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ORIGINAL ARTICLE

BREAST CANCER IN A PRIVATE MEDICAL SERVICES CENTER: A 10-YEAR EXPERIENCE

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ABSTRACT

Introduction: *Breast cancer is the most common cancer in the world in women and its incidence is rising, especially in low- and middle-income countries. In Africa, breast cancer has become a leading cancer among women. In sub-Saharan Africa, it is less common, occurs in younger age groups, and majority present late. In Ethiopia, the actual magnitude of the disease is unknown.*

Objective: *The aim of this retrospective study is to analyze the pattern and treatment outcome of patients with breast cancer at our center.*

Methods: *The study includes analysis of the clinical findings and treatment outcome of 404 patients with breast cancer managed from October 1, 2005 to September 30, 2015 at the United Vision Medical Services center, Addis Ababa, Ethiopia.*

Results: *The median age was 45 years; majority (61.2%) in the age group 35-54 years. The female to male ratio was 66.3:1.0. The most common presenting symptom was breast lump (85.3%). The mean duration of presenting symptoms was 9.2 months. On examination, breast lump was noted in 82.2% of the patients. The most frequent histological type was grade II ductal carcinoma. Most patients (80%) underwent breast surgery, mastectomy in nearly 97%. During follow up, 107 of 370 patients (28.9%) developed recurrences/metastasis. The overall 5 year survival was 69.5%.*

Conclusion: *Our study has shown that relatively young females are commonly affected; majority presented in advanced stage of the disease and the recurrence rates were high.*

Key words*: Breast cancer, outcome, private medical service, Ethiopia.*

INTRODUCTION

Breast cancer is the most common site-specific invasive cancer in women across the world and its global incidence is rising, especially in low- and middle-income countries (1,2). The disease remains to be the most lethal malignancy in women with survival rates varying greatly worldwide, ranging from 80% or over in high, around 60% in middle- and below 40% in low-income countries (3). It has become a leading cancer among women in Africa (4), but its burden in Africa is less than it is in industrialized nations (4,5). There is geographic variation in the incidence of the disease, but the trend is generally a rapid increase (6-8), probably due to favorable lifestyles such as delays in childbearing, decreased fertility, and obesity (9).The actual incidence of breast cancer in most African countries, including Ethiopia, is lacking due to absence of national cancer registry, and the available information is mainly from units in public hospitals (10).

Breast cancer affects many young and middle aged African women at the most active phase of their social and economic life. The African population has a low median age and breast cancer among young women comprises a higher proportion in patients visiting African clinics than among older women (8).

Socio-economic status is directly related to the stage of the disease and survival. Increasing incidence of breast cancer does not necessarily increase the mortality rate from the disease (3). The low survival rates in less developed countries can be explained mainly by the lack of early detection programs, lack of adequate diagnostic and treatment facilities, resulting in a high proportion of women presenting with late-stage disease (4,5). Earlier reports from the Tikur Anbessa Hospital concluded that the disease affected mainly young women and the patients presented excessively late (11,12).

Due to the rapid economic growth, private healthcare, including breast cancer care, contributes remarkably to health coverage in Addis Ababa (13) and, to patients that afford, circumvents the long waiting time for admission and treatment.

The purpose of this retrospective study, the first of its kind in a private medical center, was to analyze the pattern, treatment and outcome of patients with breast cancer at the United Vision Medical Services center, Addis Ababa, Ethiopia.

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PATIENTS AND METHODS

The study was a 10 years retrospective series from October 1, 2005 to September 30, 2015 at the United Vision Medical center, Addis Ababa. The center, besides others services, provides preoperative and postoperative evaluation of patients, pathology service, and cancer patient care including adjuvant and neo-adjuvant cancer treatment and patient follow up services. Most of the adjuvant as well as neo-adjuvant therapy were provided at the center.

All breast cancer patients managed at the medical services center, including patients referred to the center for systemic therapy and oncology follow up were included. The collected data included demographic features, clinical records and pathology reports, types of therapy and follow up notes.

Diagnosis of metastases or recurrences was based on clinical evaluation, pathology confirmation, and/or imaging study conclusions. Stage of the disease was based on information gathered from clinical, imaging and pathology reports documented in patients' medical charts. Breast conserving therapy (BCT) with axillary node dissection was performed generally when a patient declines mastectomy whereas toilet mastectomy was performed for mobile ulcerated, fungating or bleeding tumors with or without distant metastases.

Majority of patients (370/404) had follow ups at the medical center. Postoperative ipsilateral chest wall or axillary subcutaneous or skin nodule verified as breast carcinoma by a pathologist was termed as local recurrence. A questionnaire was prepared, pretested, and filled out by a surgical resident. The data was entered into computer and statistical analysis was done using the SPSS package**.**

RESULTS

A total of 404 patients with breast cancer were reviewed, out of which 323 underwent surgical therapy, a modified radical mastectomy in 316 (97.8%), at the Bethzatha General Hospital, a private hospital in Addis Ababa.

