

RESEARCH ARTICLE

Clinicopathological Characteristics of Breast Cancer at Cibabat Regional General Hospital in 2022–2023

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Abstract

Breast cancer is the most common malignancy found in women throughout the world and is the fifth leading cause of cancer death in the world. Cibabat Regional General Hospital is one of the places for breast cancer examination and treatment in West Java. This study aims to determine the clinical and histopathological features at Cibabat Regional General Hospital. The method used in this research is descriptive-analytic with a total sampling technique using secondary data obtained from the medical records of Cibabat Regional General Hospital patients from 2022 to June 2023. The results show that most cases of breast cancer at Cibabat Regional General Hospital occur in those aged 45–54 (32.3%), left breast (52.1%), grade 3 (44.8%), histopathological type invasive carcinoma of no special type (75%), lymph node status unknown (88.5%), negative lymphovascular invasion (43.7%), and fat invasion status unknown (68.7%). The conclusion is that breast cancer cases at Cibabat Regional General Hospital mainly occur in patients of productive age with a high grade and predominantly in the left breast, with the most common type being invasive carcinoma of no particular type.

Keywords: Breast cancer, clinicopathology

Introduction

Breast cancer is the most common malignancy found in women throughout the world (154 out of 185 countries) and is the fifth leading cause of cancer death in the world.^{1,2} The number of new cases of breast cancer in the world in 2020 reached 2,261,419 cases, with a death rate of 6.9% or the equivalent of 684,996 deaths. The number of new cases and deaths has increased over the last few decades, including in Asian countries. There have been 158,939 new cases of breast cancer in Southeast Asia, with 58,670 deaths from the disease.³

Breast cancer ranks first in terms of the highest number of cancer cases. It is the first contributor to cancer deaths in Indonesia, which is the country with the largest population in Southeast Asia. The number of new cases of breast cancer

in Indonesia in 2020 reached 65,858 cases (16.6%), with 22,430 deaths (9.6%) spread across all provinces in Indonesia.³ Western Java is one of the three provinces with the most significant number of cancer patients in 2013, with 45,473.⁴

Hospitals have an essential role in diagnosing and treating breast cancer cases. Breast cancer diagnosis is crucial because it plays a role in determining the prognosis of breast cancer. Prognostic factors for breast cancer consist of 1) clinical features including age and tumor size; 2) histopathological features including tumor type and histopathological grading, axillary lymph node status, fat invasion, and lymphovascular invasion; 3) the immunophenotype profile includes ER, PR, HER2, and KI67.⁵ The prognosis of breast cancer is essential to know because it can provide information about the development of the disease in the future and can be used to

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find out the most appropriate type of treatment to treat breast cancer cases.⁶

Cibabat Regional General Hospital, located in Cimahi city, West Java, has an oncology sub-specialist, one of the places to examine and treat breast cancer in West Java. Several previous studies have discussed the clinical and pathological profiles of breast cancer patients in West Java, but there is no complete data regarding breast cancer cases at Cibabat Regional General Hospital. This study aims to determine the clinical and histopathological features at Cibabat Regional General Hospital.

Methods

The method used in this research is descriptive-analytic with a total sampling technique using secondary data obtained from patient's medical records at the Cibabat Regional General Hospital from 2022 to June 2023. In this study, data was collected from 96 female patients. The variables measured were age, laterality, histopathological type, histopathological grade, lymph node status, lymphovascular invasion, and fat invasion. The data and its distribution are then presented in a table. The study's use of subjects and patients' clinical data was approved by the Research Ethics Committee at Cibabat Regional General Hospital (No. 070/45/Ethical Clearance/RSUD Cibabat/VI/2023) in compliance with the provisions set out in the Declaration of Helsinki. Confidentiality of the patient's data was ensured by withholding the patient's data.

Results

The number of breast cancer cases at Cibabat Regional General Hospital from January 2022 to June 2023 was 96. In 2022, there were 56 cases (58%), and from January to June 2023, there were 40 (42%). The clinicopathological characteristics of the patients are presented in Table.

