

## Study of newly diagnosed Gastroenterology tumors and associated risk factors at Tishreen University Hospital in Lattakia – Syria

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**Abstract:** Objective: The study was conducted in order to determine the epidemiological characteristics of referred patients at Tishreen University Hospital in Lattakia and who have been diagnosed with one of the types of malignant Gastrointestinal tumors and study the distribution of risk factors in these patients.

Patients and Methods: An Observational Descriptive study (Cross- Sectional) conducted for the period from January 2020 to January 2021 at Tishreen University Hospital in Lattakia- Syria (in Gastroenterology Department). The variables analyzed were age, gender, tumor location and risk factors

Results: The research sample included 223 patients (127 males and 96 females). Esophageal tumors are relatively rare and most of them are of the squamous cell carcinoma type (72.8%). Stomach tumors are the second most common tumor with a percentage of (23.8%), and adenocarcinoma constituted 89% of the cases. Colon and rectal cancer represented the largest percentage (35%) of gastrointestinal tumors, and half of these tumors were in the rectum. Pancreatic cancer ranked third with 11.2% of cases. Tumors of the small intestine and gallbladder and hepatocellular carcinoma are relatively rare. Our most frequently seen risk factors were smoking in most tumors, positivity for H. pylori in 70% of gastric adenocarcinoma patients, and family history and inflammatory bowel disease in Colon tumor patients.

Conclusion: Although the incidence of some gastrointestinal cancers has decreased, these cancers continue to pose major challenges to public health, especially colorectal tumors.

**Keywords:** Gastrointestinal tumors, adenocarcinoma, risk factors.

## دراسة لأورام الجهاز الهضمي المشخصة حديثاً في مشفى تشرين الجامعي في اللاذقية - سوريا وعوامل الخطر المرتبطة بها

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المستخلص: أجريت الدراسة بهدف تحديد الخصائص الوبائية لدى المرضى الذين تمّ تشخيص إصابتهم بأحد أنواع أورام الجهاز الهضمي الخبيثة ودراسة الأعراض السريرية المرافقة والنمط النسيجي وتوزع عوامل الخطورة لديهم..

طريقة البحث: دراسة رصدية وصفية أجريت على مدى سنة واحدة (كانون الثاني 2020- كانون الثاني 2021)، في مشفى تشرين الجامعي في اللاذقية- سوريا (قسم الأمراض الهضمية)، وتم دراسة المتغيرات التالية (العمر، الجنس، مكان وجود الورم، وعوامل الخطورة). النتائج: اشتملت عينة البحث على 223 مريضا (127 من الذكور و96 من الإناث). أورام المري نادرة نسبياً ومعظمها من نمط السرطان شائكة الخلايا (72.8%). أورام المعدة ثاني الأورام شيوعاً بنسبة (23.8%) وشكلت السرطانة الغدية 89% من الحالات. مثل سرطان القولون والمستقيم النسبة الأكبر (35%) من أورام الجهاز الهضمي، وكان نصف هذه الأورام في المستقيم. سرطان البنكرياس احتل المرتبة الثالثة بنسبة 11.2% من الحالات. أورام الأمعاء الدقيقة والمرارة وسرطانة الخلية الكبدية نادرة نسبياً. عوامل الخطورة الأكثر مشاهدة لدينا كانت التدخين في معظم الأورام، إيجابية الملتوية البوابية عند 70% من مرضى سرطانة المعدة الغدية، والقصة العائلية وداء الأمعاء الالتهابي عند مرضى أورام الكولون. الاستنتاج: على الرغم من الانخفاض في حدوث بعض أنواع سرطان الجهاز الهضمي، فإن هذه الأورام ما زالت تشكل تحدياً للصحة العامة لدينا وخاصة أورام القولون والمستقيم. الكلمات المفتاحية: أورام الجهاز الهضمي، السرطانة الغدية، عوامل الخطر.

## Introduction.

Gastrointestinal (GI) cancers, mainly including malignancies derived from esophageal, stomach, colorectum, liver, and pancreas are among the most common cancers in humans [1]. These cancers, which are derived from distinct but associated origins, have diverse clinical features but share some similar characteristics [2].

