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RESEARCH ARTICLE

The Prevalence of Digestive Cancers in the Algerian West Region of Sidi Bel Abbes

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ABSTRACT

Digestive cancers are a real public health problem, the objective of our work is to assess the prevalence of digestive cancers, particularly gastric cancer, according to age and sex, by determining the prevalence of Helicobacter pylori, a bacterium involved in stomach cancer in the western Algerian region of SBA. A descriptive, retrospective epidemiological study was conducted on 3,663 patients with digestive pathologies, recruited over a period of three years (January 2012-December 2014) at the pathology department of the Sidi Bel Abbes University Hospital. The information collected comes from the medical records of patients who attended the surgery and gastroenterology departments. The diagnosis is made on paraclinical examinations (endoscopy, imaging). Histological examinations are carried out at the pathology department of the SBA University Hospital. The analyses are established using IBM SPSS software version 22.0. The results obtained showed that the statistical analysis carried out during the years (2012-2014) at the level of the city of Sidi Bel Abbès revealed that digestive pathologies are strongly dependent on the sex of the patient ($p < 0.001$), The results obtained showed the presence of a very significant difference ($p < 0.001$) between the average ages and the different digestive pathologies. The distribution of digestive cancers, gastric cancer occupies the first place with a frequency of 45.94%. The results obtained showed the absence of a significant difference in digestive cancers according to age. Stomach cancer represents 47.73% in men, followed by colon cancer (40.9%), gallbladder and small intestine with a frequency of 4.55%, and liver cancer, esophagus 1.14%. Colon cancer accounts for (45.24%) in women, followed by stomach cancer (41.65%), gallbladder cancer (7.14%), small intestine cancer (3.57%), esophagus (2.38%), and no cases of liver cancer. The results obtained showed that the age group affected by stomach cancer in both sexes is (41-50 years) with a percentage of 20%, followed by 18.46% in people in the age group between (61-70 years). However, the people with low prevalence (1.53%) are in the age group between (21-30 years). The prevalence of gastric cancer indicates a sex ratio of 1.2. The distribution of H. pylori infection indicates a female predominance with a frequency of 63.63%, and a sex ratio of 0.57.

INTRODUCTION

H. pylori is ranked as the main triggering factor of stomach cancer, digestive cancers are second after respiratory cancer in men and breast cancer in women and represent 23% of all cancers in Algeria (Sweeney et al., 2012), classified as follows: Colon and rectal cancer presents 8,500 cases per year, or 4,500 men and 4,000 women after lung cancer in men and breast cancer in women. Stomach cancer is ranked 4th among all cancers, with an annual average of 3,000 cases in men and 2,000 cases in women. Esophageal cancer also presents 300 cases per year in men and 350 cases in women. Liver

cancer accounts for 1.4 cases per 100,000 inhabitants in men and 1.3 cases per 100,000 inhabitants in women. Gallbladder cancer accounts for 1.7 cases per 100,000 inhabitants in men and 2.9 cases per 100,000 inhabitants in women. Finally, for pancreatic cancer, there are 800 cases in men and 500 cases in women per year (Oukkal, 2007). Digestive system cancer in the city of Algiers was ranked among the 10 most common types of cancer in 2010, with forecasts from the National Institute of Public Health reporting 45,000 new cases of cancer per year, or 120 cases per 100,000 inhabitants, while that of digestive system cancer is 20 cases per 100,000 inhabitants (4,000 cases/year) (Achouri, 2013). Stomach cancer is more common worldwide, accounting for about 10% of cancer cases. Its incidence has decreased significantly over the past 50 years in Western countries (Louvet et al., 2008). However, the prognosis for gastric cancer is generally poor, but has improved significantly in recent years, and five-year survival is around (10-15%) (Mineura et al., 2010). In Algeria, its frequency ranks second among digestive cancers according to data from three registers (Algiers, Oran and Sétif), with an average age of onset of approximately 56 years and a sex ratio of 1.2 (Abid and Berkane, 2009). In France, its incidence is around 12/100,000 inhabitants in men and 4/100,000 in women. Gastric cancer particularly affects the elderly, whose average age of onset is 70 years (Baillet, 2003). In our SBAtown region, the rate of cases of digestive cancer is increasing, particularly gastric cancer and on these data. The objective of this work is to evaluate the frequency of digestive cancers, particularly gastric cancer, according to age and sex, by determining the prevalence of Helicobacter pylori, a bacterium involved in stomach cancer, through a retrospective study (Achouri, 2013).

MATERIAL AND METHODS

Study population

A descriptive, retrospective epidemiological study was conducted on 3663 patients with digestive pathologies, recruited over a period of three years (January 2012-December 2014) at the Department of Pathology of the University Hospital of Sidi Bel Abbes. The information collected comes from the medical records of patients who attended the surgery and gastroenterology departments. The diagnosis is made on paraclinical examinations (endoscopy, imaging). Histological examinations are carried out at the Department of Pathology of the SBA University Hospital.

