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Epidemiology of nasopharyngeal cancer in Morocco A retrospective study.

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The aim of this study is to describe the epidemiological characteristics of nasopharyngeal cancer cases, diagnosed and treated at Al Azhar Oncology Center in Rabat over a period of 11 years, between 2005 and 2015. Among the 280 cases that were diagnosed with nasopharyngeal cancers at Al Azhar Oncology Center, 67.5% were male and 32.5% were female, the mean age of men with nasopharyngeal cancer was 48 ± 15 years while that of women was 43.4 ± 15.2 years. During the study period, there were 19 deaths from this type of cancer. Nasopharyngeal cancer affects patients of the 40-59 age group with 146 cases followed by the age group ≥ 60 with 50 cases. Of all diagnosed cases 15.7% were diagnosed with metastatic disease, we noted 31 patients had unique metastases and 13 patients had multiple metastases. the frequency of locally evolved forms is represented mainly by stages IV and III with respectively 48% and 29%. Nasopharyngeal cancer is a public health problem, a long-term monitoring is essential to quickly detect these complications.

Keywords: Nasopharyngeal Cancers ; Epidemiological Profile ; Retrospective Study

INTRODUCTION

Cancers occupy an increasingly important place in health concerns in Morocco. It is estimated that the number of new cases is between 30,000 and 40,000 per year, of which only 7,500 are cared for (S. Ammor et al., 2005). Of these, cancer of the nasopharynx or nasopharyngeal carcinoma accounts for 8.4% of all malignant tumors (S. Ammor et al., 2005).

It evolves from the epithelial cells of the nasopharynx. The most frequent entity is the undifferentiated carcinomas of nasopharyngeal type. Three factors appear to be involved in the etiology of this cancer: Epstein Barr virus (EBV), a genetic factor presumed to bind to the HLA system and an environmental factor mainly related to nutrition (Schwaab et al., 1993- Mouelle et al., 2001).

One of the most common cancers in the head and neck is nasopharyngeal cancer (S. Ammor et al., 2005- Schwaab et al., 1993). It is a malignant disease and its incidence is dependent on geographical and racial variations. Nasopharyngeal carcinoma has been reported in most parts of the world with age standardized incidence rate, regardless of gender, less than one per 100,000 per year (Busson et al., 2004 and World Cancer Report 2010, IARC).

Nasopharyngeal cancer is one of the most common cancers in the head and neck areas. Men are two to three times more likely to develop it than women. The peak age of incidence is between 50 and 60 years. Informing about the occurrence, death and risk factors in prevention programs is very important

Globally, there are three zones: a very high frequency zone in South China (Canton), where

the incidence is 30 to 80/100 000 / year and that of the north where the incidence is 2 to 3/100 000 / year (Bouaouina et al., 2010- Lee et al., 2005).

Morocco, like other North African countries, is in the endemic zone undifferentiated carcinomas of nasopharyngeal type. With an incidence considered as intermediate by the WHO, its gross incidence is estimated at 2.2 cases per 100000 inhabitants according to the cancer registry of Greater Casablanca 2008-2012 (Registre des Cancers de la Région du Grand Casablanca (RCRC), 2012). The aim of this work is to draw up the epidemiological profile of nasopharyngeal cancer and to detect the risk factors of patients who have developed this pathology.

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, irradiation 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

Descriptive analysis that consists of 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 \pm standard deviation for quantitative variables.

Analytical statistics: based on association tests such as the Chi2 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 illnesses and/or health problems in a society, showing losses which are mainly due to the death of young or premature persons (Dubey, et al., 2014).

PYLL is the number 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 (Laure Yen Kai Sun et al., 2014):

1. All deaths occurring after the age of 65.
2. Infant deaths of less than one year because they are due to specific causes and often have a

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

different etiology than deaths at a later age.

