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ORIGINAL ARTICLE

Histopathological characteristics of breast tumors at Madani General Hospital Medan

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ABSTRACT

Cytology and histopathology include examinations to diagnose breast tumors. The diagnosis of advanced stages of breast tumors can lead to reduced therapeutic options and success. This study aimed to describe the results of cytological and histopathological examinations of patients with breast tumors at the Anatomical Pathology Laboratory of Madani Medan General Hospital between the period 2018-2022. This study was descriptive and retrospective. The study population included all the medical records of patients diagnosed with breast tumors. The research sample consisted of the medical records of patients with FAM and Carcinoma Mammae obtained by consecutive sampling. The results of cytological and histopathological examinations showed that the majority of breast tumor patients were both aged 17-25 years with a percentage of 42.9% and 52.4%, respectively). The results of the cytological examination showed that the majority of patients had benign tumor diagnoses (85.7%) and histology (90.5%). Malignant tumors were diagnosed based on the results of cytological examination (14.3%) and histology (9.5%). Based on the relationship between age. Based on the relationship between age and diagnosis of benign and malignant tumors, the results of cytological examination showed that patients aged 12-16 years, 17-25 years, and 26-35 years all had benign tumors (100%), patients aged 36-45 years had benign tumors (50.0%) and malignant tumors (50.0%), and patients aged 56-65 years all had malignant tumors (100.0%). Histopathological examination results showed that patients aged 12-16 years, 17-25 years, 26-35 years, and 36-45 years all had benign tumors (100%), patients aged 46-55 years had benign tumors (50.0%) and malignant tumors (50.0%), and patients aged 56-65 years all had malignant tumors (100.0%).

Keywords: breast tumor, cytology, histopathology, ca. mamae, FAM

Introduction

Breast tumors are common in the female breast cancer. Breast tumors consist of lumps. Breast tumors are 10 times more common than cancer (malignant), and those that have undergone treatment are approximately 30%. Unlike breast cancer, breast tumors are not life threatening, but there are several types of breast tumors that can develop into breast cancer.[1] According to the WHO as many as 685,000 women with breast cancer die globally.[2] Based on GLOBOCAN data in 2020, approximately 1.38 million contemporary problems in 2020, with 65,858 (16.6%) of the total 396,914 new cases of cancer in Indonesia. Meanwhile, the number of women who died from breast cancer reached more than 22 thousand cases.[3]

Benign breast tumors are abnormal breast tissue growths that do not spread. The incidence of benign tumors is more frequent, although benign tumors are not life-threatening but can be at risk of developing

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breast cancer in the future. The biggest risk factors for breast tumors are environmental and lifestyle factors (90-95%), including diet (30-35%), smoking (25-30%), and alcohol consumption (4-6%).[4]

Diagnosis in advanced stages of breast tumors leads to reduced treatment options and a lower chance of successful treatment. This leads to a higher mortality rate in patients with breast tumors. It is important to know the profile of breast tumor patients in a hospital to know the types of benign and malignant tumors in the breast that often occur to identify the problems that occur in the breast tumor itself.[5,6] One of the examinations used for breast tumors is cytology and histopathology. Based on the results of the research conducted, the results of histopathological examination were higher than those of cytological examination, namely 294 (96.6%) samples and 10 (3.6%) samples. This is because histopathological examination is an examination of solid tissue, which is directly related to the lump in the breast, which helps establish a precise diagnosis. The results showed that the most malignant tumors were mammary carcinomas, with 128 (43%) in the age range of 40-59 years. The most benign tumor was fibroadenoma, with 50 (16.8%) samples in the age range of 20-39 years. The most common non-neoplasm was mastitis, with 9 (3%) patients age range–30-38 years. The most common examination for diagnosing breast lumps is histopathology with lumpectomy preparations (Gultom 2021).[7]

Based on the above background, the researcher is interested in conducting research with a title description of the results of cytological and histopathological examinations of breast tumor patients at the Anatomical Pathology Laboratory of Madani General Hospital Medan for the period 2018-2022.

Method

This was a retrospective descriptive study to determine the results of cytological and histopathological examinations of patients with breast tumors. at the Anatomical Pathology Laboratory of Madani General Hospital Medan for the period 2018-2022. The research was conducted at the Anatomical Pathology Laboratory of Madani General Hospital Medan, which is located in Jl. Arief Rahman Hakim No.186, Sukaramai I, Medan Area, Medan City.

The population in this study included all medical records of inpatients diagnosed with breast tumors at the Anatomical Pathology Laboratory of Madani General Hospital Medan for the period 2018–2022. The samples in this study were all female patients who suffered from breast tumors between the period 2018-2022 at the Anatomical Pathology Laboratory of Madani General Hospital Medan, who met the inclusion and exclusion criteria determined by the researcher with the sample size obtained through non-probability sampling method, namely consecutive sampling. The inclusion criteria included all female patients with breast tumors who underwent cytological and histopathological examinations based on age and diagnosis of benign and malignant tumors, namely FAM and carcinoma mammae. The exclusion criteria included female patients with breast tumors accompanied by chronic diseases and a history of smoking, alcohol consumption, and narcotics.

