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Bioscience Research

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

Journal by Innovative Scientific Information & Services Network

RESEARCH ARTICLE BIOSCIENCE RESEARCH, 2019 16(3):2599-2603. **OPEN ACCESS**

Risk factors for gastric cancer: Gastric Adeno carcinoma

BenKhali Abdellah[1], OuazzaniChahed Houria[2], Soulaymani Abdelmajid[1] and Quyou Ali [1]

[1]Laboratory of Genetics and Biometry, Faculty of Sciences, University IbnTofail, Kenitra, **Morocco.**
[2]University Hospital Center, IbnSina, Hepato-Gastroenterology Department, Rabat, **Morocco**.

***Correspondence:** abdo_jobranekhalil@hotmail.com **Accepted:** 22 July 2019 **Published online:** 03 Aug 2019

This work is based on a retrospective epidemiological study of the gastric adenocarcinomas which was carried out in a cancer treatment Centre in Morocco. The study was based on a total of 240 cases of gastric adenocarcinomas taken from the Department of Hepato-Gastroenterology at the University Hospital Center in Rabat, Morocco from 2000 and 2004. Among patients with gastric adenocarcinomas, 60% were males and 40% were females. There were 99 deaths among which 68% were men and 32% were women. The highest frequency of adenocarcinoma patients was observed in the age group [60-70 years old, at 26.7%.The average age of death was 43.67 ± 8.67 years. Furthermore, the average length of survival after starting the treatment was 1.44 ± 1.89 years. The study also, showed that the evolution of patients to death depends on the age.

Keywords: Gastric adenocarcinomas, Risk factors, Morocco.

INTRODUCTION

Cancer is not only a disease of rich countries; on the contrary it becomes a scourge that is increasingly prevalent in low- and middle-income countries (Bray; 2014).

At the World level, they are among the main causes of morbidity and mortality worldwide. In 2012, there were approximately 14 million new cases and 8.2 million deaths related to the disease (14% of deaths) (Ferlay et al., 2013; Bray; 2014).

At the African level, it is 10 and 20% of pathologies, this trend is accentuated due to a share of growth and aging of the population, urbanization as well as lifestyle changes that will induce an increase the lack of preventive measures, the delay in diagnosis, the lack of trained health workers in oncology, the lack of facilities and dedicated equipment which, if measures are not taken quickly, cancer mortality will continue to progress at the same rate as incidence (Globocan.,2012; Bray et al.,2014; Tangka et al.,2016).

The aim of this work is to determine the risk factors of patients who presented gastric adenocarcinoma at the service of Hepato-Gastroenterology at the University Hospital of Rabat in Morocco.

MATERIALS AND METHODS

This is a retrospective epidemiological study during the period 2000 and 2010, based on the records of patients in which their biopsies made during the examination of their stomachs by fibroscopy in the department were consulted of Hepato-Gastroenterology at the University Hospital Center in Rabat, Morocco.

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

Descriptive statistic: release of the frequencies and the characteristics of each parameter studied

(average, minimum, maximum ...). Results are expressed as gross values for categorical variables (sex, year, age group, evolution) and averages ± error for quantitative variables (age, duration of survival...).

Analytical statistics: based on association tests such as the Khi2 test which measures the difference between the frequencies observed and the theoretical frequencies. We used this test to compare the two sexes. We also used the one-way analysis of variance (ANOVA), which estimates the intergroup variation with respect to intra-group variation (F-ratio), to determine whether the age of onset of treatment, the age of death and the survival times after treatment (dependent variables) are related to sex (independent variable).

On the other hand, the calculation of the Odds Ratio (OR) for each age class in order to detect the degree of association between the membership of a certain age group and the evolution of the patient towards death. If the value 1 is included in the confidence interval (CI) of the OR, it is deduced that there is no association between these two parameters. On the other hand, if the value 1 is excluded from the OR, it is concluded that there is an association between membership of a given age group and evolution towards death.

RESULTS

During the study period, a total of 310 cases of gastric cancer were collected, 77% of cases were gastric Adeno carcinomatous cancers with 240 cases. Of these cases, 145 (60% of cases) are male and 95 (40% of cases) are female with a sex ratio of 1.5 highly significant. The number of deaths by the adenocarcinoma cancer was 99 including 67 men (68% of deaths due to this cancer) and 31 women (32% of deaths), the sex ratio of mortality from this cancer is 2.2 in favor of men, the difference is also highly significant (Table 1).

