https://doi.org/10.70844/icrj.2025.1.1

International Cancer Research Journal

Research Article

ICRJ-25-002

Patterns of Histopathology Presentation of Breast Cancer in A Tertiary Hospital in Somalia

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Received date: 11 September, 2025, **Accepted date:** 18 September, 2025, **Published date:** 26 September, 2025

Citation: Ibrahim IG, Abdullahi IM, Osman AA, Ali AM, Elmi AM, et al. (2025) Patterns of Histopathology Presentation of Breast Cancer in A Tertiary Hospital in Somalia. Innov J Appl Sci 1(1): 1.

Abstract

Introduction: Breast cancer is the most common malignancy in African women and its incidence has been increasing steadily for the past three decades. The mortality and survival rates in Africa are higher than in developed countries due to poor oncological care, from prevention to treatment of the disease. The purpose of this study was therefore to describe the histopathological presentation of breast cancer in a tertiary care hospital in Mogadishu, Somalia.

Methods: In this study, a total of 246 cases were pathologically confirmed Breast Cancer (BC) reports were retrospectively obtained from the electronic records of Mogadishu-Somali-Turkey Education and Research Hospital for the period between January 1, 2018 and December 31, 22. The breast cancers were typed using the recent pathological typing of breast cancer.

Results: A total of 246 patients with malignant breast disease were retrospectively obtained from the hospital pathology record. The age distribution of the study showed that the majority of patients were aged between 40 and 59 years, 62.9 percent. Invasive ductal carcinoma was the most frequently reported histologically diagnosed cases at 78.4 percent, followed by invasive lobular carcinoma at 18.6 percent. 90.5 percent of patients with invasive ductal carcinoma were aged between 40 and 59 years. The right breast was involved in 50 percent of cases, the left breast in 48.4 percent and both breasts in four patients of the cases (1,5%). In the majority of cases, 71.3 percent were presented with stage II, followed by stage III (19.8%) and stage IV (7.2%). Approximately more than half of the cases, 59.3%, were in grade 2 at the time of presentation, while 21.6% were in grade 3 and 7.8% were in grade 1.

Conclusion: we report that breast cancer in Somalia mostly affects younger age groups. Invasive ductal carcinoma is the most prevalent histological type.

Keywords: Histopathology, Breast cancer, Tumor patterns, Cancer diagnosis, Pathological features

Introduction

Studies show that cancer is one of the most important diseases in the world, aggravated by epidemiological factors. In 2012, there were an estimated 14.9 million new cases in the world. Within two decades, up to 22 million new cases are expected to occur. Breast cancer is a common cancer in women worldwide, with rates ranging from 19.4 per 100,000 in East Africa to 89.7 per 100,000 in Western Europe [1].

In Africa, the number of cases and deaths from breast cancer has increased from 92,600 cases and 50,000 deaths in 2008 to 168,690 cases and 74,072 deaths in 2018. Data on the incidence and mortality of breast cancer are essential in setting health priorities [1]. Longer life expectancy, a lower burden of infectious diseases and changes in risk factors for reproduction all contribute to increased incidence of breast cancer in less developed and developing countries. Breast cancer patients in low- and middle-income countries are more often delayed in the diagnosis process compared to those in developed countries, leading to later presentation. Breast cancer is the most common cancer in African women and its incidence has been steadily increasing over the past three decades due to factors such as longevity, a westernised lifestyle marked by late marriage, shorter breastfeeding duration and menopause. Poor oncological care, from prevention to palliation, mortality and survival rates in Africa are greater than in developed countries [2-5].

https://doi.org/10.70844/icrj.2025.1.1

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The study intends to describe the patterns of histopathology presentation of breast cancer diagnosed in Somalia at Mogadishu–Somalia Turkey Education and Research Hospital.