Inclusion criteria

The study population consists of people with symptomatic signs of digestive pathology (abdominal pain, vomiting, family history, metastatic cancer, etc.).

General characteristics

The study population is divided according to: Year, Age, Sex.

Anatomopathological characteristics

The epidemiology of digestive cancer evolves differently depending on the location and histological type.

Statistical analyses

The data of the general characteristics obtained and the anatomopathological characteristics are analyzed and entered using Microsoft Office Excel 2013. The analyses are established using IBM SPSS software version 22.0.

The tools applied include:

- Descriptive statistics
- Fisher test
- The significance level is 0.05.

RESULTS

Distribution according to general characteristics

Distribution of cases by year

The distribution of patients with digestive pathologies isillustrated in (Figure1). The results obtained show a growth of digestive pathologies during (2012, 2013, 2014) with a frequency of (4.45%, 20.25%, 75%) respectively.

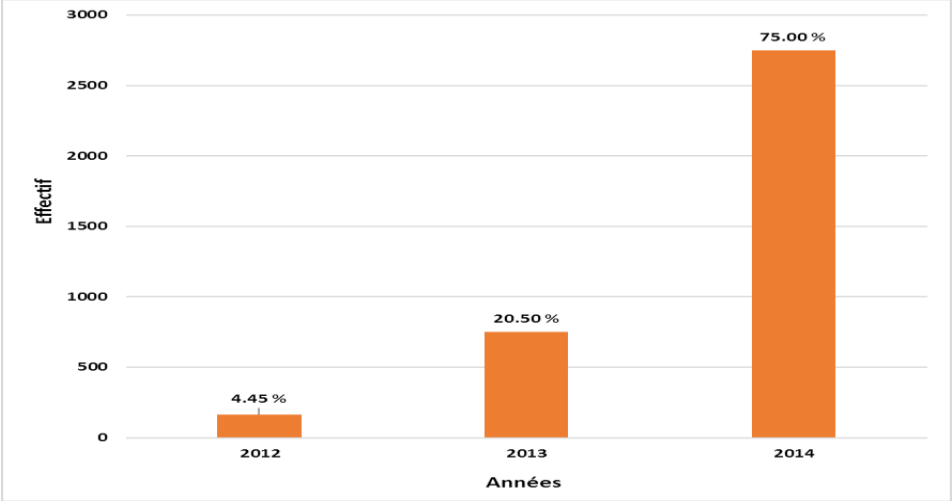

Figure 1: Distribution of patients recruited at the Anatom-Pathology Department of the SBA HCU during the 3-year period (2012-2014).

Distribution by sex

The distribution of digestive pathologies is presented in (Figure 2). Digestive pathologies represent (29.30, 70.70%) in men and women respectively, which explains the female predominance with a sex ratio of 0.41. The sex ratio is approximately 41% (average of 41 men for 100 women).

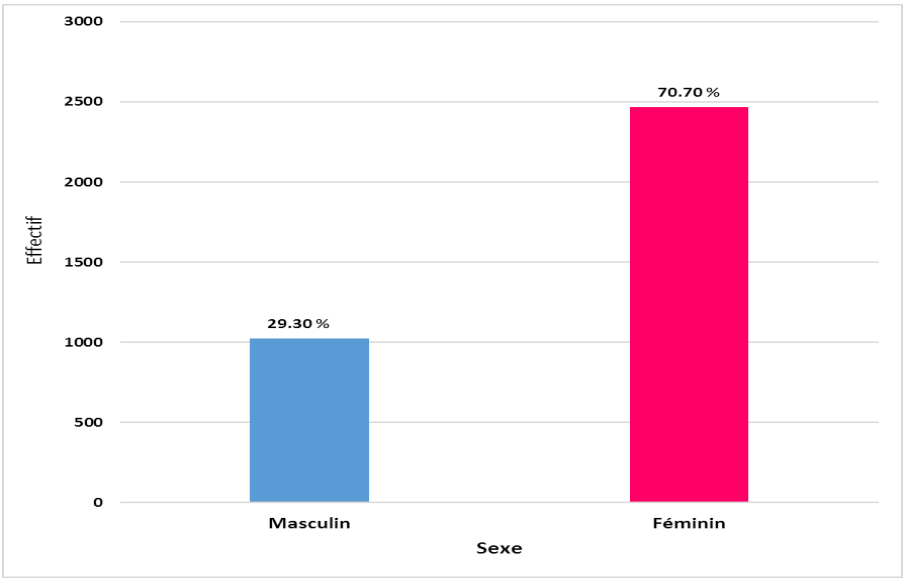

Figure 2: Distribution of patients recruited at the Anatomo-Pathology Department of the SBA HCU according to sex.

Age distribution

The distribution of digestive pathologies according to age is illustrated in (Figure 3). The results obtained showed that out of a total of 3663 cases of digestive pathologies, the prevalence of age represents 70.92%, of which the average age of our patients is (46.65 ± 17.92 years). In addition, the majority of patients belong to the age group between (35-51 years) with 23.86%.

