Baseline characteristics of women presenting with breast cancer at the Radiotherapy Unit of Victoria Hospital, Mauritius

Bansy Varsha Devi
Department of Medicine
Faculty of Science
University of Mauritius

Goorah Smita Sulackshana Devi[*]
Department of Medicine
Faculty of Science
University of Mauritius
smgoorah@uom.ac.mu

Mohith Anil
Victoria Hospital, Ministry of Health and
Quality of Life

Cheeneebash Jayrani
Department of Mathematics
Faculty of Science
University of Mauritius
jayrani@uom.ac.mu

Abstract

Breast cancer is considered to be the most frequently occurring cancer in females worldwide. The aims of the study were to analyze the various clinical presentations of breast cancer at a cancer referral centre in Mauritius with respect to patient characteristics and tumour characteristics and to explore the association of breast cancer and some possible risk factors namely smoking, family history and oral contraception. Fifty-one confirmed female breast cancer patients were reviewed. Of these, 30 were post-menopausal and 21 were pre-menopausal. The mean and median ages at presentation were respectively 49.4 and 50.0 years respectively. Most patients presented with a painless lump (76.5%). The mean delay in seeking medical advice was 2.4 months. Most patients presented with T2 tumours (56.9%) followed by 13.6% who presented with T1 tumours and 7.9% who presented with T3 tumours. Tumour size was not available for 21.6% of women. 13.7% of patients presented with Stage 1, 41.2% with Stage 2, 15.7% with Stage 3 and 3.9% presented with Stage 4 disease. Information about stage was not available for 25.5% of patients in our study. Grades of tumours at presentation were as follows: 5.9% had Grade 1 tumours, 43.1% had Grade 2 tumours and 23.5% had Grade 3 tumours and information about grade was not available for

27.5% of tumours. Infiltrating ductal carcinoma was the most common histological type accounting for 70.6% of all histological types. It was observed that 52.9% of women did not have any axillary lymph node metastasis at the time of diagnosis whilst 37.3% did. Axillary lymph node status was not available for 9.8 % of women. The association of smoking, family history of breast carcinoma and oral contraception with women presenting with breast cancer in our study was not established. A study such as this provides an overview of the clinical presentation of breast cancer in Mauritius.

* to whom correspondence should be addressed

1. INTRODUCTION

Breast cancer is a serious health concern in all countries. According to worldwide estimates, breast cancer comprised 23% of all cancers and was the most frequent cancer of women with an estimated 1.15 million new cases (Parkin *et al*, 2002). Regarding incidence rates, these were noted to be high in most of the developed nations (with the exception of Japan) with the age-standardized incidence being 99.4 per 100,000 in North America and low in most of Africa (with the exception of South Africa) with rates of less than 30 per 100,000 (Parkin *et al*, 2002). However, breast cancer rates are increasing, especially in developing countries, as a result of lifestyle changes (Bray *et al*, 2004).

In Mauritius, cancer cases are registered at the level of the National Cancer Registry (Manraj *et al*, 1999). Data obtained from this registry showed that, breast cancer accounted for 26% of all female cancers in the period 1999-2000. The 4-year incidence rates (per 100, 000), for 1993-1996 and 1997-2000, were respectively 29.3 and 31.6 (Manraj *et al*, 2006). Such incidence rates are comparable to those of intermediate-incidence countries such as Hong Kong, Brazil and Eastern European countries where the incidence rates are in the range of 30–50 per 100,000 (Bray *et al*, 2004).

Factors which have repeatedly been found to be associated with an increased risk of developing breast cancer have been increasing age (Dixon, 2004; Hankinson *et al*, 2004), female gender, inherited factors (Parkin, 2004; Rosenthal & Puck, 1999; Collaborative group on hormonal factors in breast cancer, 2001; Martin & Weber, 2000), increased oestrogen exposure associated with an increased number of menstrual cycles such as early menarche, late menopause and nulliparity (Hankinson *et al*, 2004; Martin & Weber, 2000). Use of exogenous oestrogens such as current and previous (within the past ten years) use of oral contraceptives confers a small increase in risk stated (Dixon, 2004; Collaborative group on hormonal factors in breast cancer, 1996). Current users of hormone replacement therapy are also at a slightly higher risk (Dixon, 2004; Martin & Weber, 2000; Million Women Study Collaborators, 2003). Increased maternal age at first pregnancy is also believed to be associated with a high risk of having breast cancer (Bray *et al*, 2004; Dixon, 2004; Martin & Weber, 2000). Other risk factors include a history of previous benign breast disease and previous exposure of the breast region to radiation (Dixon, 2004). The relationship of smoking and breast cancer is controversial as mentioned (Dixon, 2004; Lawlor *et al*, 2004; Reynolds *et al*, 2004). Nutritional and lifestyle factors such as fat intake, alcohol intake,

obesity and reduced physical activity and socioeconomic class may also contribute to breast cancer (Bray *et al*, 2004; Dixon, 2004; Consedine *et al*, 2004).

