2015-2017) which shows that the most common type of histopathology is Invasive Carcinoma of No Special Type.[22]

According to IARC, Invasive Carcinoma of No Special Type is the most common type of histopathological picture from the invasive breast carcinoma group with 40-75% of cases.[23] The Invasive Carcinoma of No Special Type subtype has a heterogeneous microscopic picture, ranging from tumors with complete tubule formation to tumors with anaplastic cells. Currently, there is no specific application of criteria for the inclusion of tumors included in the Invasive Carcinoma of No Special Type so that most cases of invasive breast carcinoma that do not have specific features are included in the Invasive Carcinoma of No Special Type subtype group.[24]

Frequency Distribution based on Histology Grading

In this study, the most histology grading was grade III, namely 98 patients (69%), followed by grade II as many as 44 patients (31%), while grade I did not exist. This is in line with research conducted at the Anatomical Pathology Laboratory of the Faculty of Medicine, Andalas University (2016) where the incidence of invasive breast carcinoma in grade I did not exist.[25] The results of this study are also in line with research conducted at RSUD dr. H. Abdul Moeloek Bandar Lampung (2015) which shows that the most invasive breast carcinoma grading is grade III.[26]

However, the results of this study differ from the results of research conducted at Al-Ihsan Bandung Hospital (2011-2014) which showed that the most invasive breast carcinoma grading was grade II.[27] And also with the results of research conducted at the Department and Research Institute of Radiology, Ulsan University, South Korea in 2018 also showed that the most invasive breast carcinoma grading was grade II.[28]

Data from Nottingham City Hospital, United Kingdom reported that as many as >60% of invasive breast carcinomas are grade II, but in a cohort study using well-fixed and prepared tissue and examined by experienced

pathologists showed that grade II results were only 36-49% (average 42%). This is because inexperienced pathologists tend to give a score of 2 for nuclear pleomorphism which should be given a score of 3. Poor fixation will also affect the assessment of mitotic count, so that very proliferative tumors will be given a score of 1 or 2 where they should be given a score of 3.[29]

Histopathological Type of Invasive Breast Carcinoma Patients based on Age

Based on the results of this study, the histopathology type of Invasive Carcinoma of No Special Type was most prevalent in the age group 46-55 years, namely 22 patients and the least in the age group 26-35 years. The Invasive Lobular Carcinoma subtype was also most prevalent in the 46-55 year age group, namely 22 patients, and the least in the 26-35 year age group as many as 2 patients. The results of this study are in line with research conducted at the Oncology Surgery Subdivision of Sanglah Denpasar Hospital (2016) which shows that the histopathology types of Invasive Carcinoma of No Special Type and Invasive Lobular Carcinoma are most common in the age group over 40 years.[30]

WHO data shows that 75% of breast carcinomas occur in women aged 50 years and over.[3] Invasive ductal carcinoma or Invasive Carcinoma of No Special Type often occurs in women aged >50 years, while invasive lobular carcinoma is more common at a younger age, namely >40 years.[7] Meanwhile, Tubular Carcinoma is only 2% of cases of invasive breast carcinoma. Medullary Carcinoma is a breast carcinoma that is rarely found, of all cases of breast carcinoma there are only <1% of cases. In Muscinous Carcinoma there are only 2% of cases of all cases of breast carcinoma and occur at the age of >55 years.[31] However, until now there has been no study that mentions a significant relationship between age and the histopathological picture of invasive breast carcinoma, namely the type of histopathology or histological grading.

Histopathological Type of Invasive Breast Carcinoma Patients Based on BMI

The data of this study found that the histopathology type of Invasive Carcinoma of No Special Type with obese BMI was the most common, namely 28 people and underweight BMI was the least, namely 8 people. The histopathology type of Invasive Lobular Carcinoma with normal BMI is the most common, namely 21 people and underweight BMI is also the least, namely 3 people. This data is in line with research conducted at the Anatomic Pathology Center Laboratory of the Faculty of Medicine, University of North Sumatra (2015-2017) where the most BMI is in Invasive Carcinoma of No Special Type with obese BMI as many as 37 people, followed by normal BMI as many as 11 people.[22]