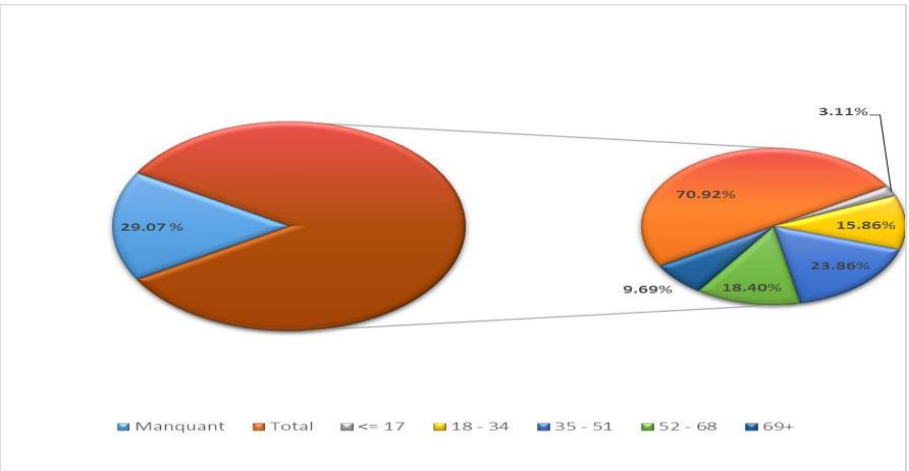

Figure 3: Distribution of patients recruited from the Anatomo-Pathology Department of the SBA HCU according to age.

Distribution according to anatomopathological characteristics

Distribution of the population studied according to age and location of digestive pathologies.

The distribution of patients suffering from digestive pathologies according to age is illustrated in (Figure 4).

- Inflammation affects a population of 1,826 patients with different types of inflammation with an age ranging from 2-94 years with an average of (47.18 ± 16.92 years).
- The average age of 669 patients suffering from gastritis is of the order of (47.07 ± 19 years) between 8-92 years.
- Cancer affects 189 people in the age group between (7-89 years), with an average age of (55.53 ± 19.65 years).
- All different types of lesions affect 65 people in the age group (11-90 years), with an average age of (54.23 ± 19.65 years).
- The average age of H. pylori infection is 74 years.
- A population of 68 people in the age group (19-88 years) are affected by Crohn's disease, with an average age of (48 ± 21.93 years).
- 90 cases of atrophy or hypertrophy recorded are of an average age of (42.03 ± 18 years) in an age group of 2-90 years.
- Adenomas affect a population between 29-73 years, with an average of (52.77 ± 11.83 years).

The results obtained showed the presence of a very significant difference ($p < 0.001$) between the mean ages and the different digestive pathologies.

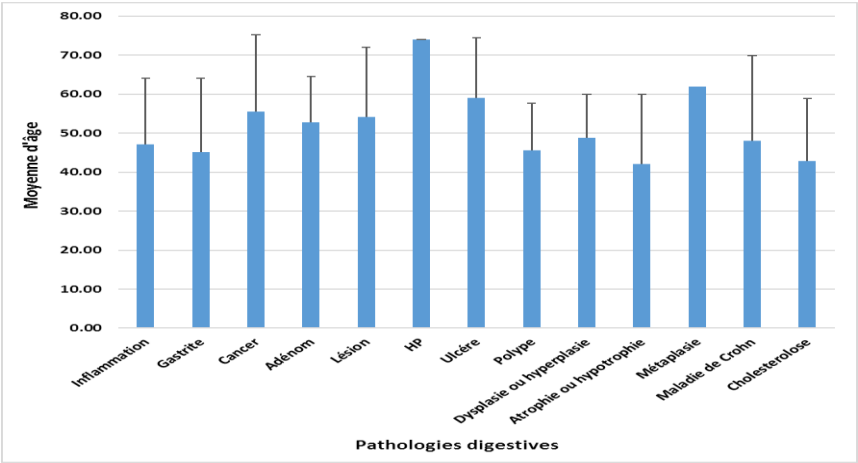

Figure 4: Distribution of digestive pathologies by age.

Distribution of the study population according to sex and site of the location of digestive pathologies.