There is an increased incidence of breast cancer with age until the menopause is reached when the rate of increase slows down (Bray *et al*, 2004; Dixon, 2004). It has been noted in recent studies that the age frequency distribution for female breast cancer peaks at 52 and 71 years in a bimodal pattern and it has been postulated that the early and late peaks are due respectively to hormonal exposures in early reproductive life and accumulated life time hormonal/ environmental exposures (Anderson *et al*, 2004).

Women may clinically present with a lump in the breast or axilla or may experience changes to the breast such as skin dimpling, ulceration or erythema, nipple abnormalities or discharge. Early disease may be asymptomatic.

In Mauritius, the majority of patients presenting with breast cancer are referred initially to the surgical unit of their local hospital. They are subsequently referred to the Radiotherapy Unit of Victoria Hospital, which is the only public cancer therapy centre in the island for further treatment. At least 80% of breast cancer patients diagnosed in the public sector in Mauritius are seen in this unit.

The aims of this study were to analyze the baseline characteristics of women presenting with breast cancer at the Radiotherapy Unit with respect to both patient characteristics and tumour characteristics and to explore the presence of selected potential risk factors namely smoking, oral contraception and family history.

2. MATERIALS AND METHODS

Ethical clearance to carry out this study was obtained from the Ministry of Health and Quality of Life.

The study was carried out at the Radiotherapy Unit of Victoria Hospital over the period of two months. The sampling strategy was as follows: A list of 326 consecutive patients was obtained from the Radiotherapy Outpatient Department Records Section and 250 were selected at random. Only 122 patients could be contacted in the time period allocated to the study and, of these, 51 gave consent for participation.

Eligible participants were women who had been diagnosed with primary breast cancer and who were following treatment at the Radiotherapy Unit of Victoria Hospital. However, there were also overseas patients living in Mauritius who were following treatment at the Radiotherapy Unit. These patients were excluded from the study since they did not bear the characteristic profiles of the Mauritian population.

The names of patients and their details were obtained from the Oncology Day Care ward and the Radiotherapy Outpatient Department Records Office. General information, details about risk factors, presenting symptoms and the delay between presentation and diagnosis was obtained by directly interviewing the patients. Data about the socio-economic class of women in Mauritius was obtained from the Central Statistics Office. These were classified according to the Standard Classification of Occupations, an adapted version of the 1988 International Standard Classification. Stage Classification was based on the American Joint Committee on

Cancer (AJCC) Stage Classification (2002) and Histological Grading Classification was based on the Nottingham Grading System (Porter *et al*, 2004).

A questionnaire was designed in order to obtain the relevant information. Participants were personally interviewed and information such as age, marital status, ethnicity and occupation, family history of breast cancer, surgical history, reproductive history, the use of oral contraception and hormone replacement therapy, smoking history, age at presentation, the first signs and symptoms, the duration of symptoms and the delay between the onset of symptoms and the time of presentation were obtained. The TNM stage, grade and histological diagnosis were obtained from the medical records. A pilot study involving 10 participants was carried out initially and the questionnaire was modified accordingly.

Once the data collection was completed, the data from the questionnaire were coded and fed in SPSS for analysis. The sample population was not too large as it consisted of only 51 individuals. The analysis performed was mainly descriptive due to the nature of the data set.

3. RESULTS

3.1 Patient characteristics: The mean age at presentation was found to be 49.4 ± 12.9 years and the median age at presentation was 50.0 years. The mean age at presentation among women with a family history of breast cancer (either first-degree or second-degree relatives) was 50.9 ± 15.3 years. For women with no family history of breast cancer, the mean age at presentation was 48.9 ± 12.3 years. This difference in mean ages at presentation was not significant. The difference in mean age at presentation between women not taking contraceptives (47.6 ± 13.6 years) and women who had ever-used contraceptives (52.1 ± 11.6 years) also did not reach statistical significance.

