Available online freely at www.isisn.org

Bioscience Research

Print ISSN: 1811-9506 Online ISSN: 2218-3973

Journal by Innovative Scientific Information & Services Network

RESEARCH ARTICLE BIOSCIENCE RESEARCH, 2019 16(4): 3722-3727. **OPEN ACCESS**

Epidemiological profile of breast cancer in Morocco: Retrospective study

Haimer Amal[1], Soulaymani Abdelmajid[1], Habib Faouzi [2], Mokhtari Abdelrhani [1]and Hami Hinde [1]

[1]Laboratory of Genetics and Biometry, Faculty of Science, Ibn Tofail University, Kenitra, **Morocco**
[2]Al Azhar Oncology Center, Rabat, **Morocco**
***Correspondence:** amal.haimer@gmail.com **Received: 10-09-2019, Revised: 13-11-2019, Accepted: 29-11-2019 e-Published: 23-12-2019**

Breast cancer is the most frequently diagnosed malignancy and the leading cause of cancer death among women worldwide. The aim of this study is to determine the epidemiological characteristics of breast cancer in Morocco.this is a descriptive retrospective study of breast cancer cases diagnosed and treated at Al Azhar Oncology Center in Rabat between 2005 and 2015.during the period of study, there were 2282 cases diagnosed with breast cancer; 98% of them were women and 2% were men. The average age of patients was 49.6 ± 11.5 years. Breast cancer affects patients in the age group 40-59 years old with 65% of the cases being female and 47% of the cases being male. The cancer was stage I for 99 patients (14.2%) and stage II for 369 patients (42.8%). In addition, we recorded 75% of patients who had a unique metastasis against 25% who had multiple metastasis.A total of 102 deaths were recorded. breast cancer deaths are predominant in the 40-59 age group with 59 cases (57.8%). Our results showed that breast cancer is an influential factor in the causes of premature death, which represents 1681 potential years of lost lives.Prevention, early detection, diagnosis and treatment are essential ways to reduce the rate of this pathology

Keywords: breast cancer, epidemiology, Morocco.

INTRODUCTION

Worldwide, cancer is one of the leading causes of morbidity and mortality (World Cancer Report 2014, IARC.) In 2012, there were 8.2 million deaths related to the disease of which 3.5 million are women; 14 million new cases including 6.6 million women and 32.4 million cases prevail over 5 years including 17.1 million women (World Cancer Report 2014, IARC.) More than half of all cancers (56.8%) and cancer deaths (64.9%) in 2012 were in the least developed regions of the world (World Cancer Report 2014, IARC.)

In Morocco, cancers are a real public health problem. It is the second leading cause of death (13.6%) after diseases of the circulatory system (20.4%) (de la Santé et al., 2015) A standardized mortality rate at age is estimated at 78.4 per 100,000 according to Globocan 2012 (Registre des cancers de la région du Grand Casablanca, Année 2005,2006, 2012) which is different from the rate reported by the RCGC between the year 2008 and 2012, whose mortality rate for the different types of cancer is estimated at 40%. 100,000 (Jemal et al., 2011)

Breast cancer is the first cancer among women in Europe or the United States [5-6] and it is the second cancer after cervical cancer among women in sub-Saharan Africa. Its incidence is estimated between 15 and 53 per 100,000 women with wide variations depending on the region, for example in Bamako (Mali) it has been estimated at 20/100 000 (IARC) : GLOBOCAN, 2002 database. (IARC) : GLOBOCAN, 2002 database. and Murray, 2006). The different assessments

favor a lower incidence than that observed for European or North American women(IARC) : GLOBOCAN, 2002 database. and Murray, 2006).

In Morocco, it accounts for 20% of registered cases by considering both sexes and 35.8% of cases recorded among women (Jemal et al ., 2011).The standardized rate of breast cancer incidence in the global population has increased from 39.9 per 100,000 in 2007 to 49.5 per 100,000 in 2012 according to the RCGC (Jemal et al ., 2011 and , Jemal et al ., 2005) Breast cancer remains the leading cause of cancer death among Moroccan women, responsible for more than 2,878 annual deaths, or a standardized mortality rate at age estimated at 18 per 100,000 in 2012 (Registre des cancers de la région du Grand Casablanca, Année 2005, 2006 et 2007 ; Edition 2012). The present study consists of mapping the epidemiological profile of breast cancer cases hospitalized at Al Azharer Oncology Center in Rabat, Morocco.

