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Gastric Cancer In Young Adult : It's Time To Sound The Alarm !

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Abstract:
Introduction: *Although gastric cancer is considered as a disease of middle-aged and elderly, 2%–15% of patients with gastric cancer are young. Only a few studies with small samples have been conducted.*
Aim: *The aim of our study is to review the epidemiological characteristics. Evaluate the survival and prognostic factors of gastric cancer in young subjects.*
Patients and methods: *This is a retrospective study including patients admitted in our department for gastric adenocarcinoma between January 2007 and June 2017. Our study included a descriptive component of the epidemiological and clinical characteristics of gastric cancer in patients under 45 and a univariate analytical component of clinical differences with older subjects, survival analysis (Kaplan Meier) and prognostic factors in multivariate (Cox).*
Results: *Two hundred and sixty-five patients were included during this period. Patients under 45 accounted for 30.6% (n = 81).The average age of our patients was 36±6.10. We observed a male predominance with a sex ratio H / F of 1.25. The familial forms remain rare (1.2%) The distal involvement of the tumor represented 27.2%. Histologically, the linitic form and the poorly differentiated ADK were significantly more frequent (24.7%, p = 0.009). Almost 94% of patients had a significantly advanced or metastatic disease (p=0.0001). Survival at 5 years in young subjects was 7%, in multivariate analysis only advanced stage and linitic or poorly differentiated forms were prognostic factors.*
Conclusion: *In our study, gastric cancer remains frequent and aggressive in young subjects compared to western series. Survival remains low in the literature values.*
Key Words: *Gastric adenocarcinoma - Epidemiology - Young adult - Survival – Prognosis*

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I. Introduction

The vast majority of gastric cancers are adenocarcinomas. Gastric lymphoma and other histological types have less frequent occurence. Gastric adenocarcinoma remains the fourth most common cancer and the second leading cause of cancer-related deaths globally [2]. The incidence of gastric adenocarcinoma has considerably decreased since the 1980s as a consequence of improved living conditions, salt reduction in food and better food storage and preservation. Despite the fact that gastric cancer is considered as an age-related disease, 2 to 15% of patients with gastric cancer are less than 45. Previous studies have reported an increase of this cancer in young patients, especially in young women. They have also described lower survival rates in this age group and implied that the cancer form was more aggressive. In Morocco, there is no data available on the survival of patients with gastric cancer to date. Therefore, this study aimed to describe the epidemiological characteristics of this cancer in young Moroccan adults and the prognostic factors determining their survival.

II. Patients And Methods

This retrospective study analyzed 265 patients, including 81 young adults (patients under the age of 45), all registered at the department of hepato-gastroenterology of Fez University Hospital. The patients received their treatment for gastric adenocarcinoma between January 2007 and June 2017.
The study addressed:

- epidemiological characteristics (age, sex, cancer history), cases of gastric cancer in young adults and tumor's characteristics (location, macroscopic appearance, metastasis and anatomic pathology), as well as clinical features of disease progression. Data was entered in Microsoft Excel. The results were expressed as averages and percentages.
- a univariate analysis of epidemiological characteristics differences (with older patients being included). It combined conventional statistical tests: chi-squared and Student's tests. *P* values of less than 0.05 were considered statistically significant. Statistical analysis was performed using SPSS software. Survival analysis was carried out using Kaplan-Maier estimate and prognostic factors were identified by Cox's regression model.

III. Results

Two hundred and sixty-five patients were included in this study. Young adults represented 30.6% (n = 81). The average age of those patients was 35 +/- 7 years. The sex ratio was 1.53. Smoking was reported in 25.9% (n = 21) of cases. Only one patient had a family history of gastric cancer. 65% patients were positive for *Helicobacter pylori* infection. 2.5% (n = 2) of patients had previously been treated for peptic ulcer disease.

