ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation Journal Home Page: https://ijrps.com

The distribution of gastric malignancies in AL-Diwaniyah province-Iraq, a retrospective study

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Article History:

Received on: 08.04.2019
Revised on: 12.07.2019
Accepted on: 17.07.2019

Keywords:

Gastric cancer, adenocarcinoma, intestinal, diffuse

ABSTRACT

Gastric cancer is one of the most common malignancies affecting gastrointestinal tract. It a multifactorial illness, both genetic and environmental factors involving in etiology. A wide variation in the incidence of gastric cancer in different geographical regions. Endoscopy is the most sensitive and specific method for the diagnosis. The aims of this study is to describe the distribution rate of gastric cancer in AL-Diwaniyah province in Iraq in correlation with the patients age, sex and the histopathological types of gastric cancer. From about (4078) patients who underwent gastroscopy for different indications at AL-Diwaniyah gastroenterology and hepatology center in Iraq during the period between November 2015 and April 2019, (76) patients were founded to have gastric cancer by documented histopathological study of tissue biopsy. Gastric cancer distribution was about (1.8%). Males are affected more than females in a ratio of (1.37:1). Out of (76) total number of patients with gastric cancer ;(69) patients (90.79%) having gastric adenocarcinoma (most common type) with male to female ratio of (1.46:1). (5) Patients (6.58%) having gastrointestinal stromal tumors (GIST) and (2) patients (2.63%) having lymphoma. In patients with adenocarcinoma,(12) patients (17.39%) were less than (40 years) of age, (31) patients (44.93%) were between (40-60 years) and (26) patients (37.68%) were older than (60 years). The intestinal-type adenocarcinoma was the most common histopathological type (63.77%), followed by diffuse type (30.43%), mixed (4.35%) and mucinous(1.45%). Gastric cancer incidence is increasing with advance age; it still a public health and challenging problem. Mass screening or surveillance programs is the best method for the detection and diagnosis of gastric cancer at an early stage.

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ISSN: 0975-7538

DOI: https://doi.org/10.26452/ijrps.v10i4.1626

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INTRODUCTION

Despite the incidence of gastric cancer has been steadily decreasing (Siegel *et al.*, 2013), gastric cancer is still one of the most common cancers worldwide, arranging the fourth most common malignancy in overall frequency, affecting more than 800,000 individuals annually (Stewart and Kleihues, 2003) and the second leading cause of death throughout the world (Bray *et al.*, 2013). It occurs more frequently in males than in females (Hamilton and Aaltonen, 2000). Most patients with gastric cancer present with an advanced stage of the disease (Siegel *et al.*, 2013) and the 5-year survival is

less than 30% despite the improvements of treatment modalities in recent years (Almhanna, 2012; Fujita, 2013). A wide variation in the incidence of gastric cancer in different geographical regions. Approximately two-thirds of gastric cancer occur in developing countries. Gastric cancer incidence has markedly decreased in some countries, such as United States, Europe and Africa, but it remains high in others such as Japan, China, and Iran. It is the first leading cause of cancer-related deaths in males and the second one among females in Iran (Stewart and Kleihues, 2003; Abdi-Rad *et al.*, 2006). In Iraq, the incidence of gastric cancer is low (Hussein *et al.*, 2009). And it is the tenth common cancer and the second common malignancy at gastrointestinal tract after carcinoma of colon and rectum (Barnouti, 1992; Al-Bahrani and z. Al-Bahrani, 2014; Iraqi Cancer Registry Center , 2011). The incidence of gastric cancer is rare before the age of (40 years), but it peaks in the seventh decade of life (Dicken *et al.*, 2005). Gastric cancer in the young age group is more frequent in female, mostly of diffuse-type and less associated with gastritis and intestinal metaplasia when compared with older patients (Matley *et al.*, 1988).

Gastric cancer is a multifactorial illness, both genetic and environmental factors involving in etiology (Crew and Neugut, 2006). Factors implicated in the development of gastric cancer include genetic factors, H. pylori infection, diet, pernicious anemia, adenomatous polyps, chronic atrophic gastritis and exposure to radiation (Henson *et al.*, 2004).

It is difficult to diagnose gastric cancer early due to a time lag between the onset of growth, and the development of symptoms (Layke and Lopez, 2004) Usually the early symptoms of gastric cancer are vague and non-specific; therefore, most patients with early gastric cancer present with indistinguishable symptoms from benign gastric ulcer disease and, subsequently, these patients are diagnosed with late-stage gastric cancer or one of its complications (Tan and Fielding, 2006). Gastric adenocarcinoma is the most common malignant gastric tumor. It accounts for about 95% of gastric cancer (Piazuelo and Correa, 2013).