The source of research data used Secondary data were obtained from the medical records of women who had complaints of lumps in the breast examined by cytological and histopathological examinations for the period 2018–2022 at the Anatomical Pathology Laboratory of Madani General Hospital Medan. The data processing of this study was carried out by performing diagnostic calculations using cytological examination, which was then matched with the results of histopathological examination as the gold standard.

Results

Table 1 shows the distribution of cytological and histopathological examination results in patients with breast tumors by age group. There were 14 samples for cytology examination and 42 samples were used for histopathological examination. Most breast tumors occurred in the age range of 17-25 years (42.9% for cytology and 52.4% for histopathology). This suggests that younger age groups were more susceptible to this condition in the studied samples. In general, the results of the cytology and histopathological examinations showed similar trends. Both showed the highest percentage in the 17-25 years age group.

Table 1. Overview of cytological and histopathological examination results of breast tumor patients based on age

Age group	Examination	
	Cytology n (%)	Histopathology n (%)
12 – 16 years	2 (14,3)	2 (4,8)
17 – 25 years	6 (42,9)	22 (52,4)
26 – 35 years	3 (21,4)	10 (23,8)
36 – 45 years	2 (14,3)	3 (7,1)
46 – 55 years	0	2 (4,8)
56 – 65 years	1 (7,1)	3 (7,1)
Total	14 (100,0)	42 (100,0)

Table 2 shows the results of cytological and histopathological examinations of patients with breast tumors divided by the diagnosis of benign and malignant tumors. The majority of patients had benign tumor diagnoses (12, 85.7%), and the histology was 38 (90.5%). Diagnoses of malignant tumors from cytological examination were made in 2 patients (14.3%), and histology was performed in 4 patients (9.5%).

Table 2. Overview of cytological and histopathological examination results of breast tumor patients based on diagnosis

Diagnosis	Examination	
	Cytology n (%)	Histopathology n (%)
Benign	12 (85,7)	38 (90,5)
Malignant	2 (14,3)	4 (9,5)
Total	14 (100,0)	42 (100,0)

Table 3 shows that benign tumors were more prevalent in the younger age groups. Almost all cases in the age range of 12-35 years showed benign cytology and histopathological results. This indicates that breast tumors tend to be benign at a young age. The number of malignant tumors increases with age. In the age group of 36-45 years, malignant tumor cases began to appear. The proportion of malignant cases further increased in the age group of 56-65 years. This indicates that the risk of developing malignant breast tumors tends to be higher in the older age groups. Based on the available data, age was found to be a significant factor in determining the type of breast tumor. The older a person is, the higher is the chance that the tumor is malignant.

Table 3. Overview of the results of cytological and histopathological examinations of breast tumor patients based on the relationship between age and diagnoses of benign and malignant tumors

Age (years)	Examination					
	Cytology			Histopathology		
	Benign	Malignant	Total	Benign	Malignant	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
12 – 16	2 (100,0)	0	2 (100,0)	2 (100,0)	0	2 (100,0)
17 – 25	6 (100,0)	0	6 (100,0)	22 (100,0)	0	22 (100,0)
26 – 35	3 (100,0)	0	3 (100,0)	10 (100,0)	0	10 (100,0)
36 – 45	1 (50,0)	1 (50,0)	2 (100,0)	3 (100,0)	0	3 (100,0)
46 – 55	0	0	0	1 (50,0)	1 (50,0)	2 (100,0)
56 – 65	0	1 (100,0)	1 (100,0)	0	3 (100,0)	3 (100,0)

Discussion

Research on the description of the results of cytological and histopathological examinations of breast tumor patients was conducted using all medical records of inpatients diagnosed with breast tumors at the Anatomical Pathology Laboratory of RSU Madani Medan for the period 2018-2022. From the results of the study, the results of cytological examination were obtained as many as 14 medical records of inpatients diagnosed with breast tumors, while the results of histopathological examination were obtained 42 medical records. The description of the results of cytological examination of breast tumor patients based on age at the Anatomical Pathology Laboratory of Madani Medan Hospital for the period 2018-2022 obtained that the majority of breast tumor patients were in the age group of 17-25 years (42.9%), whereas histopathology was dominated by breast tumor patients aged 17-25 years (52.4%). Gatsu's research mentioned different results from this study: the highest frequency of breast tumor patients was at the age of 46–55 years, totaling 20 patients (64.5%) at Wangaya Regional General Hospital, Denpasar City, from January 2019 to December 2022.[8] Previous research conducted by Narisuari & Manuaba[9] found that the sociodemographic characteristics of breast tumor patients were dominant in the age range of 41-50 years as many with 27 people (42.18%) at the Oncology Surgery Polyclinic of Sanglah General Hospital, Bali, Indonesia in 2016. One of

the risk factors for breast tumors is age, where the risk of being diagnosed will continue to increase with age and peaks at the age of 80 years.[8] 95% of new cases and 97% of deaths caused by breast tumors occur in women aged 40 years and above.[10]