According to the data available from GLOBOCAN2020, GI cancers (colorectal cancer, gastric cancer, and esophageal cancer) accounted for 18.7% of new cancer cases and 22.6% of cancer deaths in 2020, which are both highest among all cancer types, and are a significant public health burden for most countries [3, 4]. Esophageal and gastric cancers are most common in developing countries, while colorectal cancers form the major GI malignancy in western countries. However, a great shift in predominant GI cancer type is happening according to higher exposure to certain risk factors [5]

Colorectal cancer is the third most commonly diagnosed malignancy in males and the second in females, and the second leading cause of cancer death in both sexes [6, 7]. More than a half of all gastrointestinal cancers are associated to modifiable risk factors such as smoking, alcohol consumption, infections, central obesity, and exposure to radiation [8]. Thus, primary prevention of GI cancer is the most efficient and cost-beneficial means of reducing the cancer burden. A healthy lifestyle can lower the risk of all GI cancers [9]. These GI cancers are also similar in that they all have identified precursor diseases. Thus, GI cancers can be diagnosed in a precancerous state and early treatment can reduce both incidence and mortality [10, 11]. In this study, we aimed to evaluate the incidence of GI cancers, determine the histological types and risk factors associated with cancers.

## Patients and Methods:

This is an Observational Descriptive Study (Cross-sectional) of a group of patients older than 14 years with primary gastrointestinal tumors who attending Department of Gastroenterology at Tishreen

University Hospital in Lattakia- Syria during a one- year period (January 2020 to January 2021). The following data were recorded: demographic data (age, sex), clinical manifestations, tumor localization, and histological subtypes. Risk factors associated with GI tumors were recorded.

### Statistical Analysis:

Statistical analysis was performed by using IBM SPSS version20. Basic Descriptive statistics included means, standard deviations (SD), median, Frequency and percentages. Differences of distribution examined by using chi- square test or Fisher exact test if it need. All the tests were considered significant at 5% types I error rate ( $p < 0.05$ ),  $\beta$ : 20%, and power of the study: 80%.

A total of 223 cases of primary gastrointestinal tumors were identified. The median age was 61 years, tumors were more frequently in the age groups: 51- 60 years (30.9%) and 61- 70 years (26.9%). 57% of patients were male and 43% were female. Colon and rectum were the most common sites of tumors (35%) followed by stomach in (23.8%), Table (1).

**Table (1) Demographic characteristics of the study population**

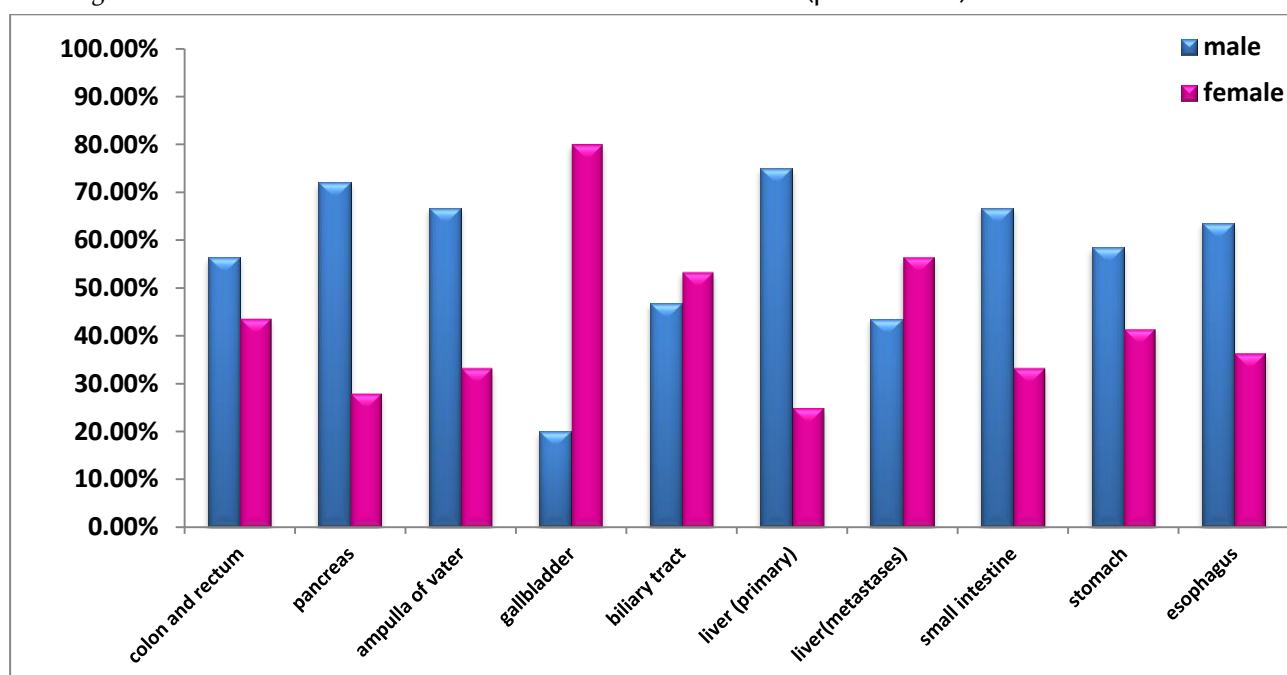
Variables	Result
Age (years)	61 (31- 97)
<u>Age groups (years)</u>	
30- 40	10 (4.5%)
41- 50	30 (13.5%)
51- 60	69 (30.9%)
61- 70	60 (26.9%)
71- 80	40 (17.9%)
81- 90	11 (4.9%)
>90	3 (1.3%)
<u>Sex</u>	
Male	127 (57%)
Female	96 (43%)
<u>Tumor sites</u>	
Colon and rectum	78 (35%)
Stomach	53 (23.8%)
Pancreas	25 (11.2%)
Liver (metastases)	23 (10.3%)
Biliary tract	15 (6.7%)
Esophagus	11 (4.9%)
Ampulla of vater	6 (2.7%)
Gallbladder	5 (2.2%)
Liver (primary)	4 (1.8%)
Small intestine	3 (1.3%)