Methods

Mogadishu-Somali-Turkey Teaching and Research hospital was officially opened in 2015 in the Somali capital of Mogadishu. The hospital offers tertiary care and can perform a wide range of surgical and diagnostic procedures, including Ultrasound (US), CT and MRI, as well as imaging-guided biopsy procedures. The incidence of breast cancer in Somalia is not known due to the lack of a national cancer registry. Although most previous studies in Somalia have focused on all cancers, Tahtabasi et al., Breast cancer was ranked third, after esophageal cancer and liver cancer. However, this is the first retrospective study to focus on only breast cancer patients in Mogadishu, Somalia, from January 1, 2018 to December 31, 2022. Complete information on histological subtypes, sex, age and grade of tumor was obtained from the pathology lab. All results were observed by resident pathologists, junior pathologists and one senior pathologist before final diagnosis. Histological grading was performed according to the Nottingham grading system, which is based on microscopic examination of the morphologic and cytological characteristics of tumor cells and assigns a score to each of the parameters (degree of tubule formation, nuclear pleomorphism and mitotic count). Each is given a score between 1 and 3, with 1 being the nearest to normal and 3 being the most unusual. These three scores are added together to form the Nottingham score. The minimum possible score is 3 (1+1+1) and the maximum possible score is 9 (3+3+3). The sum of these scores stratifies the breast tumours into Grade I (3, 4 and 5) (G1; well differentiated), Grade II (6 and 7) (G2; moderately differentiated) and Grade III (8 and 9) (G3; poorly differentiated) [5].

In this study, 246 breast cancer cases were retrospectively retrieved from the electronic records of the Teaching and Research Hospital in Mogadishu, Somalia, for five years from January 1, 2018 to December 31, 2022. Demographic parameters (age, sex), sampling site, method of sampling (e.g. ultrasound guided core biopsy, excisional biopsy and radical mastectomy) and histological parameters are all recorded in detail in the computerised medical system. The study excluded cases with incomplete data. Our hospital pathology lab doesn't have an immunohistochemistry examination machine and molecular tests, nor does it have a mammography center or a well-equipped chemo-radiotherapy center. All of these are limitations of our study.

Data were collected using Microsoft Excel and analysed using IBM Statistical Package for Social Sciences (IBM SPSS) (version 26, Armonk, New York, IBM Corp.). The Local Ethics Committee approved this retrospective study on August 1, 2021. Descriptive data analysis was used in this study

Result

The study included a total of 246 patients with malignant breast masses diagnosed histologically within the last five years. The mean age of the patients was 46.17 (SD= 12.30) ranging from 26 years to 84 years old. The age distribution of the study was found to be 132 (53.7%) 40-59 years, 77 (31.3%) 21-39 years and 37 (15%) > 60 years. Based on gender breakdown, the majority of patients, 245 (99.6%), were women, with only 1 (0.4%) being men. The lesions were found to be located in the right breast in 123 (50%), the left breast in 119 (48.4%) and both breasts in 4 cases. Among the histopathological types of breast cancer, Invasive Ductal Carcinoma (IDC) was the most common type of breast cancer, accounting for 209 (85%), followed by Invasive Lobular Carcinoma (ILC) accounting for 22 (8.9%), papillary carcinoma with 5 (2) and metaplastic carcinoma with 3 (1.2%). The micropapillary and medullary cancer were only two cases of either type. Liposarcoma, apocrine and mixed (lobular and ductal) carcinomas were the least common, with 1 case each (Figure 1). In most cases, 120 (48.5%) were in Stage II disease, followed by 98 (39.8%) in Stage III and 18 (7.3%) were in Stage IV and the least common was Stage 2, 10(4.1). Around half of the cases - 137 (55.7%) were in grade 2, 89 (36.2%) in grade 3 and 20 (8.1%) in grade 1. (Table1) (Figure 2).