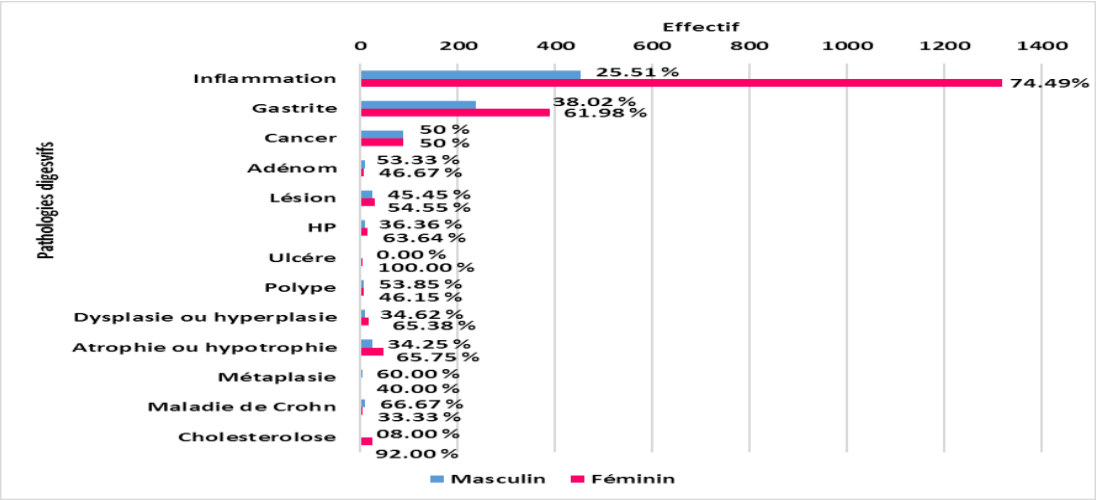

Figure 5: Distribution of digestive pathologies by gender.

The occurrence of different digestive pathologies in the patients studied, depending on gender, indicated the female predominance of inflammations (74.49%) followed by gastritis (61.98%) and atrophy or hypertrophy (65.38%). On the other hand, no significant difference between the two sexes of the different types of cancer was observed. This explains why digestive pathologies are strongly dependent on the gender of the patient ($p < 0.001$).

Distribution of digestive cancers

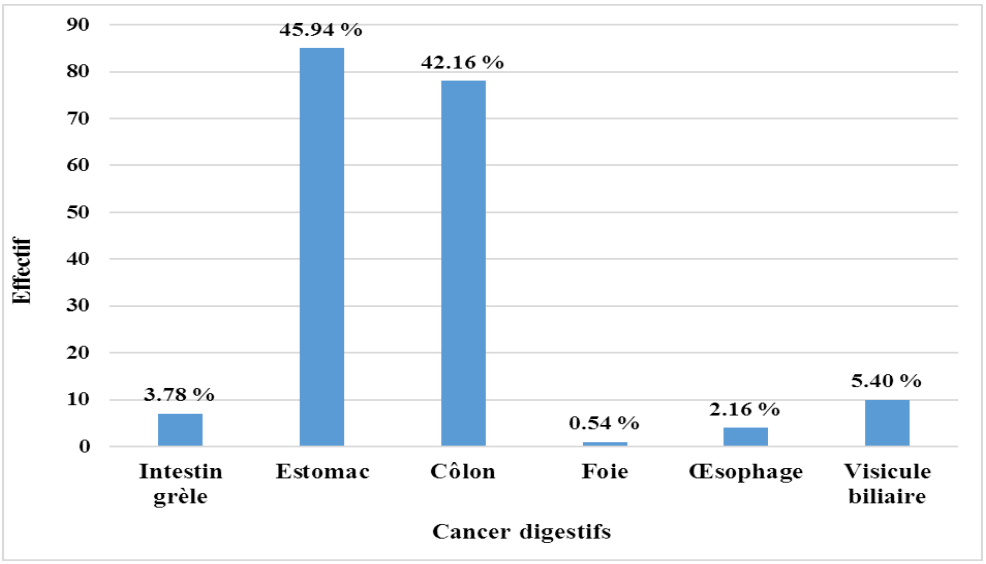

Figure 6: Location of digestive cancers.

In a population of 189 cases, gastric cancer in the city of Sidi Bel Abbes tops the list of digestive cancers recorded and represents 45.94%, followed by colorectal cancers (42.16%), gallbladder (5.40%), small intestine (3.78%), esophagus (2.16%) and liver cancer 0.54%.

Distribution of digestive cancers by age

The average age is recorded as follows:

- From (55.67 ± 16.72 yearsold) in patients with colorectal cancer,
- From (53.72 ± 21.93 yearsold) in stomach cancer,
- From (66 ± 18.73 yearsold) in cancer of the gallbladder,
- From (63.33 ± 23.71 yearsold) in cancer of esophageal,
- From (65 ± 0 years) in patients withliver cancer.

The results obtained showed the absence of a significant difference in digestive cancers according to age.

