

The Epidemiological, Clinical, and Pathological Features of Breast Cancer: A Retrospective Study from a Tertiary Care Hospital

Sophana Sam¹, Sihapol Tan², Sovenda Pan³, Silab Ong⁴, Khannara Kheng⁵,
Sikheang Chhiv⁶, Sear Soun⁷, Sophal Mom⁸, Navuddh Oam^{9*}, Sereyvathana Chhut¹⁰

^{1, 6}Department of Pathology, Khmer - Soviet Friendship Hospital, Phnom Penh, Cambodia

²Siem Reap Referral Hospital, Siem Reap, Cambodia

³Kampong Speu Referral Hospital, Kampong Speu, Cambodia

^{4, 10} Calmette Hospital, Phnom Penh, Cambodia

⁵ Cambodia - China Friendship Preah Kossamak Hospital, Phnom Penh, Cambodia

^{7, 8} Health Science Institute of Royal Cambodian Armed Forces, Phnom Penh, Cambodia

⁹ Techo Santepheap National Hospital, Phnom Penh, Cambodia

*Corresponding Author Email: [na.rcammed\[at\]ymail.com](mailto:na.rcammed[at]ymail.com)

Abstract: Breast cancer is characterized by the development of a tumor originating from glandular cells, with different names assigned based on the specific cells affected. The tumor's growth is uncontrolled by the body, expanding chaotically throughout the gland. The study aims to explore the epidemiological, clinical, and pathological aspects of breast cancer. We conducted a retrospective study at the Khmer - Soviet Friendship Hospital on 286 confirmed cases of breast cancer in women over a two - year period, from January 1, 2017, to December 31, 2018. Invasive ductal carcinoma was the predominant type, representing 263 cases (91.96%) of all malignant breast tumors. The majority of affected individuals were postmenopausal women aged 56 - 65, accounting for 107 cases (37.41%). Advanced - stage tumors were identified in 222 cases (77.62%), with 38 cases (13.29%) exhibiting metastases to the lungs, liver, multiple organs, or brain. Mammographic anomalies, predominantly masses or asymmetry of density, along with suspicious microcalcifications, were detected in 98.57% of cases. Ultrasound findings included solid masses (100%) and axillary lymphadenopathy (74.48%). Pathological analysis revealed invasive ductal carcinomas with high Scarff - Bloom - Richardson prognostic factors (SBR II and III) in 89.51% and negative hormonal status in 9 of 32 cases. Awareness of breast selfexamination in detecting anomalies is crucial for women. . Routine mammographic screening every two years for peri - and postmenopausal women can aid in identifying smaller tumors, significant for early and potentially curable treatment interventions.

Keywords: Breast cancer, TNM classification, pathological feature

1. Introduction

Breast cancer originates from the mammary glands cells and develops as a tumor. The tumor's name varies based on the specific cells affected. This tumor grows uncontrollably within the gland, spreading in a chaotic manner [3]. The World Health Organization (WHO) identifies it as the leading cause of cancer - related deaths in women aged 40 to 59 [4].

Mass screening and early diagnosis are crucial for improving the chances of recovery; they are associated with conservative surgery, as well as radiotherapy, chemotherapy, hormone therapy, and targeted treatment for metastases [5]. Utilizing mammography, ultrasonography, and micro - biopsy for early detection can aid in breast preservation. Unfortunately, many women delay screening until symptoms appear, which is particularly problematic in developing countries where incidence rates are rising. [6]. At the Khmer - Soviet Friendship Hospital, diagnosis relies on clinical signs, mammography, breast ultrasound, cyto - puncture for fluid - filled tumors, and microbiopsy for solid tumors. These latter tests primarily ensure accurate exclusions and precise diagnoses, with macrobiopsy identifying breast cancer in 95%

of cases. Surgical removal confirms the type, histo - prognostic grades, lymph node statuses, and pathological anatomy type, which can be analyzed using lab tests like immunohistochemistry (IHC), fluorescence in situ hybridization (FISH), or chromogenic in situ hybridization (CISH). Historically, before HER2 - specific therapies were available, HER2 - positive breast cancers were more aggressive. This aids in optimizing treatment strategies and formulating guidelines.

The significance of this study lies in its comprehensive analysis of breast cancer through an examination of epidemiological, clinical, and pathological features within a tertiary care hospital setting. The purpose of this study is to analyze the epidemiological, clinical, and pathological features of breast cancer in patients treated at a tertiary care hospital.