Socio-demographic characteristics of 404 breast cancer patients (Table 1). Out of 404 patients with breast cancer, 398 (98.5%) were females. The female to male ratio was 66.3:1.0. The mean and median ages were 46 and 45 (range, 20-80) years respectively. About one third (33.7%) of patients were less than 40 years of age and 7.7% of patients were under the age of 30 years. Majority of patients (61.2%) were in the age group 35-54 years, and 54.0% were in their premenopausal state. Family history of breast cancer was uncommon (6.2%) and the affected family members were mostly mothers or sisters. Most of the patients (69.8%) came from Addis Ababa.

Table 1 Socio-demographic characteristics among patients with breast cancer at United Vision Medical Center, Addis Ababa, 2005-2015

Variables	**Number (N=404)**	**Percent**
Age group		
<35	58	14.4
35-44	149	36.9
45-54	98	24.3
55-64	61	15.1
65 +	38	9.4
Mean ±SD/median age (range)	45.9±11.9/45.0 (20-80) years	
Male: Female	1.0: 66.33	
Address		
Addis Ababa	282	69.8
Out of Addis Ababa	122	30.2

Presenting symptoms, signs, duration and stage of disease (Table 2). The most common and main presenting symptom was breast lump (85.3%). Breast pain, axillary swelling, nipple discharge, or breast ulceration as the chief presenting symptom was uncommon.

Only 26.7% (108/404) of patients presented within 3 months of the onset of symptoms of breast cancer; 43.8% presented 6 or more months after they developed the symptoms. The mean duration of the presenting symptoms was 9.2 months. Breast lump or mass (82.2%) was the most common finding followed by axillary lymphadenopathy (52.2%), skin changes (18.6%), and nipple retraction (15.3%). Clinical staging of the breast cancer was documented in 347 patients and majority (54.2%) of patients were in advanced stage of the disease; only 3.5% with stage I disease.

Investigation reports of patients with breast cancer (Table 3). The breast sonography was suspicious for breast cancer in 76.8% (96/125) and mammography in 81.7% of patients (67/82). Abdominal ultrasound was suggestive of metastases only in 4.0% of 398 patients and the chest x-ray was suspicious for secondary spread only in 5.5% of 404 patients. Out of 325 patients investigated by Fine Needle Aspiration Cytology (FNAC), was consistent with breast cancer in 92.6% and suspicious for cancer in 7.4%. Histology report was conclusive of invasive breast carcinoma in 98.3% of patients; mostly grade II invasive ductal carcinoma (57%). Evidence of loco-regional and distant metastatic features were noted in 268 patients (66.3%), and the metastasis was most commonly to the axilla (86.2 %).

Table 2. Presenting symptoms, signs, duration and stage of disease in patients with Breast cancer at United Vision Medical Center, Addis Ababa, 2005-2015

Variables	**Number (N=404)**	**Percent**
Main presenting symptoms (n=404)		
Breast lump	349	85.3
Breast pain	28	6.9
Nipple discharge	7	1.7
Breast ulceration	5	1.2
Axillary swelling	14	3.5
Others	6	1.5
Duration of main symptoms (n=368)		
<6 months	207	56.3
≥6months	161	43.8
Mean ±SD	9.2±14.9	
Physical findings (n= 404)		
Breast lump or mass	332	82.2
Nipple discharge	12	3.0
Nipple retraction	62	15.3
Ulcerated breast mass	19	4.7
Chest wall invasion	19	4.7
Axillary LAP	211	52.2
Supraclavicular LAP	22	5.4
Skin changes	75	18.6
Stage of disease (n=347)		
Stage 1	12	3.5
Stage 2	147	42.4
Stage 3	164	47.3
Stage 4	24	6.9

Table 3: Investigations and Results of Patients with Breast Cancer at .United Vision Medical Center, Addis Ababa, 2005-2015