There were no patients in the study belonging to socioeconomic classes 1 and 2 as shown in figure 1. There was a gradual increase in the percentage of patients from socioeconomic classes 3 to 6. Thereafter there was a sharp increase in the percentage of women presenting with breast cancer from socioeconomic classes 7 and 8.
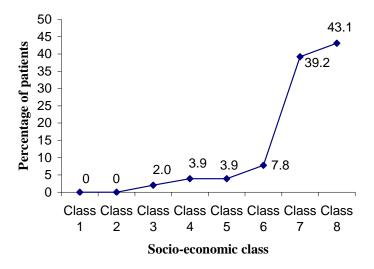

Figure 1 Distribution by socioeconomic class

21(41.2%) patients were pre-menopausal and 30(58.8%) patients were post-menopausal.

A painless lump was the most frequent presenting complaint (79.5%) in this study. A tender lump and nipple discharge were each present in 5.9% of patients whereas nipple retraction, both nipple retraction and nipple discharge and ulceration of the breast were each present in 3.9% of patients.

The mean delay in presentation (time from onset of symptoms to seeking medical advice) was 2.4 months. Marked delay in presentation was noted in only 3 women. This was of the order of 6 months, 10 months and 11 months respectively

Concerning the presence of established and probable risk factors in our sample, it was found that only 3 patients (5.9%) were former smokers, 7 (13.7%) were nulliparous and 44 (86.3%) had 1 or more children, 12 (23.7%) had a family history of breast cancer and overall, 60.8% (31) of women did not make use of oral contraceptives. Of the 39.2% (20) who were using oral contraceptive pills, the percentage of women taking pills containing 30, 35 and 50 μg of oestrogen were 40% (8), 25% (5) and 35% (7) respectively.

3.2. Tumour characteristics: The percentage distribution of tumour size in our study was as illustrated in Table 1.

Table 1: Distribution of Tumour size

Size	T1	T2	T3	Not Available
Percentage	13.6%	56.9%	7.9%	21.6%

The mean tumour size and median tumour size were respectively 3.6 cm and 3 cm respectively. The mean tumour sizes in socio-economic classes 3, 4, 5, 6, 7 and 8 were respectively 2cm, 4.5cm, 3 cm, 3 cm, 3.8cm and 3.3 cm respectively. When statistically analyzed, the difference in tumour size according to socio-economic class was not significant.

The percentage distribution of the stage of tumour at presentation was as shown in Table 2. It was observed that participants most frequently presented with stage 2 tumours.

Table 2: Distribution of Tumour Stage

Stage	1	2	3	4	Not Available
Percentage	13.7%	41.2%	15.7%	3.9%	25.5%

The percentage distribution of tumour grade at presentation was as shown in Table 3. Grade 2 tumours were the most frequent finding.

Table 3: Distribution of Tumour Grade

Grade	1	2	3	Not Available
Percentage	5.9%	43.1%	23.5%	27.5%

Regarding tumour histology, infiltrating ductal carcinoma was the most common histological type in 70.6% of the 51 women interviewed. The other histological types present in the study group were less common. 7.8% of patients had infiltrating lobular carcinoma, 3.9% of patients had mucinous carcinoma, 2.0% of patients had adenocarcinoma and 2.0% of patients had a spindle cell sarcoma. Histological types were not available for 13.7% women

It was observed that 52.9% of women did not have any axillary lymph node metastasis at the time of diagnosis whilst 37.3% of women did. Axillary lymph node status was unavailable in 9.8% of women.

4. DISCUSSION

Clearly the small sample size has been a significant limitation in this clinical study. Out of 250 patients who had been randomly selected, only 122 could be contacted in the time frame available for this study. It could be argued that those participants whom we were unable to contact might have had different socioeconomic and clinical characteristics as compared to our sample and may have included patients with poorer prognosis tumours who were deceased and lost to follow-up. Moreover, only 51 patients consented to participate out of the 122 patients who could be contacted. Though breast cancer is an increasingly important disease affecting women in Mauritius, many patients were reluctant to participate due to family and peer pressures and also due to the significant stigma associated with this condition. This low response rate (42%) introduces some degree of systemic bias in this study, as those patients who were willing to participate may have been patients who were better motivated and healthier than those who declined to participate. Moreover data collection was done only amongst women who access the public health care sector and this sample does not include those women who either make use of private health care facilities or go overseas for treatment. Interviews were carried out in depth by the same interviewer ensuring quality and consistency of data. However it was noted that there was a significant proportion of missing data in the notes concerning the size, stage and grade of tumours. However despite these limitations and potential biases, it was possible to obtain valuable clinical data in this study, which yielded useful results.