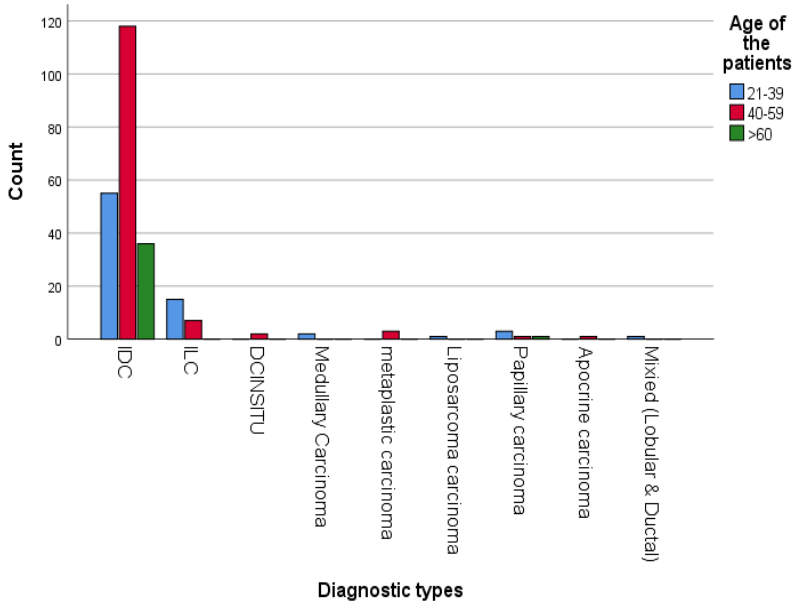

Figure 1: Distribution of breast carcinoma diagnostic types by age group.

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Demographic and clinical features		Staging				Mean	Std. deviation
		Stage 1	Stage 2	Stage 3	Stage 4	2.5	0.693
		Count	Count	Count	Count	2	0.064
Gender of the patients	Male	0	1	0	0		
	Female	10	119	98	18	46.17	12.295
Age of the patients	<20	0	0	0	0		
	21-39	3	40	30	4		
	40-59	5	56	57	14		
	>60	2	24	11	0		
Side of the breast	Right	3	61	50	9	1.52	0.532
	Left	7	57	48	7		
	Bilateral	0	2	0	2		
Diagnostic types	IDC	7	106	81	15	1.38	1.242
	ILC	0	10	12	0		
	Micropapillary carcinoma	1	0	1	0		
	Medullary Carcinoma	0	2	0	0		
	metaplastic carcinoma	0	1	1	1		
	Liposarcoma	1	0	0	0		
	Papillary carcinoma	1	0	2	2		
	Apocrine carcinoma	0	1	0	0		
	Mixied (Lobular & Ductal)	0	0	1	0		
Grading	Grade 1	4	13	3	0	2.28	0.605
	Grade 2	5	67	61	4		
	Grade 3	1	40	34	14		

Table: Distribution of demographic and clinical features by cancer stage (N = 246).

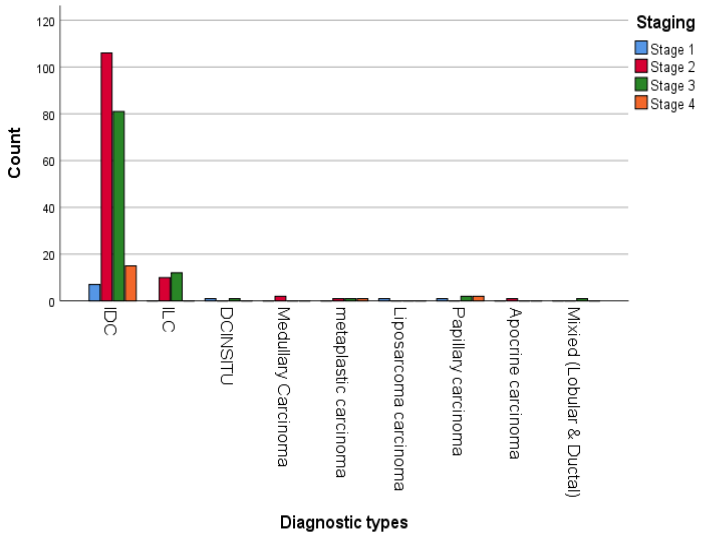

Figure 2: Distribution of breast carcinoma diagnostic types by tumor stage.

Discussion

Our study adds to the knowledge on histopathological characteristics of breast cancer in Somalia, focusing in particular on tertiary level hospitals. The results indicate that breast cancer is predominantly found in middle-aged women, with Invasive Ductal Carcinoma (IDC) being the most common histological subtype. The majority of patients had stage II disease followed by stage III tumors. Our study was comparable to other reports from sub-Saharan Africa and highlights the increasing burden of breast cancer in sub-Saharan Africa, with a still unmet need for early detection and treatment [6,7].