MATERIALS AND METHODS

This is a retrospective epidemiological study that took place at Al Azhar Oncology Center over a period of 11 years, from January 2005 until December 2015.This center was founded in July 1994, it includes several units: chemotherapy, brachytherapy, surgery, ira-therapy and bone marrow transplant. A record is created for each patient and contains the location of the tumor, its nature, the protocol and the treatment monitoring. The variables we looked at in our study were sex, age onset of treatment, the evolution (death or non-death), as well as the date and age of death. It should be noted that patients whose deaths are not reported in the records may be either alive or lost to follow-up.

The statistical analysis of the data was carried out using the SPSS software and the statistical methodology was based on:

1-Descriptive analysis that consists of extricating the frequencies and the characteristics of each parameter studied. Results are expressed as gross values for categorical variables (sex, year, age group, evolution) and averages ± standard deviation for quantitative variables.

2-Analytical statistics: based on association tests such as the Khi2 test which measures the difference between the frequencies observed and the theoretical frequencies. We also used the one-way analysis of variance (ANOVA), which estimates the intergroup variation with respect to intra-group variation.

In this study, the indicator in Potential Years of Lost Lives was calculated. PYLL is a measure of the impact of illness and/or health problems in a society, showing losses which are mainly due to the death of young or premature persons [7].

PYLL is the numbers of years that a subject dies prematurely before an age limit. The choice of the age limit at 65 corresponds to the threshold used by the WHO for international comparisons. Therefore, the calculation of PYLL is excluded for 4:

-All deaths occurring after the age of 65.

-Infant deaths of less than one year because they are due to specific causes and often have a different etiology than deaths at a later age.

$$\mathrm{PYLL} = \sum_{i=1}^{L} [(L - ai)] \times di$$

1-(id): is the number of the deaths in each age group

2- (ai): center of age class I

3-L: the upper age limit of the study

RESULTS

During the study period, a total of 2282 cases of breast cancer were collected, an annual average of 207 cases per year, which represents 29% of all registered cancers compared to other types of cancers collected. The temporal distribution of breast cancer cases and specific lethality is shown in Figure 1. The results of this figure show two distinct phases. The first phase from 2005 to 2010 where the temporal distribution of cases and specific lethality are progressive, the second phase from 2011 to 2015 where the distribution of cases and specific lethality are in regression.

Figure 1: **Yearly distribution of new cases and specific lethalithy of brest cancer.**

The average age of patients was 49.6 ± 11.5 years. Breast cancer affects patients in the age group 40-59 years old with 65% of the cases being female and 47% of the cases being male followed by the age group ≥ 60 with 33% among males and 18 % among females then in class 30-39 with 14% of cases and 13% of cases respectively in females and males (Figure 2). These results show that breast cancer preferentially affects the population of 40 and over with a frequency of 83% of cases (Figure 2).

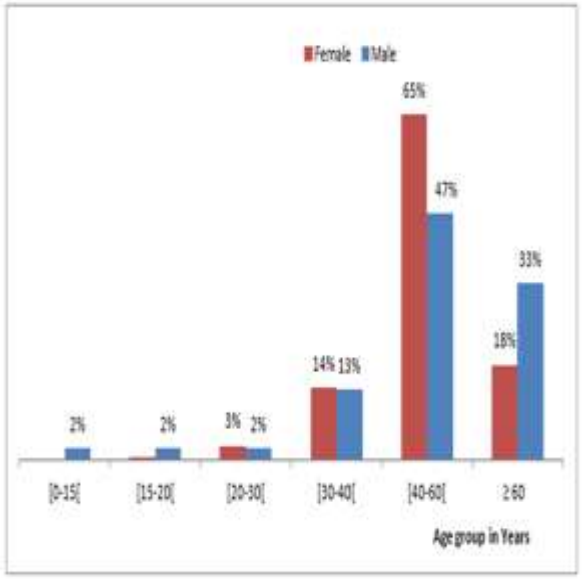

Figure 2: **Distribution of cases by age group**.

Women are the most represented 98% of the cases, a sex ratio (M / F) of 0.02. Regarding the female population, we found an average age of 49.6 ± 11.34 years with variations of 15 years and 88 years. Among men, the mean age was 51.5 ± 15.4 years with extremes ranging from 3 years to 80 years (Figure 3). The difference between the two sexes is insignificant (F = 0.046, P = 0.830). Women and men have mammary gland cancer at almost the same age, according to our results.