Lauren classifies gastric adenocarcinoma into two major histological types: diffuse and intestinal (Laurén, 1965). These two histological types look different microscopically, in gender ratio, age at diagnosis and epidemiological features (Henson *et al.*, 2004) . A small percentage of adenocarcinoma is mixed, presenting features of both types (Piazuelo and Correa, 2013).

[18]. 2010 WHO classification of gastric adenocarcinoma stratified four major histologic patterns: tubular, papillary, mucinous and poorly cohesive (including signet ring cell carcinoma), plus uncommon histologic variants (Hu *et al.*, 2012)

Primary gastric lymphoma originating from the stomach and adjacent lymph nodes. High-grade B-cell lymphoma is the major type of gastric lymphoma, some of which developed through a progression from low-grade lymphoma of mucosa-associated lymphoid tissue. In Western countries, the stomach is the most frequent site affected within the gastrointestinal tract, while the small intestine is the most frequent sit of involvement in Middle Eastern countries (Hamilton and Aaltonen, 2000)

Gastrointestinal stromal tumors (GIST) are the most common mesenchymal tumors of the gastrointestinal tract (Duffaud and Blay, 2003). Accounting about 2% of all digestive tract tumors (Miettinen and Lasota, 2003). They may be benign or malignant. Usually, they occur throughout the gastrointestinal tract. However, the most common localization is the stomach. Males and females have the same prevalence of development. They usually observed above the age of 50 years, and the peak incidence is between the fifth and the sixth decade of life (Cichoz-Lach *et al.*, 2008).

Endoscopy is considered as the most sensitive and specific method for the diagnosis of suspected patients with gastric cancer (Karpeh and Brennan, 1998). By endoscopy we can directly visualize the tumor location, the extent of mucosal involvement, and tissue biopsy for histopathological diagnosis (Sadowski and Rabeneck, 1997), however; endoscopic ultrasound (EUS) can facilitate tumor staging by providing more information about depth of tumor invasion and assess the extent of perigastric lymphadenopathy (Willis *et al.*, 2000), other radiologic modalities useful for diagnosis and staging includes an upper gastrointestinal barium study (UGI), Computed tomography (CT) (Halvorsen *et al.*, 1996).

PATIENTS AND METHODS

In this retrospective case study, all patients who attended AL-Diwaniyah gastroenterology and hepatology center from November 2015 till April 2019 and underwent gastroscopy and tissue biopsy, for different indications, with finding of different gastric lesions matching the histopathological results were included. Patients who had a documented pathology of gastric malignancy were evaluated. Tissue biopsy specimens were studied histopathologically by an expert pathologist and determined according to WHO and Laurén classifi-

cation. Reviewing patients with gastric malignancies for their age, sex and histopathological types. The gastroscopic examination done by (Olympus CF-Q260DL) and (Pentax EC-3885TFK) scopes.

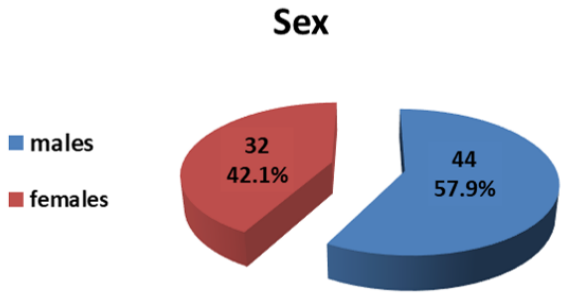

Figure 1: Sex of patients

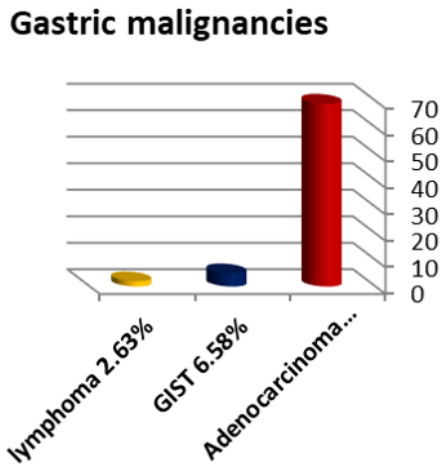

Figure 2: Types of gastric malignancies

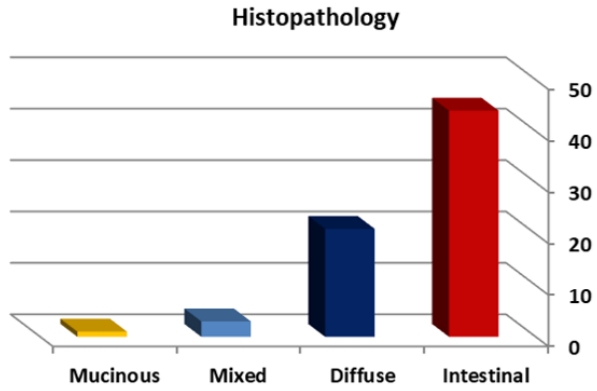

Figure 3: Histopathological types of gastric adenocarcinoma

RESULTS AND DISCUSSION

Gastric malignancies were founded in (76 patients) out of (4078) gastroscopy done, account (1.8%) in distribution, which includes adenocarcinoma, gastrointestinal stromal tumor (GIST) and lymphoma.