Variables	Number	Percent
FNAC report (n=325)		
Suspicious for cancer	15	4.6
Highly suspicious for cancer	9	2.8
Ductal carcinoma	269	82.8
Breast carcinoma	31	9.5
Other	1	0.3
Histology report (n=302)		
Grade I ductal carcinoma	8	2.6
Grade II ductal carcinoma	172	56.9
Grade III ductal carcinoma	53	17.2
Invasive ductal carcinoma	56	18.5
Other	14	4.7
Breast ultrasound report (n= 125)		
Benign lesion	13	10.4
Suspicious for cancer	41	32.8
Highly suspicious for cancer	55	44.0
Not conclusive	10	8.0
Normal	5	4.0
Mammography report (n= 82)		
Benign lesion	9	11.0
Suspicious for cancer	30	36.6
Highly suspicious for cancer	37	45.1
Not conclusive	4	4.9
Normal	2	2.4
Chest X-Ray report (n= 404)		
Normal	382	94.6
Lung metastases	15	3.7
Pleural effusion	4	1.0
Hilar lymphadenopathy	3	0.7
Evidence of regional and distant metastasis (n= 268)		
To the axilla	231	86.2
To the liver	16	6.0
To the lung	15	5.6
To bone	4	1.5
To other site	2	0.8

Neoadjuvant therapy, extent of surgery, and follow up course (Table 4). Neo-adjuvant therapy was administered in the form of tamoxifen, 5-Flurouracil, Adriamycin and Cyclophosphamide (FAC) and or radiotherapy to 144 patients with advanced disease and the response was partial in 76.8% and complete in 15.7%. The status of 19 patients was unknown. Mostly combined modality of adjuvant therapy was used; chemotherapy to 274 patients (67.8%), tamoxifen to 196 patients (48.5%) and radiotherapy was recorded in only 72 patients (17.8%). Eighty percent of patients (320/404) underwent surgery, mastectomy in nearly 97% and MRM plus ALN dissection in 92% of patients.

The mean duration of follow-up of 370 patients was 28 months; 285 patients (77.0%) had follow-up for at least 3 years. During the study period, 107 of the 370 patients were seen with recurrences and/or distant metastases, in decreasing order of frequency to the chest wall, bone, axilla, lung, liver, neck, and brain. The disease free and overall 5-year survival rates were 216 (58.4%) and 69.5% respectively. Two patients died of the disease. During the follow-up, 79 were lost for follow-up or referred to other clinics or hospitals for further therapy and/ or follow up.

Table 4: Neoadjuvant therapy, extent of surgery, and follow up of patients with breast cancer at United Vision Medical center, Addis Ababa, 2005-2015.

Variables	Number	Percent
Neoadjuvant therapy (n=144)		
FAC	132	91.7
Tamoxifen	52	36.1
Radiotherapy	8	5.6
Response to neoadjuvant therapy (n=125)		
Complete resolution	20	16.0
Partial resolution	96	76.8
No resolution	9	7.2
Surgery (n=320)		
MRM plus ALND	295	92.2
BCT plus ALND	8	2.5
Simple mastectomy	14	4.4
Biopsy	3	0.9
Follow up after treatment (n=370)		
<12 months	111	30.0
≥12 months	259	70.0
Mean ±SD (months)	28.0±24.8	
Recurrence or metastases during follow up (n= 107)		
Axilla	18	17.0
Supraclavicular	11	10.4
Chest wall	26	24.5
Lung	13	12.3
Liver	12	11.3
Bone	19	17.9
Brain	8	7.5

DISCUSSION

Breast cancer is the most common site-specific cancer in the world in women and its incidence is rising, especially in low- and middle-income countries (1-3). Breast cancer has become a leading cancer among women in Africa (4). In this series, the female to male ratio of 66.3:1.0 shows that the disease affects more female population in Ethiopia than in other African countries. Six patients were male (1.5%); many western literatures report 1% (14,16,17). The mean age was 46.0 years. Almost all African studies consistently reported more younger females affected by the disease and mean age of 44.8 to 48.7 years (16,18,19,20), about a decade younger than that in Western populations (21), which may be due to genetic or environmental factors or the demographic phenomenon of Ethiopia and Africa characterized by predominantly young population (22,23). Contrary to high-income countries, but consistent with previous reports from Ethiopia as well as other parts of Africa (11,12,23), 54% of our patients were premenopausal.

As in our series, Brinton et al (22) cited many studies that have documented that breast cancer is more common in urban than rural settings (22). Most rural Ethiopian patients have difficult accessibility and affordability to private healthcare facilities in the capital city. In more than 85% of our patients the initial symptom was breast lump, which is similar to earlier reports in Ethiopia (11,24) but higher than the 59% reported from Papua New Guinea (25).