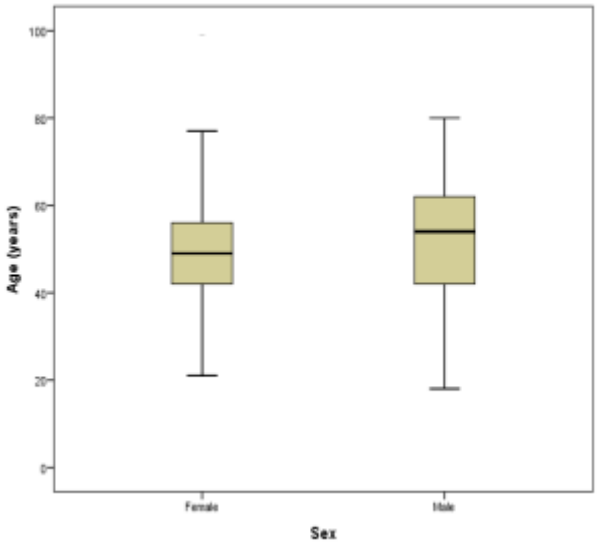

Figure 3: **Distribution of patients by sex.**

The cancer was stage I for 99 patients (14.2%) and stage II for 369 patients (42.8%). Only 499 patients (6.4%) were at stage IV and the stage III was not determined for 78 patients (10.8%). Hormone therapy was performed among 27% of patients, surgery among 24% of patients and chemotherapy among 18% of patients (Figure 4). In addition, we recorded 75% (n = 900) of patients who had a unique metastasis against 25% (n = 300) who had multiple metastasis.

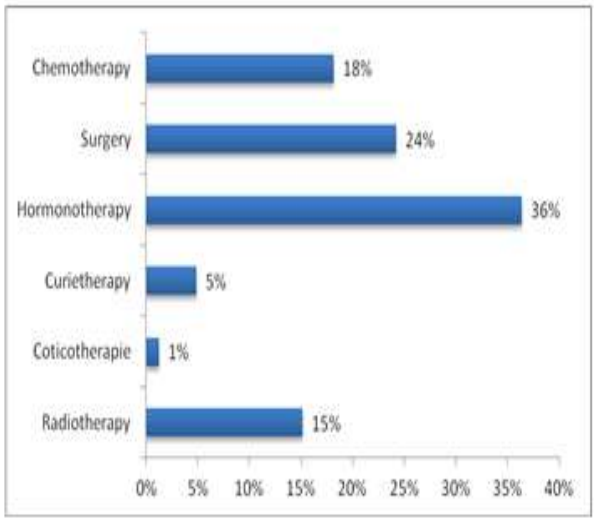

Figure 4: Breakdown of Breast Cancer Cases by Type of Treatment.

With respect to the distribution of patients by family history, we found that more than half of the cases did not have a history, 64%.

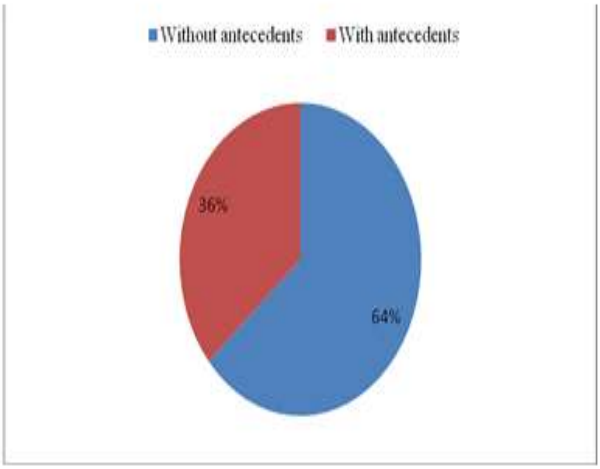

Figure 5: **Distribution of patients by family history Breast Cancer.**

Table 1 describes the location of the tumor. It was specified at 2014 patients (88%). The left side was the most concerned with 50% (n = 1134). Seat relative to quadrants was reported in 307 patients, or 14.67%. QSE (Superexternal Quadrant) accounted for 49.51%.

Table 1: Distribution of cases according to the localization.

Localization	Right breast	Left breast	Bilateral
External Super Quadrant	32	95	-
Super-inner quadrant	18	26	-
Inferior-internal quadrant	8	7	-
Infero-external quadrant	17	6	-
union of the upper quadrants	5	3	-
union of the lower quadrants	3	2	-
union of the external quadrants	4	3	-
union of the internal quadrants	2	1	-
Retromammillated	10	3	-
Unknow	1000	1014	20
Total	1099	1134	20
%	48	50	2

Table 2 describes the distribution of deaths and specific lethality by age group and the distribution of potential years of lost lives. During the period 2005 -2015, a total of 102 deaths were recorded. Breast cancer deaths are predominant in the 40-59 age group with 59 cases (57.8%) of all deaths from breast cancer), followed by age groups 60+ and 30-39. who respectively reported 23 cases (22.5%) and 16 deaths (15.7%) .