The description of the results of cytological examination of breast tumor patients based on the diagnosis of benign tumors and malignant tumors in the Anatomical Pathology Laboratory of Madani Medan Hospital for the period 2018-2022 obtained a diagnosis of benign tumors as many as 50 people and histology as many as 42 people. The diagnosis of malignant tumors based on the results of cytological examination was 2 (14.3%) and histology was 4 (9.5%). From this study, it can be seen that patients with breast tumors in the Anatomical Pathology Laboratory of Madani Medan General Hospital between the period 2018-2022 based on the results of cytological and histopathological examinations, were mostly infected with benign tumors compared to those with malignant tumors. Breast tumors can be classified as benign, malignant, or cancerous. In benign breast tumors, small lumps, <2 cm in size, well-differentiated, usually expansive growth, slow growth rate, do not infiltrate surrounding tissues, and do not metastasize, whereas in malignant tumors in the breast, the lumps are solitary, unilateral, solid, hard, and irregular, tend to be poorly differentiated, anaplastic, have a faster growth rate, infiltrate surrounding tissues while damaging them (destructive), and metastasize. Nipple abnormalities and retraction are uncommon. In advanced stages, skin edema, redness, and burning of the breast tissue may occur.[11]

The benign tumor found in this study was fibroadenoma (FAM), while the malignant tumor was a carcinoma mammae. The results of this study are in line with previous research conducted by Gultom et al.[7] which states that FAM is the most common benign tumor found in breast tumor patients biopsied at Siloam MRCCC Semanggi Hospital in 2017-2018 and the malignant tumor is carcinoma mammae. FAM is the most common type of benign tumor that occurs in 25% of women without any symptoms and can appear at any age, but is often diagnosed in young women in their 20s and 30s. The exact etiology of this condition is unknown. However, hormonal influences are also thought to be contributing factors. Some FAMs are also associated with rare diseases or syndromes such as Beckwith Wiedemann syndrome, Maffucci syndrome, Cotard syndrome, Carney syndrome and Cowden syndrome. These benign tumors usually present as capsular, mobile, rubbery, and painless masses when pressed. If a FAM tumor mass is not diagnosed early, it can cause psychological trauma to the patient.[12] Mammary carcinoma is a malignant tumor arising from a fibroadenoma that is difficult to diagnose because its oncogenic components may be masked by fibroadenoma.[13] This type of malignant tumor is also among the most commonly diagnosed malignant tumors in women and is the first cause of death, where the incidence rate continues to increase in all regions of the world.[14]

A study by Suryaningsih et al.[15] states that menarche age <12 years is at a high risk of mammary carcinoma. This could be attributed to the estrogen exposure. The earlier she starts menstruating, the longer she is exposed to estrogen, and the development of breast cancer cells. In addition, long-term use of hormonal contraceptives for > 5 years is also associated with the incidence of mammary carcinoma.[13] Hormonal contraceptives contain estrogen and progestin hormones, which cause imbalances in the body. The prolonged use of hormonal contraceptives causes obesity and increases adiposity, thereby increasing fat storage and excessive proliferation of breast cells.[15] An overview of the results of cytological and histopathological examinations of breast tumor patients based on the relationship between age and tumor diagnosis at the Anatomical Pathology Laboratory of RSU Madani Medan for the period 2018-2022 found that most patients with benign tumors were aged 17–25 years, while those with malignant tumors were in the age range of 36–45 years and 56–65 years. Research conducted by Gatsu et al.[8] stated that the frequency of benign breast tumors was highest at the age of 46–55 years, totaling 32 patients (29.35%). The peak incidence of benign breast tumors in women is in their 30s. The appearance of these tumors is often found in patients during adolescence, but is often overlooked.[11] In contrast, malignant breast tumors are rarely found at < 30 years of age. The risk of malignant tumors increases steadily after a woman is >30 years old, doubling every 10 years, and decreases after menopause. Every one year increase in age above 40 years has a new incidence rate of 1-2% for the risk of malignant tumors. This is thought to be related to the influence of prolonged hormonal exposure and other risk factors that can trigger malignant tumors.[11] In addition, an earlier age of menarche may be associated with higher post-menopausal estrogen levels, resulting in a higher risk of malignant breast tumors.[16]

In addition to age, many other risk factors modify the likelihood of a woman contracting benign or malignant tumors in her breasts such as occupation, gender, radiation, obesity, diet, menstruation at the age of 30, unmarried or unmarried, family history of breast cancer, alcohol consumption and frequent exposure

to ionizing radiation including X-rays on the chest, as well as gene changes associated with malignant breast tumors.[11]

Conclusion

The results of cytological and histopathological examinations of breast tumor patients at RSU Madani Medan during the period 2018-2022 show that the majority of breast tumor patients in this hospital are young, aged between 17-25 years. Both cytology and histopathological examination results showed the dominance of this age group. Most of the breast tumor cases were benign, both based on cytology and histopathology results. Although younger age groups dominated the breast tumor cases, the percentage of benign tumors was higher in almost all age groups. This indicates that benign tumors were more common in all age groups studied. These findings indicate the importance of the early detection of breast cancer, especially in younger age groups. Regular and periodic examinations can help detect abnormalities early so that treatment can be carried out more quickly and effectively.

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