2. Materials and Methods

2.1 Study setting and population

This retrospective study was conducted over a two - year

Volume 13 Issue 9, September 2024

Fully Refereed | Open Access | Double Blind Peer Reviewed Journal

www.ijsr.net

period from January 1, 2017, to December 31, 2018, focusing on breast cancer in women. Case recruitment took place in the Gynecology Department for patients who underwent surgery, the Medical Oncology Department for those receiving chemotherapy and radiotherapy, and the Anatomopathology Cytology Department at the Khmer - Soviet Friendship Hospital in Phnom Penh, Cambodia. During this timeframe (2017 - 2018), 286 cases of breast cancer in women were included, based on specific inclusion criteria. The inclusion criteria were diagnosis of breast cancer was confirmed by an anatomopathological examination, cancer staging, chest X - ray, abdominal ultrasound, and bone X - ray, surgical protocol along with postoperative follow - up data. Subjects with incomplete medical records were excluded.

2.2 Data analysis

All data were stored in Excel and data entry was carried out with coding and verification. For description of baseline characteristics, number and percentage were used for categorical variables, and mean with standard deviation or median with 25th - 75th percentile range were used for continuous variable according to their distribution. Baseline characteristics were described in number and percentages for categorical variables, and median and interquartile range for continuous variables. SPSS Version 22 was used for data analysis.

2.3 Ethical consideration

This study was conducted with approval from the committee of Khmer - Soviet Friendship Hospital and University of Health Sciences, Phnom Penh, Cambodia.

3. Results

3.1 Demographic background

The total women with breast cancer were 286 included in this study. There were most majority of breast cancer in age group of 56 - 60 (35.31% followed by age group of 51 - 55, and 45 - 50. We found that there are 217 cases, or 75.87%, of women who breastfeed and 69 women, or 24.13%, who do not, of which 4 women were single (Table 1). There were more common in housewife, 32.52%.

There were 286 women with breast cancer with the prevalence of 8.56%. Table 2. We found that the right side was the most affected by breast cancer, with 175 cases or 61.19%, the left breast was 38.11%, and bilateral breast was the least common, 0.70%. The upper outer quadrant is the most affected, representing 186 cases or 65.03% and followed by upper - inner quadrant. Table 3.

Table 1: Characteristics of women with breast cancer

Characteristics	Total Subjects, n (%)
Gender	286 (100)
Female	286 (100)
Age group (years)	286 (100)
45 - 50	59 (20.63)
51 - 55	86 (30.07)
56 - 60	101 (35.31)
61 - 65	20 (6.99)
66 - 70	9 (3.15)

>70	11 (3.85)
Occupation	286 (100)
Housewife	93 (32.52)
Farmer	71 (24.83)
Vendor	64 (22.38)
Worker	40 (13.99)
Officer	12 (4.20)
Machanical	6 (2.10)
History of breastfeeding	286 (100)
Breastfeeding	217 (75.87)
Single	4 (1.40)
Non - reastfeeding	65 (22.73)

Table 2: Frequency of the patients with breast cancer by year of study

Year	Number of total hospitalized patients	Women with breast cancer, n (%)
2017	1,598	160 (10.01)
2018	1,744	126 (7.22)
Total	3,342	286 (8.56)

Table 3: Lateralization and location of the breast cancer

Lateralization	Total Subjects, n (%)
Right breast	175 (61.19)
Left breast	109 (38.11)
Bilateral	2 (0.70)
Total	286 (100)
Quarant of breast	Total Subjects, n (%)
UOQ	175 (61.19)
UIQ	109 (38.11)
IOQ	2 (0.70)
IIQ	2 (0.70)
RM	2 (0.70)
Total	286 (100)

UOQ: upper outer quadrant; UIQ: upper - inner quadrant; IOQ: infero - outer quadrant; IIQ: intero inner quadrant; RA: retro - areolar

3.2 Clinical features

From a clinical perspective, all indicators of breast cancer were observed, with the most frequent being a fixed breast nodule in 162 cases (56.64%), a movable breast nodule in 78 cases (27.27%), and mastodynia with a detectable tumor in 23 cases (8.04%). Other symptoms appeared less consistently, such as peau d'orange, ulceration with skin retraction, inflammatory signs, and nipple discharge.

Table 3: Clinical features of study subjects

Clinical features	Total Subjects, n (%)
Fixed breast nodule	162
Movable breast nodule	78
Mastodynia with nodule	23
Ulcer	9
Inflammation	6
Nipple discharge	3
Skin retraction	2
Peau d'orange	2
Mastodynia	1
Total	286

3.3 Risk factors of breast cancer

The predominant risk factors found in our study include advanced age of 50 years or older, accounting for 227 cases

or 79.37%, followed by late menopause occurring at 55 years or older, noted in 133 cases or 46.50%, and having a first pregnancy at an older age, recorded in 50 cases or 17.48%. In contrast, hormonal contraception was present in only 58 cases or 20.28%. Furthermore, family history of breast cancer, high - risk mastopathy, and hormone replacement therapy were less commonly reported.