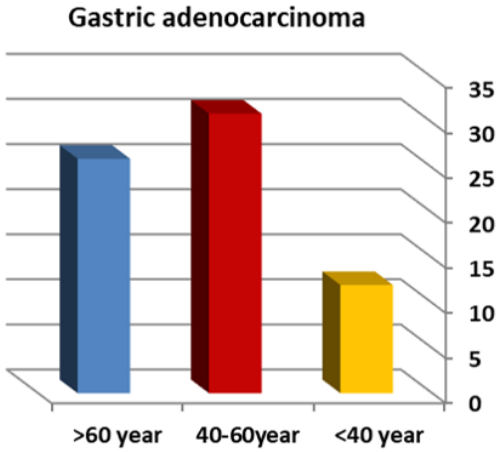

Figure 4: Age distribution of gastric adenocarcinoma

Patients were classified into three groups according to their age (< 40 years, 40-60 years, > 60 years). The age of patients was distributed between 24 years and 85 years. Out of (76 patients); 44(57.9%) were males, and 32(42.1%) were females with male to female ratio of (1.37:1). Figure 1 and Table 1 show sex distribution.

Gastric adenocarcinoma contributes the largest cases number (69)(90.79%) out of total (76) patients, followed by GIST (5) cases(6.58%) and lymphoma (2) cases (2.63%). Figure 2.

The histopathological types of adenocarcinomas include intestinal type (44 case) (28 males,16 females) (63.77%) , diffuse type (21 case) (11 males, 10 females) (30.43%), mixed type (3 cases)(one male,2 females) (4.35%) and mucinous type (one case)(one male)(1.45%), Figure 3, Table 2. The mean age for adenocarcinoma was (54.4years).

Table 3 and Figure 4 show the types of adenocarcinoma matching the age and sex of patients for each type. (12) cases (17.39%) of adenocarcinoma were below (40 years) , (31) cases(44.93%) between (40-60 years) and (26) cases(37.68%) above (60 years) of age. The largest number of cases shown at the age of (40 years) and above. The mean age for the intestinal type was (60.84 years) and for the diffuse type was (42.95 years).

Gastric cancer is one of the most common malignancies and a major public health problem as it the fourth most common cancer and the second leading cause of cancer death worldwide (Bray *et al.*, 2013; Parkin *et al.*, 2005).

According to Iraqi Cancer Registry Center (2011) ; gastric cancer was classified as the tenth most common malignancy in our country in about (3.2%)

Table 1: Sex distribution of patients in relation to types of gastric cancer

Total(%)	Female	Male	Gastric malignancies
69(90.79%)	28	41	Adenocarcinoma
5(6.58%)	3	2	GIST
2(2.63%)	1	1	Lymphoma
76(100%)	32(42.1%)	44(57.9%)	Total (%)

Table 2: Sex distribution of patients in relation to histopathological types of gastric adenocarcinoma

Total(%)	Female	Male	Gastric adenocarcinoma
44(63.77%)	16	28	Intestinal
21(30.43%)	10	11	Diffuse
3(4.35%)	2	1	Mixed
1(1.45%)	0	1	Mucinous
69(100%)	28(40.58%)	41(59.42%)	Total(%)

Table 3: Sex distribution of patients with gastric adenocarcinoma in relation to their age groups

Total (%)	>60years		40-60 years		<40 years		Age, sex Adenocarcinoma
	Female	Male	Female	Male	Female	Male	
44(63.77%)	22		20		2		Intestinal
	7	15	8	12	1	1	
21(30.43%)	3		9		9		Diffuse
	0	3	4	5	6	3	
3(4.35%)	0		2		1		Mixed
			0	2	1	0	
1(1.45%)	1		0		0		Mucinous
	0	1					
69(100%)	26(37.68%)		31(44.93%)		12(17.39%)		Total (%)

of all tumors with incidence Rate of (2.1) (Per 100,000Population), which was approximately similar to the results seen by Ministry of Health (2012) in which gastric cancer was arranged the tenth most common cancer in both sex in about (2.7%) among all types of cancers and the incidence Rate was (3.9) (Per 100,000Population). As (Hussein, 2010) consider the area of incidence Rate (Per 100,000Population) of less than (10) having a low risk for gastric malignancies; so both Iraq and Jordan have a low incidence rate. Turkey, the United Kingdom and Italy are considered intermediate risk areas as the incidence rate of (10–20) (Per 100,000Population), while China, Brazil and Japan are considered high-risk areas with an incidence rate of more than (Hu *et al.*, 2012).