1. (di) is the number of deaths in each age group
2. (ai): center of age class i
3. L: the upper age limit of the study

RESULTS

A total of 280 nasopharyngeal cancer cases were collected during the study period, representing 3.5% of all cancer cases collected. Among nasopharyngeal cancer cases, 67.5% (189 cases) of males and 32.5% (91 cases) of females with a sex ratio of 2.1 ($\chi^2 = 34.300$; $p < 0.001$) (Figure 1) Yearly distribution of new cases of nasopharyngeal cancer during the period 2005-2015.

Regarding the average age of patients hospitalized with nasopharyngeal cancer, it was 46.5 ± 15.2 years. The average age of diagnosis of nasopharyngeal cancer for men was 48 ± 15 years (3-80 years) and for women the average age was 43.4 ± 15.2 years (11-80). The difference between the two sexes is very significant ($F = 5.65$; $p = 0.018$).

The time distribution over the collection years shows two distinct phases, the first from 2005 to 2010 and the second from 2011 to 2015. The trend of this evolution is of linear order ($R^2 = 0.78$), with a negative slope ($a = -1.4$) (Figure 1). This trend found its minimum from the year 2011, which reached its peak in the year 2005 to reach its apogee in 2008 with 44 cases (16%).

Nasopharyngeal cancer affects patients in the 40-59 age group with 146 cases followed by age group ≥ 60 with 50 cases and class 30-39 with 43 cases (Figure 3). These results show that nasopharyngeal cancer preferentially affects the population of 40 and over (70% of cases).

A total of 19 deaths were recorded. Nasopharyngeal cancer deaths are predominant in the 40- 59 age group with 11 cases, followed by

age groups of 60 years and older with 3 cases of death.

The case fatality rate distribution assigns the highest rate of 5.06% to the age group of patients

under 15, followed by the 40-59 age group 7.53% (Figure 3).

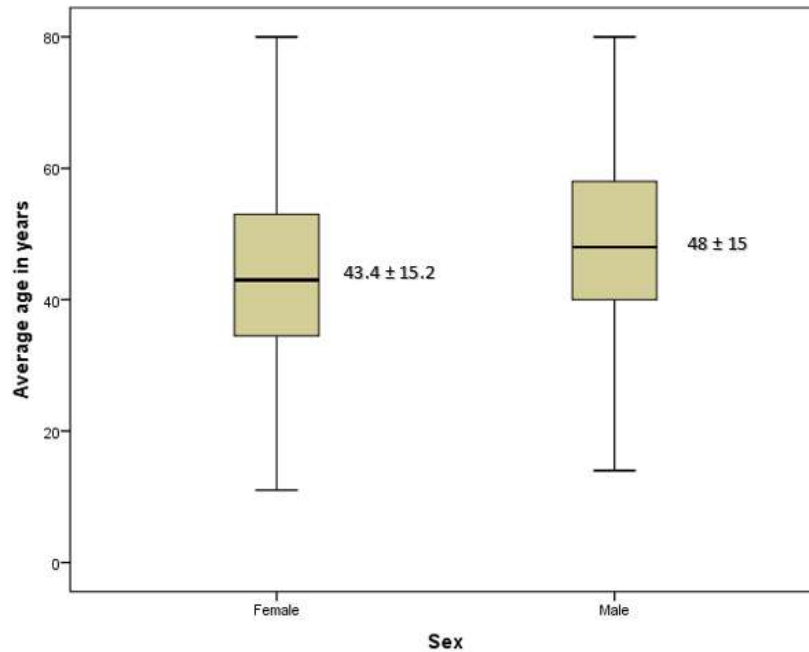


Figure 1: distribution of cases of nasopharyngeal cancer by sex.