It has been noted in several studies that breast cancer is a disease of younger premenopausal women in developing countries whereas in developed countries it affects older postmenopausal women. Studies carried out in Nigeria showed that the mean age at diagnosis to be in the range of 42.7 years to 48 years (Ikpat *et al*, 2002; Adesunkanmi *et al*, 2006; Gukas *et al*, 2006). Furthermore, in a study carried out in Bahrain, it was found that the mean age at presentation was 50.1 years (Fakhro *et al*, 1999) whereas in developed countries, studies have shown that the mean age at presentation of symptomatic patients to be 64 years and 65.2 years (Gukas *et al*, 2006; Robinson *et al*, 2006). In our study it was observed that the mean age at presentation was 49.4 years, in keeping with, the pattern observed in developing countries. These findings may largely be influenced by the younger population age structure and the specific demographic patterns of developing countries (Bray *et al*, 2004; Adesunkanmi *et al*, 2006; Gukas *et al*, 2006).

It was also observed that the age frequency distribution was unimodal. This is in contrast to bimodal patterns found in a recent study in the USA, with early onset incidence at 52 years, and, late onset incidence at 71 years (Anderson *et al*, 2004). However this may be explained by the different life expectancies in Mauritius as compared to that of the USA.

Socioeconomic class is considered as a probable risk factor (Dixon, 2000) and may also be of prognostic significance (Thomson *et al*, 2001). The distribution of patients according to socioeconomic class in our study could partly be explained by the pattern of utilization of public health care facilities in different socioeconomic groups. The absence of patients in the study belonging to socioeconomic classes 1 and 2 could be due to the fact that these patients utilize preferentially private health care facilities. Thus the magnitude of the influence of socioeconomic status in the presentation of breast cancer is difficult to determine in this study.

The most common clinical presentation of breast cancer in our study was a painless lump (76.5%). Early stage breast cancer is usually asymptomatic and as it develops the most common presentation is a painless mass (American Cancer Society, 2005-2006). However other presentations have been noted in other studies: breast pain was the most common feature in a study in Nigeria (Adesunkanmi *et al*, 2006).

The size of the tumour is of important prognostic value. It has been estimated that the 5-year survival for tumours less than or equal to 2 cm to be 92%, for tumours 2.1-5 cm to be 77% and for tumours greater than 5 cm to be 65% (American Cancer society, 2005-2006). In our study, T2 tumours were the most predominant (56.9%) with a mean tumour size of 3.6 cm. Comparatively, the mean tumour size of a sample of symptomatic patients in a study in England was 2.48 cm (Robinson *et al*, 2006). In Bahrain the most frequent tumour size on presentation was in the range of 2-5 cm (Fakhro *et al*, 1999). In contrast, studies in Nigeria revealed that the majority of women presented with large tumour masses and advanced disease (Adesunkanmi *et al*, 2006; Okobia *et al*, 2001).

Both stage 2 and grade 2 tumours were the most frequent finding in our study and this was comparable with findings in a study carried out in UK among symptomatic cases (Robinson *et al*, 2006).

As expected by far the most common histological type was the infiltrating duct carcinoma in keeping with other studies.

In our study, it was observed that 52.9% of women did not have any axillary lymph node metastasis at the time of diagnosis whilst 37.3% of women did. This appeared to be a favourable finding. However this finding could also be a reflection upon the extent of axillary surgery being performed by Mauritian surgeons.

The mean delay in presentation was 2.4 months. This contrasted with findings in Nigeria where the mean delay in presentation was 11.2 months (Adesunkanmi *et al*, 2006). It appeared that symptomatic women in Mauritius accessed health care facilities at a relatively early stage. This may be due to the fact that the public health care facilities are free of charge and accessible and that women feel able to seek appropriate care when required.

Risk factors such as smoking, a family history of breast cancer and the use of oral contraception did not appear to contribute significantly to breast cancer presentation in our sample.

This study, despite its limitations, has provided a valuable description of the clinical presentation of breast cancer in Mauritius. There is a need for future studies in this area to

provide local data for an improved understanding of breast cancer and for better cancer awareness among the local population and physicians.

5. ACKNOWLEDGEMENTS

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