Our study found 53.7 percent of the patients with breast cancer were aged between 40 and 59 years, which is consistent with the findings of the Abdulrahman and Rahman study [8]. This may be due to interactions between genetic, environmental and reproductive influences [9]. The majority of breast cancer patients are women, 99.6 percent, which is in line with the world average, but male breast cancer cases require greater awareness and care in men.

The predominance of Invasive Ductal Carcinoma (IDC) 85% in our study, which corresponds to the global trends and is parallel to the findings of Olayide et al. and Espina et al, where IDC had the highest diagnoses frequency as a histological type [10,11]. The second most common subtype in our study was Invasive Lobular Carcinoma (ILC), accounting for 8.9 percent of the total cases. Other uncommon subtypes such as papillary carcinoma and metaplastic carcinoma were less frequent, parallel reports were reported in Nigeria and Libya [12,13]. It follows from the above that the incidence of breast cancer in Somalia and in particular the prevalence of invasive ductal carcinoma, suggests that breast cancer in Somalia is following the general pathophysiological trends observed worldwide.

For the grading of tumors, our study aligns with other African countries, conducted by Ginsburg et al. and Kene et al [12,14]. and we noted that grade 2 was the most prevalent in our study (55.7%) followed by grade 3 (36.2%) and grade 1 (8.1%). Such grades were also reported in Iraq and Pakistan [15,16]. The findings of the majority of grade II and III dominant tumors appear to indicate that this group has a poor prognosis due to likely more aggressive tumor behaviour and a poorer prognosis, especially in low-resource settings where early intervention is often lacking [17].

A key finding from our study is the distribution of patients at different stages: 48.5% at stage II, which is the majority of cases, followed by 39.8% at Stage III and 7.3% diagnosed at stage IV. These late presentations were parallel in studies conducted in sub-Saharan Africa, appear to be further complicated by delays in diagnosis owing to socioeconomic and healthcare infrastructure challenges, which in turn, result in poor prognoses [18,19]. In contrast, developed nations have a higher proportion of patients diagnosed at earlier stages due to the availability of advanced screening and diagnosis systems [20]. There are many reasons for advanced presentation of breast cancer in Somalia, including lack of information, cultural beliefs and inadequate diagnostic and treatment centers. As noted by Ntirenganya et al., the absence of diagnostic modalities such as mammography and immunohistochemistry are a major obstacle to early detection and appropriate management of breast cancer [21].

The findings in Somalia are similar to those reported by Mensah et al. and Gusbi et al., in Nigeria, Ghana and Libya where the majority of the patients are diagnosed at advanced stages and there is inadequate oncologic care [13,22]. These patterns from different countries suggest that there is an urgent need for inter-country initiatives to enhance breast cancer awareness, screening and treatment. The research by Wondimagegnehu et al. and Cummings-John et al., conducted in Ethiopia and Sierra Leone highlights a common trend of late-stage presentation, which calls for urgent population-level health services to improve early detection [23,24].

This lack of mammography screening programs combined with poor access to radiotherapy and inadequate chemotherapy services demonstrate the need to implement policy changes that strengthen the healthcare system, train health professionals and establish national cancer control programs [25,26].

In this study, some gaps in the optimal breast cancer care in Somalia were uncovered and a similar barrier was identified by Olaogun JG et al. The absence of immunohistochemistry testing makes it impossible to classify tumors into molecular subtypes, which is critically important for a targeted therapy [27]. Moreover, the lack of radiotherapy options coupled with limited chemotherapy choices results in many patients seeking care abroad, especially in India and Turkey, which comes at significant financial expenses [26]. There seems to be a prevailing fear of mastectomies which causes many women to delay their presentation, as has been seen in some other African contexts, including in Ghana and Nigeria [25,28].

Conclusion

Our study highlights the urgent need for improved breast cancer care in Somalia. Improving early detection and treatment outcomes requires strengthening health care infrastructure, awareness and screening programmes. This regional cooperation and policy-driven intervention will be crucial in addressing the growing burden of breast cancer in Somalia and the Sub-Saharan African region as a whole.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Conflict of interest

The authors declare no conflict of interest.

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