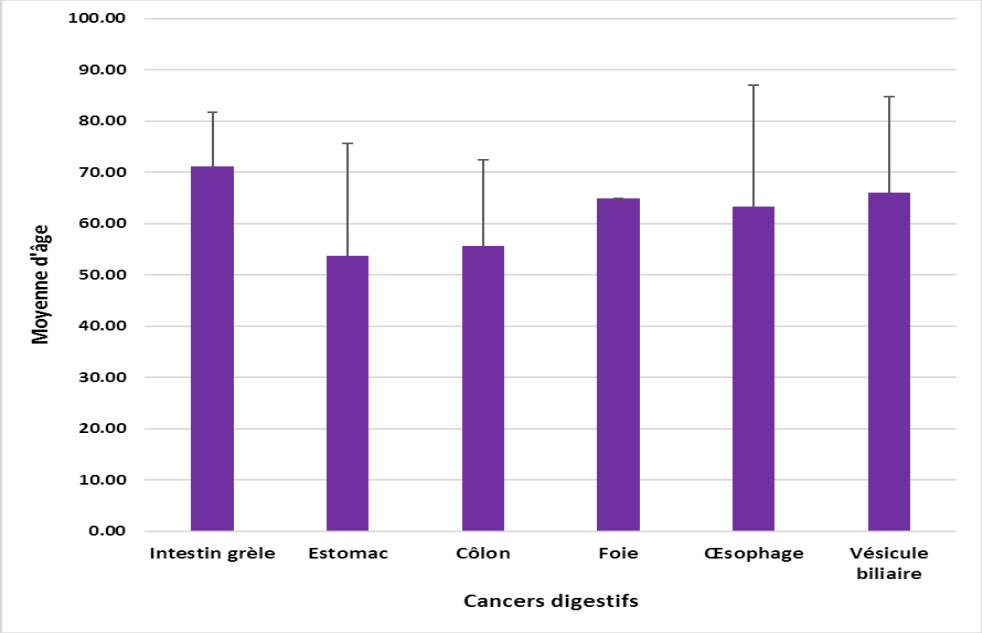

Figure 7: Distribution of digestive cancers by age.

Distribution of digestive cancers by sex

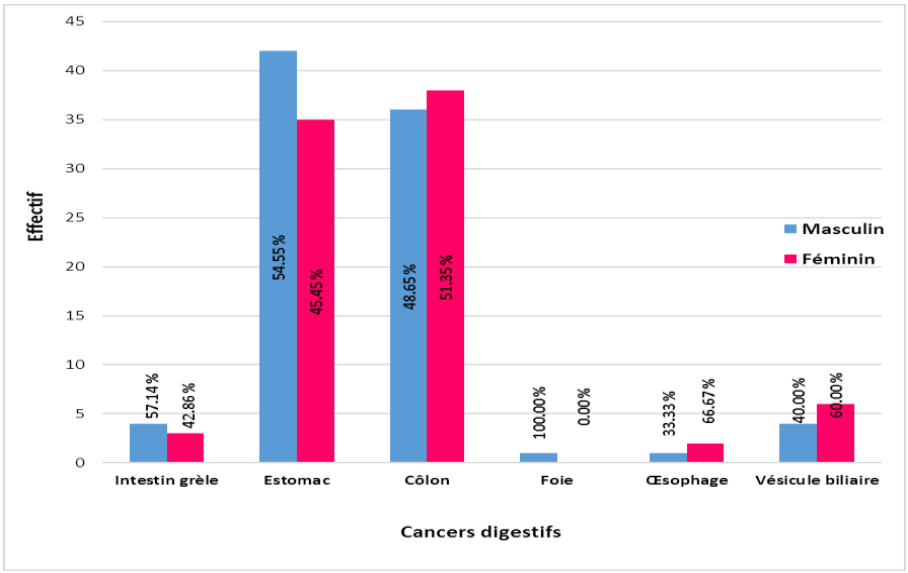

Figure 8: Distribution of digestive cancers in both sexes.

- Gastric cancer represents 54.55% in men and 45.45% in women.
- Colon cancer affects 51.35% of women and 48.65% of men.
- Gallbladder cancer represents 60% in women and 40% in men.
- Esophageal cancer represents 66.67% in women and 33.33% in men.
- Liver cancer represents 100% in men.
- Stomach cancer accounts for 47.73% in men, followed by colon cancer (40.9%), gallbladder and small intestine with a frequency of 4.55%, and liver cancer, esophagus with a frequency of 1.14% (Figure 9).
- Colon cancer accounts for (45.24%) in women, followed by stomach cancer (41.65%), gallbladder cancer (7.14%), small intestine cancer (3.57%), esophagus (2.38%) and no cases of liver cancer.

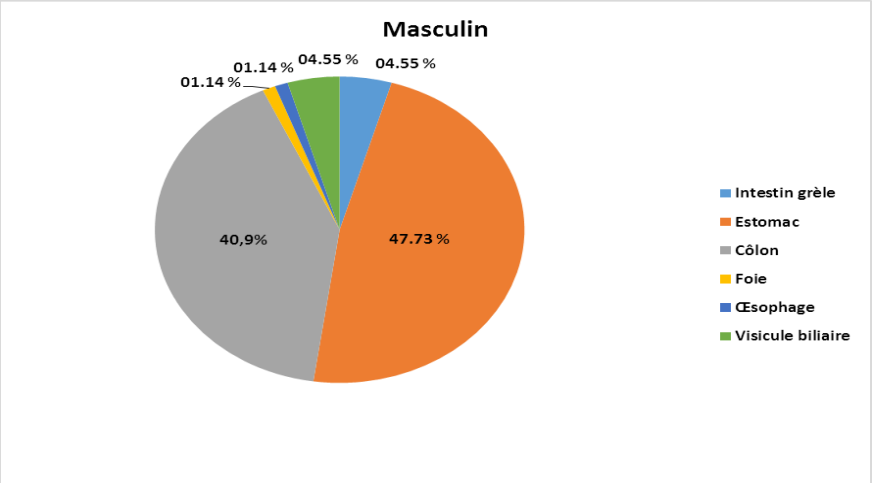

Figure 9: Localization of digestive cancers in males.