In this study we discovered (76) cases of gastric cancer out of (4078) gastroscopy done over about three years in the gastroenterology and hepatology center in AL-Diwaniyah province, that number may underestimate the real fact of the cancer percentage due to many factors likes a large number of patients with gastric cancer are old age who may died from other illnesses like coronary artery and /or respiratory diseases before discovering or they screened for gastric cancers by endoscopy, the diagnosis made by other radiologic modalities and getting treatment without doing endoscopy or many patients prefer to do endoscopy in other provinces or even outside the country.

This study shows that the highest number of patients with gastric cancer are males (57.9%), while females represent (42.1%). Also, it shows that the highest number of patients are at the age of the

(40 years) and above. Approximately; these results are also seen by (Sulaiman, 2016) in a study done at Erbil city which showed a high percentage of gastric cancer in males (66 %) and in females represent (34 %), as it also showed the highest number of patients are at age interval (45-64) years.

Whoever, in our study ; the most common type of gastric malignancies was adenocarcinoma which represent (90.79%) with male to female ratio of (1.46:1) , that result also seen in study done in Duhok city by (Razak *et al.*, 2014) who found gastric adenocarcinoma was the most common gastric cancers and represented (87.7%). Same results also are seen by (Mandong *et al.*, 2010). This male predominance which was seen in our study and in Gulf Cooperation Council Countries in which the male to female ratio was (1.8:1) in Saudi Arabia, (1.7:1) in Kuwait and (1.9:1) in United Arab Emirate and Oman (Al-Mahrouqi *et al.*, 2011) and in other previous studies (Catalano *et al.*, 2009; Shin *et al.*, 2011) for all gastric malignancies may explained by the environmental or occupational exposure to carcinogens in males.

Although gastric cancer is rare before the age of (40 years) (Dicken *et al.*, 2005), we found, in this study, about (17.39%) of patients were below age of (40 years), in which (9) out of (12) cases are of diffuse-type with female predominance, this result also seen by (Matley *et al.*, 1988) who found high proportion of females with diffuse-type gastric adenocarcinoma among young adults. (Brien and Waxman, 1988) mention that the disease presents commonly in the fifth and sixth decades of life. In our study we found gastric adenocarcinoma commonly present at the age of (40 years) and above with male predominance; (44.93%) for (40-60years) and (37.68%) for above (60 years) respectively, a result which was similar to previous studies in Iraq. The accumulation of somatic mutations connected with the occurrence of malignant tumors can explain the frequency of gastric cancer occurrence with rising age (Czyzewska, 2013).

The mean age for gastric adenocarcinoma in this study was (54.4years). (Razak *et al.*, 2014) notice the mean age was (60.27 years). (Al-Azow, 2014) found the mean age of gastric cancer in Nineveh was (54.5 years). On the other hand, the mean age in neighboring countries; in Jordan was (58.6 years) (Awad *et al.*, 2017) (57.7 years) in Saudi Arabia (Alahmadi *et al.*, 2016), (56 years) in turkey (Yalcin, 2009), while in Iran was (56.6 years) (Trend, 2004). The mean age of intestinal-type was (60.84 years), which was higher than the mean age of diffuse-type (42.95 years). These results in our study also seen by others (Matley *et al.*, 1988; Shibata *et al.*, 2001).

Regarding GIST, our study shows it the second common gastric cancer accounting (6.58%), followed by lymphoma (2.63%). (Razak *et al.*, 2014) a study in Duhok city found lymphoma was the third common gastric cancer (6.5%) followed by GIST (4.5%). Study in Bahrain by (Omran and Ansari, 2015) showed GIST account (6.0%) while lymphomas(8.6%). (Shahid *et al.*, 2017) see by study at Jordan lymphoma (10.3%) as third common gastric cancer followed by GIST, which account (8.5%).

Gastric malignancies that develop through different mechanisms may explain these different distribution results in relation to age and sex of gastric adenocarcinoma; diffuse-type adenocarcinoma incidence is related to hereditary factors, while the intestinal type is due to other factors like dietary, H. Pylori infection and lifestyle.

CONCLUSION

1. Gastric adenocarcinoma is the most common type of gastric malignancies in AL-Diwaniyah province.
2. Males are affected more than females.
3. Gastric cancer incidence is increasing with advance age; it still a public health and challenging problem.
4. Mass screening or surveillance programs are the best methods for detection and diagnosis of gastric cancer at an early stage.

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