Table 3: Distribution of patients according to risk factors

Risk factor	Total Subjects, n (%)
Age ≥ 50 years	227 (79.37)
Hormonal factor	
- Hormonal contraception	58 (20.28)
- Early menarche < 12 years	19 (6.64)
- Late age at first pregnancy ≥ 25 years	50 (17.48)
- Pauciparity	101 (35.31)
- Nulliparity	62 (21.68)
- Late menopause ≥ 55 years	133 (46.50)
- Hormone replacement therapy	4 (1.40)
Family history of breast cancer	7 (2.45)
High - risk mastopathy	2 (0.70)

3.4 Pathological aspects of the breast tumor

The majority of patients had T4 tumors (122 cases or 42.66%), with an average size of 85.1 mm. Table 4. All patient received an ultrasound examination of both the affected and the opposite breast. This evaluation confirmed that all patients suspected of breast cancer were classified as BIRADS IV. The ultrasound revealed the following abnormalities: solid mass in 286 cases, representing 100%, axillary lymphadenopathy in 213 cases, or 74.48%, changes in parenchymal echostructure in 86 cases, or 30.07%, multifocality or multicentricity in 59 cases, or 20.63%, skin thickening in 46 cases, or 16.08%, focal parenchymal acoustic shadowing in 35 cases, or 12.24%, involvement of the pectoral muscle in 9 cases, or 3.15%, lymphatic dilation in 4 cases, or 1.40%. Table

Table 4: TNM Classification and tumor size

TNM Classification	Tumor Size	Total Subjects, n (%)
T1	< 2 cm	18 (6.29)
T2	2 et 5 cm	52 (18.18)
T3	> 5 cm	94 (32.87)
T4	Extension to the skin, chest wall, and/or inflammatory extension	122 (42.66)
Total		286 (100)

Table 5: The abnormality on ultrasound

Ultrasound Abnormalities	Total Subjects, n (%)
Solid mass	286 (100)
Axillary lymphadenopathy	213 (74.48)
Changes in parenchymal echostructure	86 (30.07)
Multifocality, multicentricity	59 (20.63)
Skin thickening	46 (16.08)
Focal parenchymal acoustic shadowing	35 (12.24)
Involvement of the pectoral muscle	9 (3.15)
Lymphatic dilation	4 (1.40)

4. Discussion

In our study, the average age of participants was relatively high at 56.2 years (ranging from 56 to 65), which contrasts with other research showing an average age of 60.8 years in the Jamaican population [5] and 53.5 years among the French [6]. In Wingo PA and colleagues' study [7], the average age at diagnosis was slightly earlier, at 57.6 years, compared to 56.2 years in our group. Breast cancer occurrence varies by ethnicity and age, with higher rates noted in Black populations [7]. The most frequent reason for consultation in our series was the detection of a breast lump, cited in 263 cases (91.96%), often diagnosed at a later stage. Among these, only 18 patients (6.29%) had tumors at stage T1, while 52 cases (18.18%) were at T2, 94 cases (32.87%) at T3, and 122 cases (42.66%) at T4. When we compared the average tumor size in our patients to Western studies like those by Juhan, we found larger tumors in women aged 50 to 69 years (30 mm in Juhan's series [8], compared to 85.1 mm in ours), indicating a more advanced local stage than in the study by Smoot RL and colleagues (91 mm) [9]. The overall survival rate, regardless of stage, is about 60% at five years and 47% at ten years if the tumor size at diagnosis is less than 2 cm [40]. The median age for breast cancer diagnosis is 56.2 years. The risk increases with age, being rare before 44 and noticeable from the mid - 30s. Most recognized risk factors for breast cancer involve unusually high exposure to estrogens, whether from external sources or produced by the body. In our Cambodian cohort, five factors showed significant associations in a univariate analysis when compared with the French [10] and Tunisian [11] cohorts.