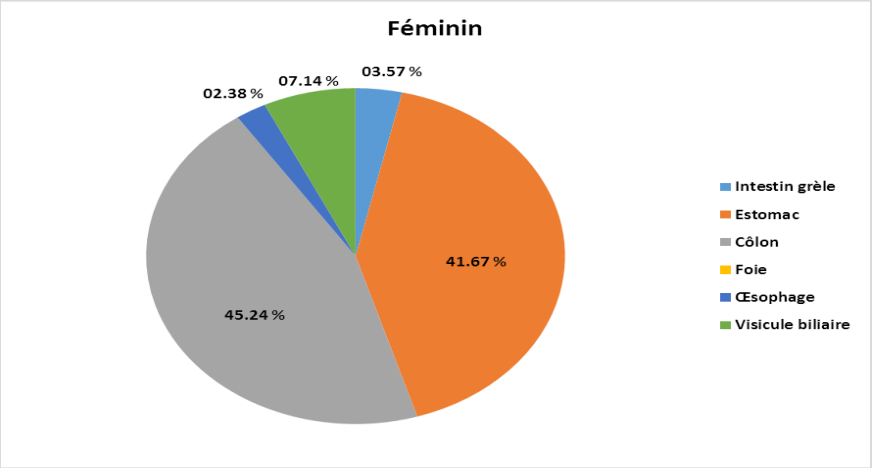

Figure 10: Localization of digestive cancers in females.

Distribution of gastric cancer according to age

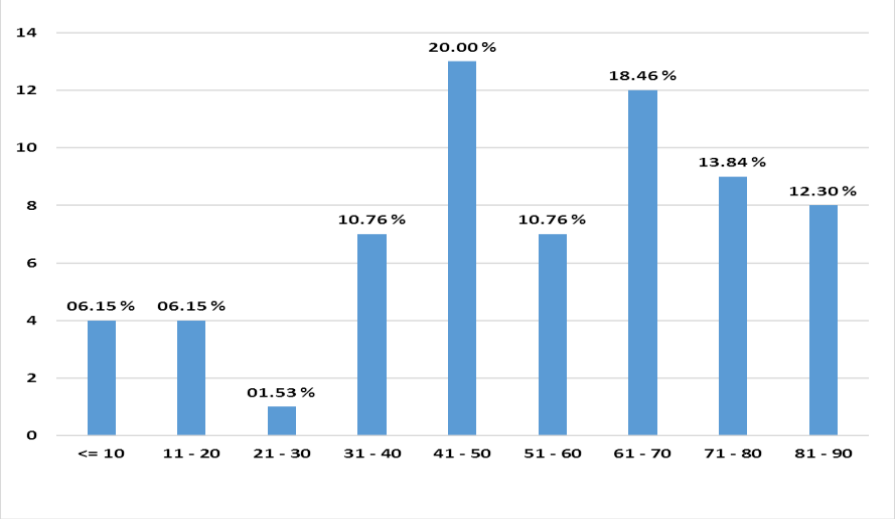

Figure 11: Frequency of gastric cancer according to age in both sexes.

The results obtained showed that the age group affected by stomach cancer in both sexes is 41-50 years with a percentage of 20%, followed by 18.46% in people in the age group of 61-70 years. However, the people with low incidence (1.53%) are in the age group of 21-30 years.

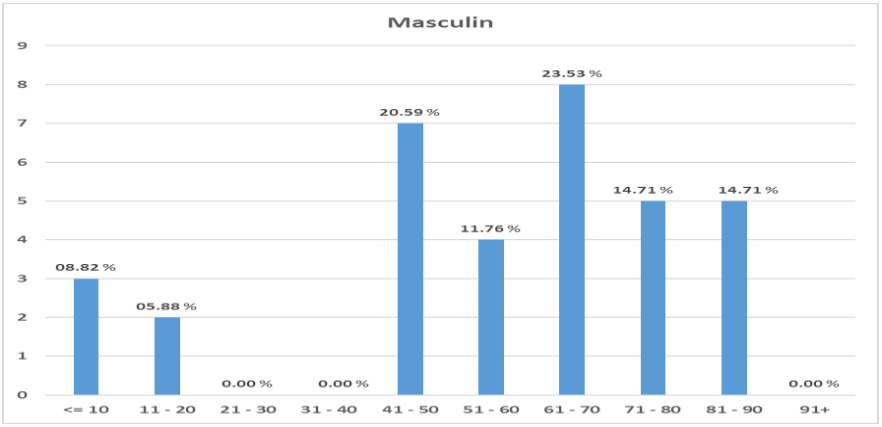

Figure 12: Frequency of gastric cancer in males.