Breast cancer patients can be classified into five age groups: under 35, 35–44, 45–54, 55–64, and over 64. The majority of breast cancer cases at Cibabat Regional General Hospital occurred in those aged 45 to 54, with 31 cases (32%), followed by 35–44-year-olds with 24 cases (25%), 55–64-year-olds with 20 cases (21%), 15 cases over 64 years old (16%), 5 cases under 35 years old (5%), and 1 case (1%) unknown. Figure 1 shows that 2022 and 2023 have distinct peaks.

Table Clinicopathological Characteristics of Breast Cancer Patients at Cibabat Regional General Hospital in 2022–2023

Characteristics	n=96 (%)
Age (years)	
<35	5 (5)
35–44	24 (25)
45–54	31 (32)
55–64	20 (21)
>64	15 (16)
Laterality	
Sinistra	49 (52)
Dextra	38 (40)
Bilateral	4 (4)
Unknown	3 (3)
Histopathological type	
Invasive carcinoma of no special type	72 (75)
Invasive lobular carcinoma	4 (4)
Pleomorphic invasive lobular	1 (1)
Mucinous carcinoma	3 (3)
Papillary carcinoma	1 (1)
High ductal carcinoma in situ	1 (1)
Metastasis carcinoma	3 (3)
Metaplastic carcinoma	1 (1)
Micropapillary carcinoma	1 (1)
Medullary carcinoma	1 (1)
Unknown	8 (8)
Histopathological grade	
1	2 (2)
2	31 (32)
3	43 (45)
Unknown	20 (21)
Lymph node status	
+	4 (4)
–	7 (7)
Unknown	85 (88)
Lymphovascular invasion	
+	27 (28)
–	42 (44)
Unknown	27 (28)
Fat invasion	
+	26 (27)
–	4 (4)
Unknown	66 (69)

The peak in 2022 was 35–44 years, while the peak from January to June 2023 was 45–54 years.

Based on laterality, breast cancer cases at Cibabat Regional General Hospital mainly occurred in the left breast with 49 cases (52%), followed by cases in the right breast with 38 cases (40%), bilateral with 4 cases (4%), and unknown as many as 3 cases (3%). The most common

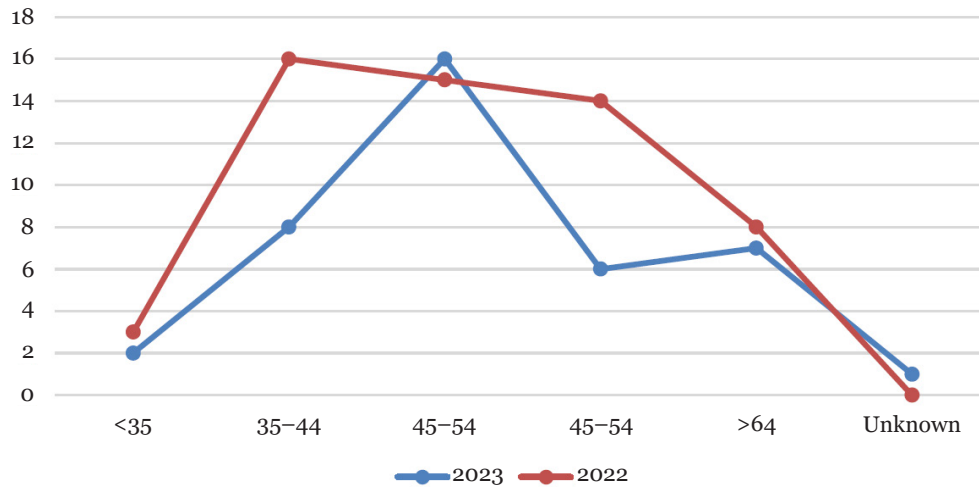


Figure 1 Age Distribution of Breast Cancer Patients at Cibabat Regional General Hospital in 2022–2023

histopathological type was invasive carcinoma of no particular kind, with 72 cases (75%). Other types can also be found, although the numbers are very few. There were 8 cases of breast cancer whose histopathological type was unknown (8%). The most common histopathological grade was Grade 3 with 43 cases (45%), followed by Grade 2 with 31 cases (32%), Grade 1 with 2 cases (2%), and 20 cases with an unknown grade (21%).