In our study nearly 75% of patients presented more than 3 months after the onset of symptoms. Many African studies also noted significant delay in the presentation of patients with breast cancer where more than half of patients waited 3 months or more to seek medical advice, in some, a year or more (4). In Benin City, Nigeria, 78% of the patients were delayed for over 3 months before presenting to the hospital (15). In our series the mean duration of presentation was 9.2 months; this varied from 11.5 months to 18.0 months in other African studies (19,26). At the time of presentation almost 55% of our patients were in advanced stage of the disease (stage III/ IV). Vanderpuye et al (27) cited high rates of advanced stage of the disease at presentation in several African

studies including South Africa (50-55%), Kenya (89.6%) and Nigeria (72.8%), but the rate was lower in a Moroccan study (33%). However, South Africa and northern African patients present at earlier stages compared to the rest of Africa (27). In another review of 13 different African studies it was shown that more than 75% of patients presented in stages III to IV (4). Our patients presented late but earlier than those reported from many African countries. But our patients were mostly urban dwellers with relatively better awareness and access to private healthcare. Brinton et al (22) cited that participants with higher education were 3.6 times more likely to practice breast self-examination than those with lower education levels.

As reported from Mali (29) (94%), and Tanzania (18) (91.5%), the most common histological type in this series was invasive ductal carcinoma (98.3%). Most of our patients (57%) had grade II invasive ductal carcinoma, similar to an earlier report of 57.2% (12). But, several African studies reported more incidence of naturally aggressive grade III tumors (16,18,29,30). Description of grade of tumor may be inadequate due to non-standardized histopathology reporting methods (31); the disparity calls a further study.

Kantelhardt et al (12) reported 87% surgery rate in 1070 women with breast cancer, which was 80% in our series. The rate of mastectomy (97%) in our study is similar to the earlier reports from Addis Ababa and several other African countries, which is, due to the advanced stage of the disease as well as lack or un-affordability of adjuvant treatment, often over 90% (4,12). As cited by Vanderpuye et al, the rates of surgical treatment vary across Africa, ranging from 35.2% in Nigeria to 100% in Cameroon, majority of countries reporting surgical therapy rates between 48.0% and 75.0% compared to over 90.0% in Europe. The rate of BCT is more in high-income countries than in low- and middle-income countries due to early presentation (27).

Among patients with advanced stage disease at presentation, 144 patients (35.8%) received neo-adjuvant therapy, the main modality being chemotherapy (91.7%) followed by tamoxifen (36.1%) and radiotherapy (5.6%). The type of neo-adjuvant therapy offered is comparable to a Nigerian study, which concluded that the choice mainly depended on availability of resources (31). The number of cases who got neo-adjuvant chemotherapy, 132 patients (32.6%) is much higher than a previous report of 42 cases (3.9%) (12). This may be due to better understanding or acceptance of the benefits of neo-adjuvant chemotherapy by patients and availability of chemotherapeutic drugs on the market in Addis Ababa. The main adjuvant therapy, mostly combined modality, was chemotherapy (67.8%) followed by tamoxifen (48.5%) and radiotherapy (17.8).

A five-year retrospective study of 297 patients treated in a clinic in Uganda showed that 76% had radiotherapy, 60% had hormonal therapy and 29% had chemotherapy (16). As cited by Stephanie et al (4) from hospitals in South Africa, Nigeria, and Cameroon more than 85% of patients received chemotherapy compared with 28% in Rwanda and 1.2% in Eritrea. The use of adjuvant therapy is variable because of availability, affordability and accessibility. There is only one radiotherapy center in Ethiopia for the whole population.

The disease free and overall 5-year survival rates were 216 (58.4%) and 69.5% respectively. Several African studies reported low 5-year survival rates because of advanced stage of the disease, younger age, aggressive histological types, and/or unavailability of standard treatment (4). Follow up of patients progressively declined after the first year of treatment probably due to lack of awareness of the importance of long-term follow up by the patients, or change of follow up venue after chemotherapy to the cancer center or to other healthcare facility. A study from Nigeria showed postoperative follow up rate of only 12.7%, the mean follow-up period being only 8.4 months (32).

Our study has several limitations. It was a retrospective study. The medical services center does not have access to subsidized chemotherapeutic drugs and access to radiotherapy and free healthcare provision. Most of the patients were from a private medical center.

In conclusion, Breast cancer affected commonly premenopausal, relatively young females. The main presenting symptom was breast lump and most patients presented with advanced stage of the disease, but, compared to earlier reports, the rate of early detection of the disease has increased. The most common histological type of breast cancer was grade II ductal carcinoma. Surgery was the main modality of treatment and, compared to earlier reports, the survival rates probably improved, but long-term follow-up at the center was limited.

Breast cancer early detection programs should be introduced through public education on the burden of the disease, awareness creation, education on breast self-examination, and clinical breast examination. The importance of public education on breast cancer risk factors and preventive measures should be underscored.

Resources and access to adjuvant therapy should be improved and expanded to regional states of the country. The importance of private-public healthcare partnership in breast cancer care should be recognized. The importance of assiduous adherence to long-term follow-up should be emphasized and patients should be encouraged to comply with adjuvant therapy to improve survival, quality of life, and early detection of recurrences or metastasis and timely treatment thereof.

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