The frequency of gastric cancer in men is absent in the age group of 21-40 years, 14.71% in the age group of (71-90 years) and increases significantly by (20.59%, 23.53%) in the age groups of (41-50 years, 61-70 years) respectively. In addition, the frequency of gastric cancer in women is about (22.58%) in the age group of (31-40 years) and gradually decreases to (19.35%, 12.90%) in the age groups of (41-50, 61-80 years) respectively. The prevalence of gastric cancer indicates a sex ratio of 1.2.

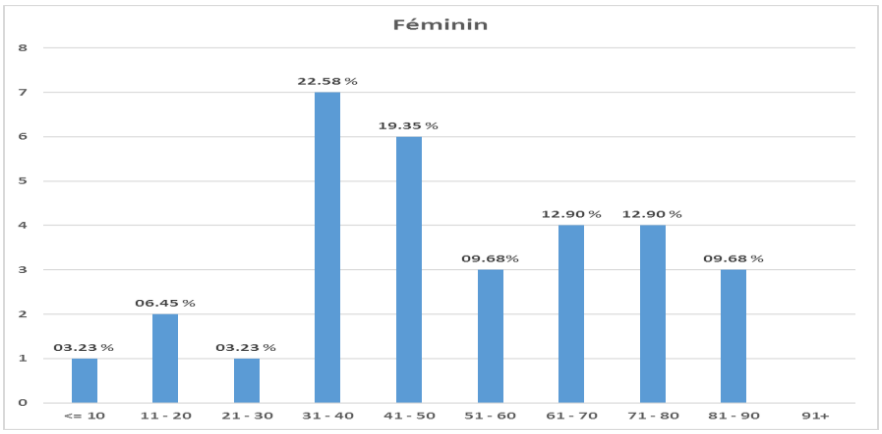

Figure 13: Frequency of gastric cancer in females.

Prevalence of *H. pylori* infection by sex

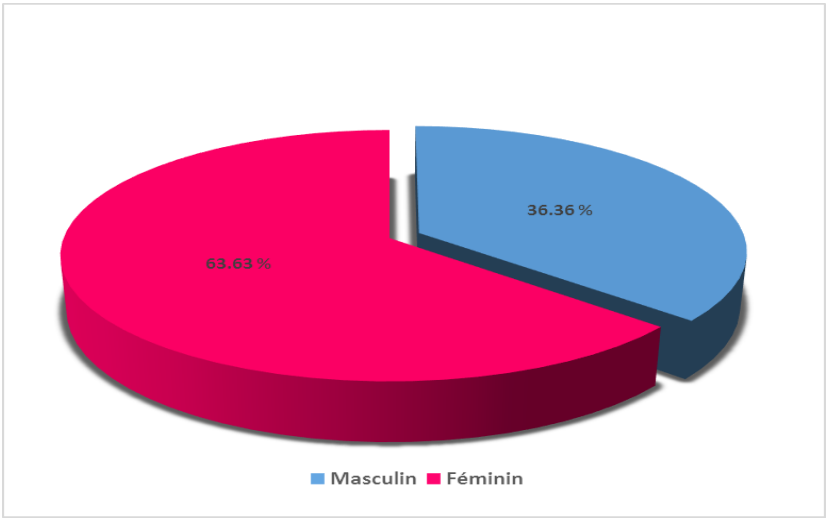

Figure 14: Prevalence of H. pylori by sex.

The distribution of *H. pylori* infection shown is predominanthy female with a frequency of 63.63%, and a sex ratio of 0.57.