Body Mass Index is associated with the histopathologic type of breast carcinoma. An increase in BMI can affect estrogen precursor levels so that when BMI is high, the production of the hormone estrogen will also increase as well as estrogen receptors which can trigger proliferation of ductal epithelial cells in the breast which can cause the growth of breast carcinoma.[12] Research conducted at Adam Malik Hospital Medan (2018) shows that the risk of getting breast carcinoma subtype Invasive Carcinoma of NST is 7.6 times greater in patients with obese BMI.[7] In line with research conducted at Al-Islam Bandung Hospital in 2016 which showed that there was a significant relationship between BMI and the type of histopathology of breast carcinoma.[12]

Histological Grading of Invasive Breast Carcinoma Patients based on Age

In this study, out of 142 invasive breast carcinoma patients, grade III was most prevalent in the age group of 46-55 years, namely 47 patients and the least at the age of >65 years as many as 6 patients. In grade II, the most occurred in the same age group as grade III, namely 46-55 years as many as 11 patients and the least at the age of 26-35 years as many as 5 people. The results of this study are in line with research conducted at RSUD Soetomo Surabaya where grade III invasive breast carcinoma patients were mostly suffered in the age group 41-55 years and the least in the age group >70 years.[32] Another study conducted at Adam Malik General Hospital (2014-2015) also showed that grade III invasive breast carcinoma was mostly suffered in the age group of 50-59 years and the least in the age group >70 years.[33]

However, until now there has been no research that mentions a significant relationship between age and the histopathological picture of invasive breast carcinoma, namely the type of histopathology and histological

grading. As in the research conducted at Adam Malik Hospital Medan (2018), where the p value> 0.05 was obtained, meaning that there was no difference in certain age groups to experience certain grading of breast carcinoma.[7] This is supported by research conducted at the Anatomical Pathology Laboratory of Dr. Kariadi Hospital Semarang (2016) where the results of the chi square test obtained a significance value of p = 0.189 so that it can be concluded that age does not have a significant relationship to the degree of differentiation (grading) of breast carcinoma in women.[34] And also supported by research conducted at Dr. M Djamil Padang Hospital (2015) which showed no significant relationship between age and histology grading of breast carcinoma.[8,35]

Histological Grading of Invasive Breast Carcinoma Patients Based on BMI

In this study, grade III with obese BMI was the most common, namely 35 patients and underweight was the least, namely 6 patients. In grade II, the most were in the normal BMI group, namely 15 people and the least in underweight BMI, namely 5 people. The results of this study are in line with research conducted at RSUD dr. Moewardi Surakarta (2017) showing that there is a tendency that BMI with the obese category is more at risk of high grade in breast carcinoma grading.[9] And research conducted at Adam Malik Hospital Medan (2018) showed that patients with obese BMI were 38 people (36.9%) with grade II breast carcinoma. This study also showed that the risk of getting grade III breast carcinoma was 3.27 times greater in patients with obese BMI.[7]

There are several studies that show a significant relationship between BMI and grading in invasive breast carcinoma, such as research conducted in Surakarta in 2017 where there was a significant relationship between BMI and grading in breast carcinoma. And the results showed that there was a tendency for BMI in the overweight-obesity category to be more at risk of high grades in breast carcinoma grading.[9] The mechanism directly involved in the effect of obesity on the histologic grading of breast carcinoma is not yet known for certain. However, there are two factors that are thought to influence, namely: (1) This relationship may occur due to delayed diagnosis in women with obesity due to more difficult detection of breast tumors; and (2) Several studies have shown that increased estrogen levels support tumor growth, obesity leads to increased production of estrogen known as estrone through aromatization of androstenedione in adipose tissue. In addition, obesity is also associated with low levels of sex hormone-binding globulin, which results in an increase in active, unbound estrogen known as estradiol. Therefore, it is possible that obesity leads to an increase in active estrone and estradiol which promotes breast tumor growth.[36]

Conclusions

Based on research that has been conducted regarding "Histopathological Description of Invasive Breast Carcinoma Patients Based on Age and Body Mass Index at Dr. M. Djamil Padang General Hospital in 2019-2020" the following conclusions were obtained:

1. The majority of invasive breast carcinoma patients are in the age group of 46-55 years old, obese BMI, histopathology type Invasive Carcinoma of No Special Type, and grade III.
2. Invasive Breast Carcinoma of No Special Type subtype patients are mostly in the 46-55 years age group and obese BMI, while Invasive Lobular Carcinoma subtype patients are mostly in the 46-55 years age group and normal BMI.
3. Grade III of Invasive Breast Carcinoma is most prevalent in the 46-55 years age group and obese BMI, while grade II is most prevalent in the 46-55 years age group and normal BMI.

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Declarations of competing interest

There is no conflict of interest in this research.

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