The fatality rate distribution assigns the highest rate of 22% to the age group of 15-19 year olds, followed by the age groups 30-39 and 60 years and over with a rate of 5.7 % and 5.3% (Table 2).

Table II : The distribution of death cases, specific lethality according to age groups and potential years of lost life

	Number ofdeath	Lethality	PYLL
Age group(Years)			
[0-15[	-		
[15-20[	1	0.04	48
[20-30[	2	0.09	79
[30-40[	14	0.61	413
[40-60[	57	2.5	855
≥ 60	22	0.96	143
Total	**96**	**4.2**	**1538**
Male			
[0-15[	-		
[15-20[	1	0.04	48
[20-30[	-		
[30-40[	2	0.09	59
[40-60[	2	0.09	30
≥ 60	1	0.04	7
Total	**6**	**0.26**	**143**

Potential years of lost lives were derived from the number of deaths in the age group compared to the general population under 65 years of age (Table III). So the PYLL is 21.3 per 100 inhabitants for all victims who have suffered this pathology. Breast cancer is an influential factor in the causes of premature death, which represents 1681 potential years of lost lives.

DISCUSSION

Today, the surge in breast cancer worldwide is a major public health problem.

It is the first most frequently diagnosed cancer in the world and the first cancer of the woman. Each year 1.7 million women are diagnosed with breast cancer in 2012 (Traoré et al., 2010)

Since the latest estimates for 2008, the incidence has increased by more than 20% and mortality by 14%. Breast cancer is the most common cause of cancer death among women (522,000 deaths) (Traoré et al., 2010)

Although the incidence is increasing in most parts of the world, there are huge inequalities between developed and developing countries.

In Western Europe, for example, the incidence of breast cancer is over 90 new cases per 100,000 women per year compared to 30 per 100,000 women in East Africa. On the other hand, mortality rates in these two regions are almost identical to about 15 per 100,000 women, indicating late diagnosis and much worse survival in East Africa (Traoré et al ., 2012)

In our study, we collected 2282 cases of

diagnosed breast cancer, an average frequency of 207 cases per year. This frequency is high compared to that found by Zaki and al in Niger, which was 64.5 cases per year [Zaki et al.,2013)], Darré and al in Togo found 22.5 cases per year (Darré et al.,2013)

In our study, women accounted for 98% of cases, a sex ratio (M / F) of 0.02. This result is identical with other works(Engbang et al .,2015). These figures are lower than those of Zaki and al in Niger, 0.03 (Zaki et al.,2013 Zaki). Breast cancer is the first female cancer in the industrialized countries of Western Europe and North America (Fédération nationale des centres de lutte contre le cancer 2001 and Radesa,1979).

The etiology of breast cancer is poorly understood, however several risk factors have been linked to hormonal factors, social and personal and family history (Abdallah et al .,2007). According to our study, the notion of family history of breast cancer was found at 36% of patients.

The average age of onset of breast cancer in our sample was 49.6 ± 11.5 years. In the female population, the average age was 49.6 ± 11.34 years. Similar results have been reported in the literature [Slimani et al.,2016].

In contrast, for men, the mean age was 51.5 ± 15.4 years. These results contrast those recorded by other authors (Slimani et al.,2016) where the average age was 61 years.

Moreover, in Africa, the increase of hypatic diseases in men after the age of 60, leading to an hyperestrogenism , is a factor in the appearance of this cancer (Kidmas et al.,2005).

Of the 2282 cases specified, the left side was the most affected with 50%, followed by the right side, 48% and 2% bilateral. In general, the involvement of the left breast has been predominant compared to the right breast according to several authors Dem et al.,2006 and Lansac et al.,2012). However, some publications have reported a predominance of the right side (Darré et al.,2014 and Sano et al .,1998).

In fact, breast cancer is a serious and deadly disease with 15 to 20% of all cancer deaths and 2 to 5% of all deaths in developed countries. Its prognosis is severe with 35% survival at 5 years (Grogan G MAC,2003). According to our results, we recorded a death rate of around 2%.

CONCLUSION

Breast cancer remains a common pathology, characterized by a much larger attack of the female sex. Early diagnosis remains the most effective way to reduce the expected risks.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

ACKNOWLEGEMENT

The authors are pleased to acknowledge to the entire research team of the Genetics and Biometry Laboratory at Ibn Tofail University.

AUTHOR CONTRIBUTIONS

H.A wrote the manuscript, S.A, M.A and H.H revied the manuscript, H.F provieded data and statistics.All authors read and approved the final version.