Lymph node metastases can be identified by positive or negative lymph node status. Most cases at Cibabat Regional General Hospital

had unknown lymph node status, with 85 cases (88%). The number of cases with positive lymph node status was 4 (4%), while the number with negative status was 7 (7%). Lymphovascular invasion is known to be associated with the presence of lymph node metastases in the axilla. Negative lymphovascular invasion had the most significant number, with 42 cases (44%). Fat invasion is also a factor that can indicate a poor prognosis for breast cancer. In this study, most fat invasions were unknown, with 66 cases (69%).

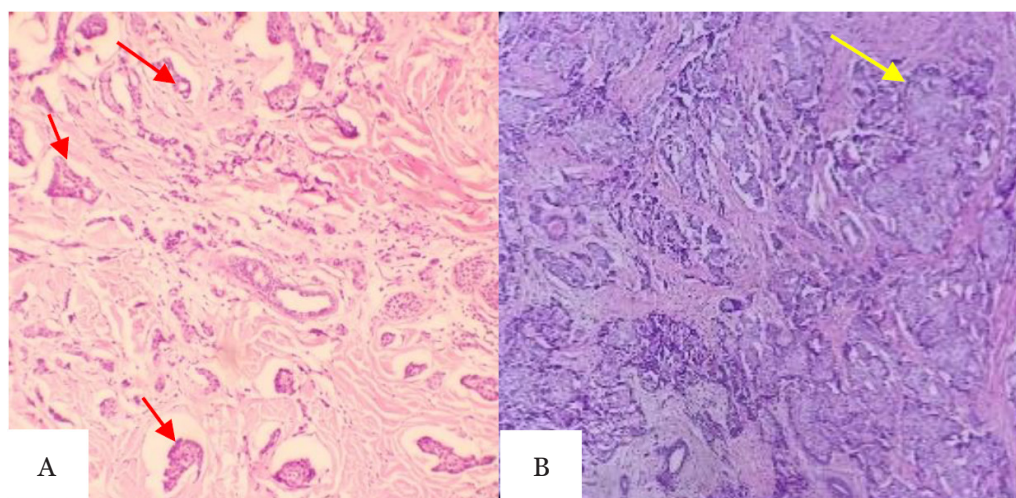


Figure 2 Histopathology of Breast Cancer with HE Stain and Magnification of 100×

Note: (A) grade 2 is indicated by 10–75% of gland appearance (red arrow), (B) grade 3 is indicated by the solid appearance (yellow arrow)

Discussion

Most cases of breast cancer at Cibabat Regional General Hospital occurred among those aged 45 to 54, with 31 cases (32%). These results are similar to research by Fajar et al.,⁷ which states that breast cancer cases in Al Ihsan Hospital, West Java, most often occur in the 45–54 year age group (44.36%). Research by Ervina et al.⁸ also stated that breast cancer cases at Dr. Saiful Anwar Hospital Malang most often occur in the 46–55-year age group (28%). This is supported by Shoemaker et al.,⁹ that breast cancer cases in 2004–2013 among Asian and Pacific Islander ethnic groups experienced a significant increase in 45–49. Based on Figure 1, 2022 and 2023 have different peaks. It is thought to be due to differences in factors that cause breast cancer, such as lack of physical activity, high calorie and fat consumption, alcohol use, and use of hormone replacement therapy.¹⁰

Based on laterality, breast cancer cases at Cibabat Regional General Hospital mainly occurred in the left breast, with 49 cases (52%). This follows previous research, which states that the number of cases of left breast cancer is higher than right breast cancer, with a ratio ranging from 1.05 to 1.26.¹¹ Despite having the same genetic and environmental risk factors for cancer, the left and right breasts differ in tissue shape, artery and venous supply, and lymphatic drainage during embryonic development. This is what causes differences on the two sides and is a possible cause of laterality in breast cancer.¹² The left breast is known to have more tissue mass, which is thought to result in a mild tendency for breast cancer on the left side. However, subsequent research stated that the risk of cancer was not related to breast size. Laterality in breast cancer is hypothesized to be caused by cerebral hemisphere laterality as well as handedness. Most women are thought to be right-handed; therefore, a palpable bump on the left chest is more likely to be discovered. Breastfeeding patterns and lactation dysfunction in the left breast are also suspected causes. However, subsequent research has not confirmed these allegations or accepted uniformly.¹³ Until now, the exact cause of the more significant number of cases found in the left breast is not known, but research by Abdou et al.¹² stated that left breast cancer has a more proliferative genomic profile, a lower response to neoadjuvant chemotherapy, and slightly worse

long-term outcomes compared with right breast cancer.