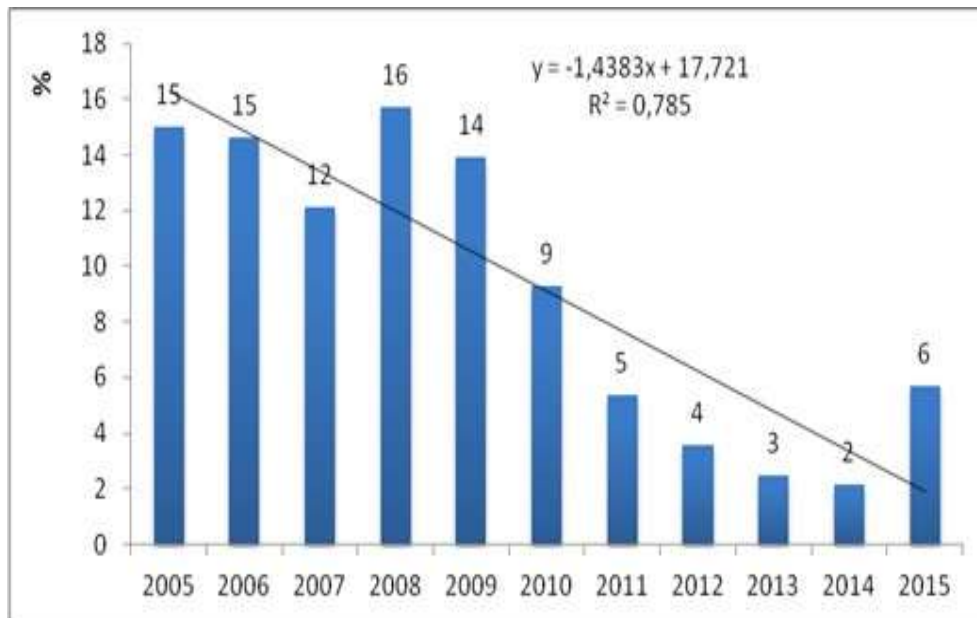


Figure 2: Yearly distribution of new cases of nasopharyngeal cancer during the period 2005-2015.

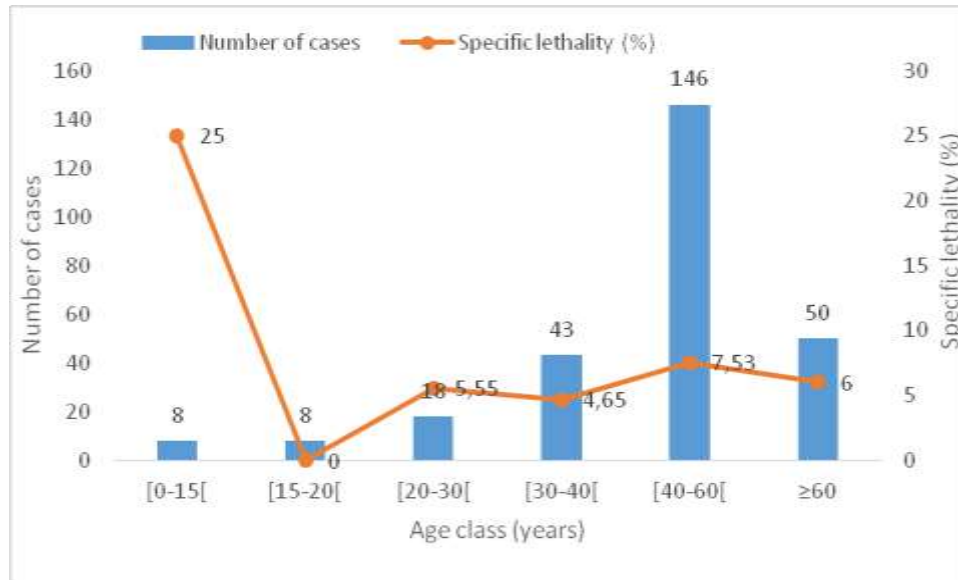


Figure 3: Distribution of cancer cases and specific lethality of nasopharyngeal cancer treated in Azhar center during the period 2005-2015.