FUNDING SOURCE:

This work is part of the project "PPR-B-MOKHTARI-FS-UIT-Kenitra"

REFERENCES

Abdallah MB, Achour N, Hsairi M. Pronostic du cancer du sein à l'Institut de Carcinologie Salah Azaiez de Tunis. East Mediterr Health J. 2007; 13(2):309

Darré T, Amegbor K, Sonhayé L, Kouyate M, Aboubarak A, N'Timo B et al. Profil histo-épidémiologique des cancers du sein: à propos de 450 cas observés au CHU de Lomé. Médecine Afr Noire. 2013; 60(2):53-8.

Darré T, Amegbor K, Sonhayé L, Kouyate M, Aboubarak A, N'Timo B et al. Profil histo-épidémiologique des cancers du sein: à propos de 450 cas observés au CHU de Lomé. Médecine Afr Noire. 2013; 60(2):53-8.

Dem A, Traoré B, Dieng MM, et al. Cancers gynécologiques et mammaires à l'Institut Curie de Dakar (Sénégal). Oncol Clin Afr. 2006; 2:17-21

Fédération nationale des centres de lutte contre le cancer : Le cancer duGrogan G MAC : Les néoplasies mammaires non invasives et

invasives. *VII èmes journées Franco-Africaines de Pathologie. 2003; 1-3.*

Hill C, Doyon F. La fréquence des cancers en France en 2002 et son évolution depuis 1968*. Bull Cancer* 2006 ; 93 : 7-11.International agency for research on cancer (IARC) : GLOBOCAN, 2002 database. http:www-dep.iarc.fr.

Jean Paul Ndamba Engbang, Henri Essome, Valère Mve Koh, Godefroy Simo, Jean Daniel Sime Essam, Albert Sone Mouelle, Jean Louis Oyono Essame. Cancer du sein au Cameroun, profil histo-épidémiologique: à propos de 3044 cas. Pan African Medical Journal – ISSN: 1937- 8688 , 2015.

Jemal A, Bray F, Center MM et al. Global cancer statistics. CA Cancer J Clin. 2011; 61:69–90.

Jemal A, Murray T, Ward E, *et al*. Cancer statistics, 2005*. CA Cancer J Clin* 2005 ; 55 : 10-30.

Kidmas AT, Ugwu BT, Manasseh AN, Iya D, Opaluwa AS. Male breast malignancy in Jos University Teaching Hospital. West Afr J Med. 2005; 24(1):36-40.

Lansac J, Lecomte P, Marret H. Gynécologie pour le praticien. Paris. Elsevier-Masson. 2012. Ministère de la Santé, Maroc. Santé en chiffres 2014. Direction de la Planification et des Ressources Financières. Edition 2015.

Murray E. The management of breast cancer in Africa. A review of the problems presented by breast cancer in Africa. In : Ly A, Khayat D,eds. *About cancer in Africa*. Institut national du cancer 1 vol, 2006 :27-41.

Radesa F: Réflexion sur l'étude statistique des cancers du sein observés dans notre Registre des cancers de la région du Grand Casablanca, Année 2005, 2006 et 2007 ; Edition 2012.

Sano DI, Cisse R, Dao B, Lankoande J, Traore SSL, Soudre RB et al. Le cancer du sein: problèmes diagnostiques et thérapêutiques au CHU de Ouagadougou. Médecine Afr Noire. 1998; 45(5):297-301. sein métastatique. *Standards options & recommandations, 2001, 13, 103-9.*service à propos de 117 cas. *Afr. Méd. 1979.*

Slimani, K. A., Debbagh, A., Sbitti, Y., Errihani, H., & Ichou, M. (2016). Cancer du sein chez l'homme au Maroc: épidémiologie et facteurs pronostiques. À propos de 140 cas. Gynécologie Obstétrique & Fertilité, 44(11), 636-640.

Traoré CB, Kamaté B, Coulibaly B, Mallé B et Keita ML. Le cancer à Bamako de 2006 à 2010 : Données du registre des cancers au Mali. Rev Afr Path 2012 ; 11(1) : 5-10.

Traoré CB, Kamaté B, Coulibaly B, Mallé B et Keita ML. Le cancer à Bamako de 2006 à 2010 : Données du registre des cancers au Mali. Rev Afr Path 2012 ; 11(1) : 5-10.World Cancer Report 2014, IARC.

Zaki HM, Garba-Bouda O, Garba SM, Nouhou H. Profil épidémiologique et anatomopathologique du cancer du sein au Niger. J Afr Cancer. 2013; 5(4):185-91.

Zaki HM, Garba-Bouda O, Garba SM, Nouhou H. Profil épidémiologique et anatomopathologique du cancer du sein au Niger. J Afr Cancer. 2013; 5(4):185-91.