DISCUSSION

For years, epidemiologists have been particularly interested in digestive cancers, due to both their frequency and their severity (Faivre, 2008). This study shows that in the city of Sidi Bel Abbes, gastric cancer (45.94%) is at the top of digestive cancers, followed by colorectal cancers (42.16%), gallbladder cancer (5.40%), small intestine cancer (3.78%), esophageal cancer (2.16%) and liver cancer (0.54%). In Europe, France ranks first for all digestive cancers. The incidence of colorectal cancer is increasing dramatically by more than 34%, and that of pancreatic cancer is increasing moderately by more than 9%. However, the incidence of esophageal cancer also decreases by 19%, thanks to lower alcohol consumption (Launoy et al., 1992). Colorectal cancers resulting from the malignant transformation of certain polyadenomas, villous tumors and familial polyps are also promoted by the very high consumption of animal proteins, fats, and beer (Barthelemy et al., 1995). The geographical and ethnic distribution of colorectal cancers is characterized by a high prevalence in Western European countries, the United States, Australia and Canada (Hill, 1997). Furthermore, the frequency of liver cancer in Algeria is higher than in Europe and significantly lower in Asia (Yaker, 1990). Many risk factors are involved, such as low socioeconomic status, the action of aflatoxins, alcohol and liver diseases such as cirrhosis (Dumas et al., 1990). The frequency of gallbladder cancer is very high in women than in men; which probably suggests the link between many cases of cholelithiasis-cholecystitis encountered in women and the correlation between gallstones and cancer. The results obtained showed that gastric cancer has a frequency of (47.73, 41.67%) in men and women respectively, with an increase from 41 years. In addition, gastric cancer increases considerably in men and reaches significant high frequencies in the age groups between (41-50 years) (20.59%) and (61-70 years) (23.53%). In addition, the frequency of gastric cancer in women is about (22.58, 19.35%) in the age groups between (31-40 years; 41 to 50 years) respectively. The prevalence of gastric cancer indicates a sex ratio of 1.2. Descriptive epidemiology data have made it possible to generally define the population at risk, subjects over 50 years of age, this may be due to the increasing accumulation, over time, of carcinogenic factors and the decrease with age of immune defenses (Arsène et al., 1995; Meyer et al., 1998). In Algeria, gastric cancer ranks first among digestive cancers in both sexes and has a frequency of 32.43% in men, followed by colon cancer (26.12%) and rectal cancer (18.46%). In addition, the frequency of stomach cancer is approximately (26.07%) followed by colon cancer (25.50%) and rectal cancer (21.48%) in women. However, the frequency of gallbladder cancer is relatively high (11.17%) in women and rare in men (4.50%). Previous studies conducted in the years (2006, 2011, 2014) showed that gastric cancer had percentages of (23.9, 21.5, 24%) respectively, colorectal cancer follows VBEH cancer (11.4%, 7.9%, 8.3%), pancreatic cancer (5%, 8%, 7.4%), liver cancer (3.4, 5.7, 5.7%), small intestine cancer (3.2, 1.8, 0.8%) and esophageal cancer (2.6%, 2.4%, 1.7%). Gastric cancer ranks second among cancers worldwide (Ferlay J., Parkin, D. M. 2010), and its incidence is decreasing worldwide at a rate of (2-3% per year) (Algiers, Oran and Annaba Registry), recording one million new cases in 2012, with very high rates in Japan, Korea and Portugal (Algiers, Oran and Annaba Registry, 2014). This reduction is mainly explained by the considerable decrease in the consumption of foods preserved by salt and the availability of fresh fruits and vegetables throughout the year in many countries. Gastric cancer can be caused by several factors such as predisposing diseases (Arsène et al., 1995), diet (Tuyns, 1988) and Helicobacter pylori infection (Parsonnet, 1993; Reed et al., 1993; Formand et al., 1994).

Previous studies have shown that Helicobacter pylori infection is considered a major factor in the development of stomach cancer (Fiocca et al., 1993; Kuippers et al., 1994; Sobhani, 2004). Data from epidemiologists have shown that gastric cancer, the most common intestinal adenocarcinoma, occurs almost constantly after the development of inflammation of the gastric mucosa caused by chronic Helicobacter pylori infection. The stomach is the only reservoir of the H. pylori bacteria. The latter is acquired from childhood and is transmitted from person to person, through the mouth and stools. It modifies acid secretion, neutralizes natural defenses, prevents repair of the mucosa, in short actively contributes to the creation and maintenance of ulcers, but also to the occurrence of gastritis. Its role is even mentioned in the occurrence of stomach cancer. (Mégraud, 2004), reports that H. pylori is responsible for 7 out of 10 gastric ulcers and that 9 out of 10 duodenal ulcers are linked to H. pylori. The cultural characteristics of H. pylori are characterized by a too long generation time (3 to 4 days minimum) and the availability of specific culture conditions (microaerophilia) and culture media supplemented with blood, serum or enrichment supplements (Flandrois, 1997) such as PYL agar (selective for H. pylori) or Columbia agar supplemented with blood. The isolation of H. pylori is

favored by the generation of conditions favorable to their growth such as micro-aerophilic atmosphere and selective rich media, containing different antibiotics (Ghouini, 1996; Sobhani et al., 1995; Mégraud, 1994; Cellini et al., 1995).

CONCLUSION

The results obtained showed the absence of significant difference in digestive cancers according to age. In addition, the results obtained showed that gastric cancer represents 45.94% of the overall rate, and ranks first among digestive cancers. The average age of patients with gastric cancer is around (53.72 ± 21.93 years), with a considerable increase in the age groups of (41-50 and 61-70 years) for men and (31-50 years) for women. The diagnosis of gastroduodenal pathology is treated by highlighting the presence of H. pylori, sought by the use of certain biochemical tests. Culture remains the reference diagnostic method because it allows the isolation and identification of H. pylori and the study of sensitivity and resistance to antibiotics. For better care of people with gastric cancer and early prevention of gastric cancer and the establishment of a cancer registry set up at the University Hospital of Sidi Bel Abbes. Further efforts are still needed to improve the early detection of these diseases and reduce the diagnostic delay by making paraclinical examinations, in this case upper digestive endoscopy, more accessible.

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