The sample as a whole satisfies the Gaussian condition (asymmetry coefficient = -0.21, flattening coefficient = - 0.01), so our sample is assumed to be simple random.

Table 1 describes the Distribution of patients by clinical signs It was specified at 141 patients. Cervical lymphadenopathy 21% (n = 30). Epistaxis was reported in 20 patients, or 14%. Otagia accounted for 13% (n = 18).

Table 1 : Distribution of patients by clinical signs

Clinical signs	n (%)	%
Cervical lymphadenopathy	30	21
Epistaxis	20	14
Nasal obstruction	15	11
rhinorrhea	4	3
Nasal pain	3	2
Tinnitus	8	6
Otagia	18	13
Hypoacusia	10	7
Headaches	15	11
Dysphonia	5	4
Neuralgia facial	6	4
Blindness	4	3
Facial paralysis	3	2

In our study, ten patients had a family history of cancer. In 6 cases, it was a cancer of the

nasopharyngeal and in the remaining 4 cases, lung cancer, thyroid, colorectal and larynx. In addition, we noted that 31 patients (70.4%) had unique metastases. 13 patients (29.6%) had multiple metastases.

Indeed, the frequency of locally evolved forms is represented mainly by stages IV and III with respectively 48% and 29% Table 2.

Table 2 : Distribution of patients by TNM classification.

Stades	n	%
I	6	6
II	18	18
III	29	29
IV	48	47

Potential Years of Lost Lives were derived from the number of deaths in de age group included between 0 to 94 years, compared to the general population under 65 years of age. So the PYLL is 65.8 per 1000 inhabitants for all victims who have suffered this pathology. Nasopharyngeal cancer is an influential factor in the causes of premature death, which represents 376 potential years of lost lives. Table 3.

Table 3 : Potential Years of Lost Lives

Age class	Deaths	PYLL
15>years	2	114
[15-20]years	-	-
[20-30]years	1	39.5
[30-40]years	2	59
[40-60]years	11	159.5
[60-64] years	2	4
Total (2005-2015)		376

DISCUSSION

The data we report cannot reflect the situation in the general population. These results are of great value and give a sufficiently precise idea of the epidemiological profile of nasopharyngeal cancer in Morocco.

In this work, which is based on histologically confirmed cases of nasopharyngeal cancer, we found some peculiarities with respect to other regions of the Kingdom and Western series.

During the study period, a global number of registered cases is 280 cases, our results are lower than Western data (Belot A et al., 2008) and similar with data from the Maghreb country (Fouatih Z et al., 2011). Nevertheless,

They remain significantly higher than the African data, since in Lomé (Togo) (Amégbor K et al., 2011) the number of cases recorded over a period of 25 years was only 525 cases. This could certainly be related to population size and access to care in high-income countries (L. Chbani, e al., 2013).

The male sex is significantly more affected by this type of cancer than the female sex either in terms of frequency or death. It is 2.1 (M / F). This is reproduced in most national (Rabat cancer registry. 2012)], Maghrebi (Boukhris SA et al., 2012) and international series (Lehrer, R. et al., 2017).

In our sample, the average age of patients is 46.5 ± 15.2 years. The average age for men is higher than for women (48 ± 15 years). Our results are consistent with data from the literature (Ibrahim AS et al., 2010) - International Agency for Research on Cancer (IARC., 2008) Moreover, more than 85.3% are over 30 years old. This is similar to the data from the literature (Boukhris SA et al., 2012) where this pathology mainly affects young adults.

Indeed, this cancer is characterized by the frequency of locally evolved forms: 83, 6% of tumors were classified in stage III and IV (Daoud J

et al.,2003) which is consistent with the data of our study.

CONCLUSION

Nasopharyngeal cancer is a real health problem, hence the need to organize information and education campaigns in order to encourage people to consult early on functional signs and to treat patients early in order to control the disease and avoid deadly results.

CONFLICT OF INTEREST

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

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AUTHOR CONTRIBUTIONS

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

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