Clinically, 66.7% (n = 54) of patients have suffered gastric cancer symptoms for 1-6 months and unfortunately, 21% of patients have ignored their symptoms for more than 6 months. Epigastric pain was the predominant symptom in 76.5% (n = 62) of patients and digestive hemorrhage (*Hematemesis, Melena*) in 27 patients (33.3%). 4.9% of patients reported dysphagia of a cardiac origin together with general asthenia. Anorexia and slimming were present in almost two-thirds of cases. On clinical examination, an epigastric mass was observed in 27.2% (n = 22) of cases. 48.1% (n = 39) of patients had anemia. Endoscopic images showed a process of budding and an ulcerated tumor in 48.1% (n = 38) of cases. The tumor with a fast-growing mass was observed in 30.9% of patients whereas the distal gastric tumor in antro-pyloric region was found in only 27.2% of cases. The tumor was found at a locally advanced or metastatic stage (stage IV) in 94% of patients (n = 79).

Histological analysis revealed gastric linitis in 20 patients (almost 25% of cases) and a poorly differentiated or undifferentiated tumor in 50% (n = 41) of young adults. Only 5% of patients had surgery +/- perioperative chemotherapy. Palliative surgery was performed on 14% of patients and palliative chemotherapy was administered in 28% of cases. Almost a quarter of patients had no treatment and no palliative care (Table 1). Comparing the two age groups, we did not find a statistically significant difference regarding family history, sex and clinical symptoms. Nevertheless, the occurence of the ulcero-budding tumor, metastasis, gastric linitis and the undifferentiated form were statistically significant in the group of young adults with $p = 0.018$, $p = 0.002$, $p = 0.009$ and $p = 0.0022$, respectively (Table 2).

The 5-year survival in young patients was 7%. In the multivariate analysis only the advanced stage, gastric linitis or poorly differentiated forms were good prognostic factors (Table 3, Figure 1).

IV. Discussion

Gastric cancer has poor survival even when the tumor is not spread. Recurrence after surgery is frequent, and a 5-year survival rate is almost the same as after the surgery alone (20%) [3]. In 90% of cases it is an adenocarcinoma, a type of tumor of epithelial tissue that has grandular origin. Gastric cancers remain the second leading cause of cancer deaths worldwide. Their incidence varies from one country to another. [4]

According to the results of the Cancer Registry of the Greater Casablanca (RCRC), gastric cancer has been the second most common cancer of the digestive tract in Morocco in both men and women. The incidence of this cancer remains lower than in developed countries and is close to other countries of North Africa [5].

Incidence of gastric cancer in young people under 45 is rare. It varies between 6 and 15% [6]. In our study, 30.6% of gastric cancers (of adenocarcinoma type) occur in young patients, which represents a much higher incidence compared to Western countries' results (between 2 and 15%). The incidence of non-cardia gastric cancer in the United States is decreasing among people aged 50 and older, but increasing among those under 50. This trend has been observed among women of non-Hispanic white ethnicity [7]. It is contradictory with our results since we have detected a male predominance in young patients group but with a statistically insignificant difference comparing to older patients.

Our results are similar to previously published studies concerning the incidence of gastric linitis cancer in young adults. Such cases are rare and the cancer remains undifferentiated. Those cases are probably unrelated to exogenous factors predisposing to cancer [8].

An increased risk of cancer has been associated with the *Helicobacter pylori* (HP) infection (between 2 and 6-fold compared to the uninfected population). In Africa, the prevalence of HP varies between 70 and 92%. This imposes screening for HP in patients who present gastric symptoms in order to fight the infection [9].

Gastric cancer in young adults has poor prognosis. In our study, the 5-year survival did not exceed 7%, a result that remains much lower comparing with the Western literature data. These survival rates are reported for the first time in Moroccan population. The increased mortality can be explained by a late diagnosis of the disease and high incidence of inoperable forms.

Patients with gastric cancer die early in the first year following the diagnosis and the 5-year survival remain exceptional [8].

V. Conclusion

Gastric cancer has poor prognosis. Such prognosis occurs in 30% of patient under 45 years of age. The survival rate is 7% and it remains inferior compared to the current literature data. We should attach cardinal importance to the HP screening tests. HP Information and education campaigns should be established. This would encourage people to consult doctors when functional symptoms appear. Only an early diagnosis of gastric cancer can improve its prognosis.