Regarding the annual evolution in the number of new cancer cases treated in the center studied since 2000 until 2010. Figure 1 shows that this number was low in 2000, increased in 2001 and stabilized between 2003 and 2007 to increase considerably between 2008 and 2010 (from 29 cases to 62 cases).

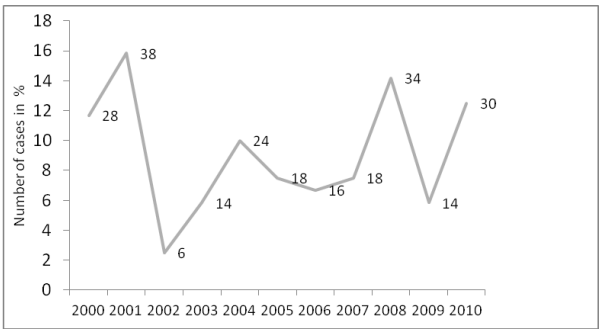

Figure 1; **Yearly distribution the number of cases.**

The distribution of cases according to the origin of the consultations shows that the most frequent origin is Rabat–Sale-Zemmour-Zair region with 55% of the cases, followed by that of Marrakech-Safi 9% and that of Casablanca-Settat with 8% (Figure 2).

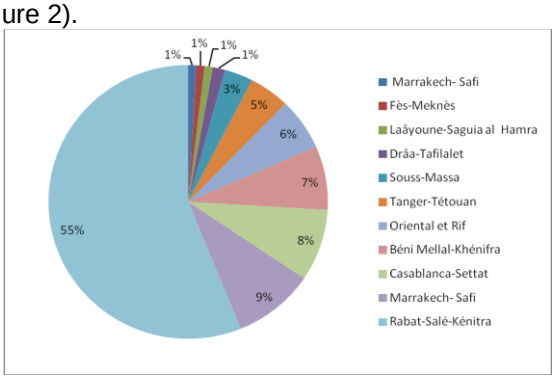

Figure 2; Distribution of the cases of gastric adenocarcinoma according to patients origin.

Figure 3 shows the distribution of gastric adenocarcinomas according to age groups. The age group [60-70 years [is most affected by this type of cancer with 64 cases (26.7%) followed by the age group [50-60 years [with 60 cases (25%) cancers) and the age group [70-80 years [with 46 cases (19.2% of cases).

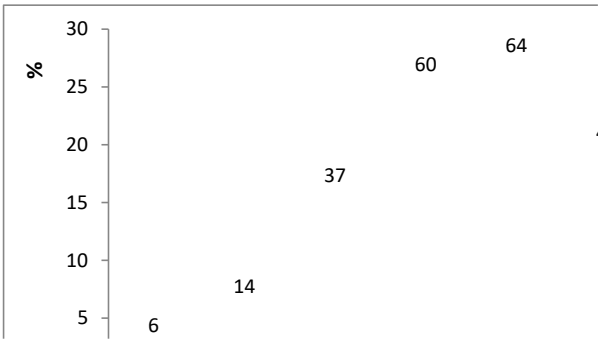

Figure 3; Distribution of frequencies and percentages of adenocarcinoma found according to the age groups

The mean age at onset of treatment in patients with adenocarcinoma is shown in Table 2. It is found that this one in the sample studied is 48.6 ± 14.82 years, with 51.3 ± 19.05 years for the male and 49.5 ± 16.79 years for the female sex. The difference between the two sexes is very significant (F = 13.56; p = 0.001).

Regarding the average age of death from this type of gastric cancer, it was 43.67 ± 8.67 years for both sexes, with 67.78 ± 8.37 years for men and 66.68 ± 8.01 years for women. The difference between the two sexes is significant (F = 5.54; p = 0.03).

Otherwise, the results of the calculation of the mean duration between the start of treatment and the occurrence of death are shown in Table 3. This duration was on average 1.44 ± 1.89 years, with 1.58 ± 2.84 years for males and 0.86 ± 1.26 years for females. The difference between men and women is not significant (F = 0.83 ; p = 0.38).