The most common histopathological type was invasive carcinoma of no special type, with 72 cases (75%). These results are from previous research, which stated that invasive carcinoma of no special type or invasive ductal carcinoma is the most common histological type of invasive breast cancer, which is around 70–75% of all cases.¹⁴ This is because invasive carcinoma of no special type originates from the epithelial lining of the breast ducts and does not exhibit sufficient characteristics to warrant classification as a particular type.¹⁵

The most common histopathological grading of breast cancer cases at Cibabat Regional General Hospital was grade 3, with 43 cases (45%). These results are similar to research by Fajar et al.⁷ at Al Ihsan Hospital, West Java, with 136 cases (51.13%) and research by Ervina et al.⁸ at Dr. Saiful Anwar Hospital Malang, with 240 cases (47%). Grade 3 indicates that the cancer has poor differentiation with rapid and uncontrolled cell growth and spread and also does not resemble the original cells, so there is a high possibility of breast cancer recurrence. Many grade 3 cases were discovered at Cibabat Regional General Hospital due to a lack of an effective screening procedure. In addition, lack of awareness about symptoms and delays in treatment are also thought to contribute to this occurrence.¹⁶

Cibabat Regional General Hospital reported that up to 88% of breast cancer cases had no known lymph node status. Lymph node status is an important prognostic factor and is closely related to breast cancer treatment, morbidity, and mortality. Histological evaluation of the axillary lymph nodes can help detect metastasis, which is a common complication of breast cancer.¹⁷ Breast cancer cells that experience lymph node metastases initially pass through the sentinel lymph node and then move to the axillary lymph node. For breast cancer patients, the higher the degree of lymph node metastasis, the lower the cumulative survival rate.¹⁸

Lymphovascular invasion is also an essential prognostic factor in breast cancer that can indicate the level of tumor aggressiveness and be a predictor of worse survival outcomes in breast cancer. Lymphovascular invasion is defined as tumor cells in endothelial-lined spaces (lymphatics or blood vessels) in the breast that surround the invasive carcinoma. The presence of lymphovascular

invasion is associated with an increased risk of axillary lymph node metastasis.¹⁹ In this study, the negative lymphovascular invasion had the highest number with 42 cases (44%), while the positive lymphovascular invasion was 27 cases (28%), and cases of unknown invasion were 27 cases (28%). Based on these results, there is a possibility of metastasis in positive cases, with 28%. This result is different from the research results of Fajar et al.,⁷ which had a higher number of cases with positive lymphovascular invasion, 192 cases (72.18%). This difference is assumed to occur due to incomplete data.

In this research, most fat invasions were unknown, with 66 cases (69%). Fat invasion is essential to know because it is a biological indicator of tumor aggressiveness in early-stage breast cancer. The tumor microenvironment is a heterogeneous cell population consisting of tumor cells and endogenous stromal cells, such as vascular endothelial cells, pericytes, fibroblasts, bone marrow mesenchymal stromal cells, immune cells, and adipocytes. These stromal cells are recruited by cancer cells and promote cell migration, tumor angiogenesis, proliferation, invasion, metastasis, and drug resistance. Adipocytes are abundant stromal partners in breast tissue, and cancer cell invasion into local fat may increase metastatic potential in animal model studies.²⁰ Proper evaluation of fat invasion has proven helpful in formulating therapeutic strategies and predicting which breast cancer patients will have an excellent prognosis.

This research has limitations, including a lack of medical records, which prevent it from investigating various additional factors that can influence the prognosis of breast cancer.

Conclusion

Breast cancer cases at Cibabat Regional General Hospital mainly occur in patients of productive age with a high grade and dominantly in the left breast.

Conflict of Interest

None declared.

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