Tables and Figures

Table 1: Epidemiological characteristics in young adults with gastric adenocarcinoma

Characteristics	Number of patients N=81
Age (in years)	**36±6.1**
Sex :	
Female	**32(39.5%)**
Male	**49(60.5%)**
Tobacco smoking	**21(25.9%)**
Previous gastric ulcer	**2(2.5%)**
Family history	**1(1.2%)**
Symptoms between 1 and 6 months	**54(66.7%)**
Aneamia	**39(48.1%)**
Anatomic location :	
Greater curvature	**25(30.9%)**
Cardia	**20(24.7%)**
Pyloric antrum	**22(27.2%)**
Fundus	**12(14.8%)**
Duodenum	**1(1.2%)**
Gastric stump	**1(1.2%)**
Advanced cancer	**54(66.7%)**
Metastasis	**25(27.3%)**
Gastric linitis	**20(24.7%)**
Surgery +/- perioperative chemotherapy	**4(4.9%)**
Palliative surgery	**11(14%)**
Palliative chemotherapy	**22(28%)**

Table 2 : Comparative study of two age groups

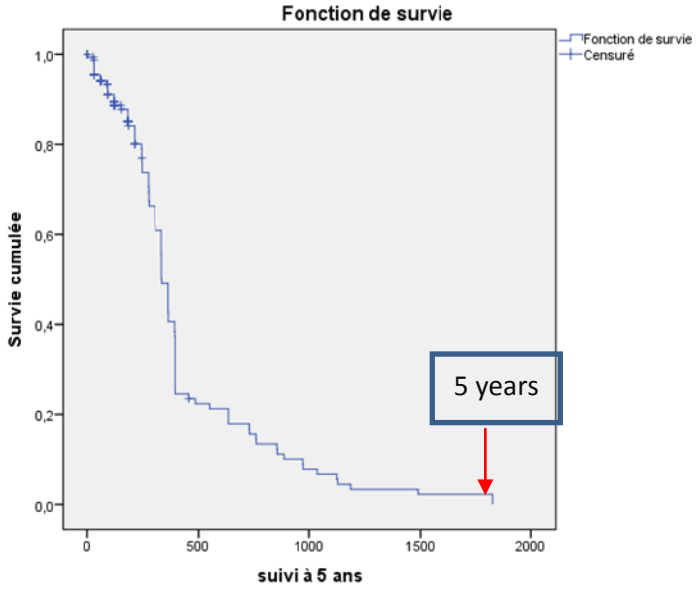
	Group 1 (<45 years) N=81 (30.6%)	Group 2 (>45 years) N= 184 (69.4%)	*p*
Male	**49 (60.5%)**	**120(65.2%)**	***p* = 0.49 (NS)**
Symptoms + 6 months	**17(21%)**	**35(19%)**	**0.738 (NS)**
Previous gastric ulcer	**2(2.5%)**	**3(1.6%)**	**NS**
Family history	**1(1.2%)**	**3(1.6%)**	**NS**
Tobacco smoking	**21(25.9%)**	**42(22.8%)**	**NS**
Distal tumor	**22(27.2%)**	**55(30.1%)**	***p* = 0.368**
Ulcero-budding tumor	**38(48.1%)**	**127(69.4%)**	***p* = 0.018**
Gastric linitis	**20(24.7%)**	**21(11.5%)**	***p* = 0.009**
Metastasis	**25(27.3%)**	**19(10.5%)**	***p* = 0.002**
Undifferentiated tumor	**41(50%)**	**94(51.4%)**	**p = 0.022**

NS = not (statistically) significant

Table 3 : Predictors of 5-year survival, multivariate analysis ; OR = Odds ratio ; CI = Confidence interval

Variable	*p*	OR	CI
Advanced stage (IV)	**0.01**	**2.79**	[1.26-7.01]
Gastric linitis	**0.01**	**1.02**	[1.01-1.04]
Poorly differentiated tumor	**0.002**	**2.66**	[1.44-4.89]

Figure 1. 5-year survival analysis in patients under 45.



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