Table 1; **Frequency and death differences between men and women**

	Total	Male	Female	Ratio (M/F)	Khi2 (1ddl)	p
Number of cases	240	145	95	1.5	10.41	<0.001
Number of deaths	99	68	31	2.2	13.82	<0.001

Table 2; Differences in the age at the beginning of treatment between men and women treated

			Age	
		Average	Minimum	Maximum
Start of treatment (active n =150)	**Male**	51.3 ± 19.05	23	80
	Female	49,5 ± 16,79	21	92
	Total	48,6 ± 14,82	21	93
Death (active n = 32)	**Male**	67.78 ±8.37	21	73
	Female	66.68 ± 8.01	25	89
	Total	43.67 ± 8.67	21	89

Table 3; Differences **in the length of survival after starting the treatment between men and women treated**

Sex	Survival after start of treatment (years)		
	Average	Minimum	Maximum
Male (Active n=29)	1.58 ± 2.84	0	6
Female (Active n=10)	0.86 ± 1.26	0	4
Total (Active n=39)	1.44 ± 1.89	0	6

Table 4; Death relative risks per age group and their significations.

		Confidence interval (CI 95%)	
Age class	**OR**	**Inferior**	**Superior**
[10-20[	-		
[20-30[	-		
[30-40[	-		
[40-50[	-		
[50-60[	1.02	1.12	1.17
[60-70[	1.81	1.04	3.16
[70-80[	7.67	3.47	16.94
≥80	5.75	1.54	21.51

On the other hand, the study of Odds Ratio of death for each age class compared to the others showed that here is an association between the evolution towards death and the age classes of [50-60 [years ; [60-70 [years; [70-80 [years and the age greater than or equal to 80 (1 is not included in the CI). Odds Ratio and their signification are shown in Table 4.

DISCUSSION

Gastric cancer is the second most common cancer worldwide, with a frequency that varies greatly across different geographic locations (Bozzetti et al., 1999).

Ninety percent of all tumors of the stomach are malignant, and gastric adenocarcinoma comprises 95% of the total number of malignancies (Bozzetti et al., 1999).). Curative therapy involves surgical resection, most commonly a total or subtotal gastrectomy, with an accompanying lymphadenectomy. The overall 5-year survival rate of patients with respectable gastric cancer ranges from 10% to 30% (Green et al., 2002; Harrison et al., 1998).

Gastric adenocarcinoma is a cancer whose incidence is variable throughout the world. The highest were reported in East Asia (Japan, China and Korea) and a further 102,040 cases were reported in Japan in 2008 (Yingsong et al., 2011).

The data we report may not reflect the situation in the general population. These results are of great value and give a sufficiently precise idea of the epidemiological profile of gastric adenocarcinomas in Morocco.

The annual evolution in the number of new cases at the sample level is increasing over the last four years of study (2007/2010). This confirms the efforts of the staff of the Association Lalla Salma to fight against cancer through awareness and support for patients.

The male sex is significantly more affected by this type of cancer than the female sex either in terms of frequency or death which converges with the data of the literature where the sex-ratio varies between 2 and 3.5 in favor of the men (Neuberger et al., 2006; Santos-Martínez et al., 2005).

On the other hand, Rabat-Sale-Zemmour-Zaïr region is the most frequent source of consultations for gastric adenocarcinoma. This is mainly due to the proximity as the center studied is in Rabat and does not reflect the geographical distribution of this type of cancer.

In addition, the study showed that Adeno carcinoma found its maximum frequency in patients aged between 60 and 69 years. This is consistent with the literature (Ang and Fock., 2014; Hsieh et al.,2012; Qiu et al.,2011).

On the other hand, at the level of the sample studied, men are the most affected by this pathology at a much older age than women and die at a later age as well (Dicken et al., 2005).

On the other hand, there is no difference between the two sexes in terms of survival after the start of treatment. In addition, the evolution to death depends on the age of patients with gastric adenocarcinoma.

CONCLUSION

The study shows that gastric adenocarcinoma is one of the most dangerous cancers, especially among the male population, with a frequency and lethality important and a poor prognosis.

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 IbnTofail University.

AUTHOR CONTRIBUTIONS

BA collected the data, realized the descriptive and analytical study and drafted it. QA reviewed the manuscript. All authors have read and approved the final version.

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