We found that nonspecific skin and subcutaneous changes such as skin thickening, dilation of lymphatics and veins, and interstitial edema with increased echogenicity of subcutaneous fat. Parenchymal changes presented as focal attenuation without a mass, suggesting stromal infiltration. Potential masses were often irregular, heterogeneous, and vascularized, detected more easily than with mammography, especially in dense breast tissue. This improved the identification of axillary lymph nodes over mammography and aided pathological diagnosis without a breast mass. Common ultrasound abnormalities across various studies included skin thickening, solid masses, changes in parenchymal echostructure, and axillary lymphadenopathy. Solid masses were reported in 100% of cases in our study, with 20.63% being multifocal or multicentric, and 74.48% showing axillary lymphadenopathy. Skin thickening was present in only 16.08% of cases, a lower rate than in other studies. Lymphatic dilation, which indicates tumor emboli in the dermal lymphatics, was also noted in the studies by Günhan - Bilgen I et al. [12] and Lee KW [13], at 68% and 55% respectively. Pectoral muscle involvement was examined only in the study by Günhan - Bilgen I et al., showing a low rate of 10%. However, our series did not assess lymphatic dilation or pectoral muscle involvement [12].

5. Conclusion

This study highlights the predominance of advancedstage breast cancer in postmenopausal women in Cambodia, emphasizing the need for better screening and early detection strategies. The findings show the high incidence of invasive

ductal carcinoma and underscore the importance of routine mammography and breast self-examinations for early intervention. Enhanced public awareness and access to healthcare facilities are crucial in reducing breast cancer morbidity and mortality rates.

[13] Lee KW, Chung SY, Yang I, Kim HD, Shin SJ, Kim JE et al. Inflammatory breast cancer: imaging findings. *Clin Imaging*. 2005 Jan - Feb; 29 (1): 22 - 5.

Conflict of Interest Statement

All authors disclose no conflict of interest related to this submission.

References

- [1] MJ, Lagios MD, Craig PH, Waisman JR, Lewinsky BS, Colburn WJ, Poller DN. A prognostic index for ductal carcinoma in situ of the breast. *Cancer* 1996 Jun 1; 77 (11): 2267 - 74.
- [2] National Agency for Health and Scientific Research in Oncology (INCa). Breast Cancer Screening [online]. Paris: INCa; [updated 2013; accessed January 8, 2013].
- [3] Hailu HE, Mondul AM, Rozek LS, Geleta T. Descriptive Epidemiology of breast and gynecological cancers among patients attending Saint Paul's Hospital Millennium Medical College, Ethiopia. *PLoS One*. 2020 Mar 20; 15 (3): e0230625.
- [4] World Health Organization. Global Health Estimates 2016: Disease Burden by Cause, Age, Sex, by Country and by Region, 2000–2016. World Health Organization; Geneva, Switzerland: 2018. [(accessed on 9 July 2021)].
- [5] Chevallier B, Roche H, Olivier JP, Chollet P, Hurteloup P. Inflammatory breast cancer. Pilot study of intensive induction chemotherapy (FEC - HD) results in a high histologic response rate. *Am J Clin Oncol*. 1993 Jun; 16 (3): 223 - 8.
- [6] Bertucci F, Tarpin C, Charafe - Jauffret E, Bardou VJ, Braud AC, Tallet A, et al. Multivariate analysis of survival in inflammatory breast cancer: impact of intensity of chemotherapy in multimodality treatment. *Bone Marrow Transplant*. 2004 May; 33 (9): 913 - 20.
- [7] Wingo PA, Jamison PM, Young JL, Gargiullo P. Population - based statistics for women diagnosed with inflammatory breast cancer (United States). *Cancer Causes Control*. 2004 Apr; 15 (3): 321 - 8.
- [8] Juhan V. Breast Cancer in Women Aged Over 70. Marseille: Faculty of Medicine, Marseille; 1997. p.56 - 78.
- [9] Smoot RL, Koch CA, Degnim AC, Sterioff S, Donohue JH, Grant CS, et al. A single - center experience with inflammatory breast cancer, 1985 - 2003. *Arch Surg*. 2006 Jun; 141 (6): 567 - 72; discussion 572 - 3.
- [10] Lê MG, Arriagada R, Bahi J, Pfeiffer F, Cammoun M, Tabbane F, et al. Are risk factors for breast cancer similar in women with inflammatory breast cancer and in those with non - inflammatory breast cancer? *Breast*. 2006 Jun; 15 (3): 355 - 62.
- [11] Urquhart J. Role of patient compliance in clinical pharmacokinetics. A review of recent research. *Clin Pharmacokinet*. 1994 Sep; 27 (3): 202 - 15.
- [12] Günhan - Bilgen I, Ustün EE, Memiş A. Inflammatory breast carcinoma: mammographic, ultrasonographic, clinical, and pathologic findings in 142 cases. *Radiology*. 2002 Jun; 223 (3): 829 - 38.