As shown below Table (2), most types of tumors were seen most often in the age groups: 51- 60 and 61- 70 years, and 50% of patients with ampulla of Vater tumors were in the age group 71- 80 years. There were no significant statistical differences between age groups and tumor site (p value: 0.9)

**Table (2) Distribution of the study population according to the age groups**

Tumor sites	Age group (years)						
	30- 40	41- 50	51- 60	61- 70	71- 80	81- 90	>90
Colon and rectum	2 (2.6%)	12 (15.4%)	21 (26.9%)	23 (29.5%)	13 (16.7%)	5 (6.4%)	2 (2.6%)
Pancreas	1 (4%)	2 (8%)	10 (40%)	7 (28%)	5 (20%)	0	0
Ampulla of Vater	0	0	1 (16.7%)	2 (33.3%)	3 (50%)	0	0
Gallbladder	0	1 (20%)	1 (20%)	2 (40%)	1 (20%)	0	0
Biliary tract	0	1 (6.7%)	5 (33.3%)	5 (33.3%)	2 (13.3%)	1 (6.7%)	1 (6.7%)
Liver (primary)	0	0	2 (50%)	1 (25%)	1 (25%)	0	0
Liver (metastases)	3 (13%)	3 (13%)	6 (26.1%)	5 (21.7%)	4 (17.4%)	2 (8.7%)	0
Small intestine	1 (33.3%)	1 (33.3%)	0	0	1 (33.3%)	0	0
Stomach	2 (3.8%)	9 (17%)	20 (37.7%)	12 (22.6%)	8 (15.1%)	2 (3.8%)	0
Esophagus	1 (9.1%)	1 (9.1%)	3 (27.3%)	3 (27.3%)	2 (18.2%)	1 (9.1%)	0

Gallbladder tumors were more frequently in females (80% vs. 20%). Pancreatic and primary liver cancers were more frequently in males, (72% vs. 28%) and (75% vs. 25%) respectively, Figure (1). There were significant statistical differences between the sex and tumor site (p value: 0.04)



**Figure (1) Distribution of the study population according to the type of tumor and sex**

Patients with esophageal tumors had common symptom of progressive dysphagia at presentation. Squamous cell carcinoma was the most common type of tumors (72.7%), with presence of liver metastases in (9.09%), Table (3). (3).

**Table (3) Clinical manifestation and histological types of esophageal tumors**

Variable	Result
<u>Clinical manifestation</u>	
Dysphagia	11 (100%)
<u>Histologic types</u>	
Adenocarcinoma	3 (27.3%)
Squamous cell carcinoma	8 (72.7%)
<u>Hepatic metastases</u>	1 (9.09%)

The principle presenting symptoms for patients with gastric tumors are epigastric pain (33.9%) followed by anemia (20.7%). Tumors occur within any portion of the stomach, and more frequently in pyloric antrum (43.4%) followed by the body of stomach (28.3%). Tubular adenocarcinoma was the most common histologic type (62.2%) followed by signet ring cell carcinoma (15%), Table (4).

**Table (4) Clinical manifestation and histological types of gastric tumors according to sex**

Variable	N (%)	Male	Female
<u>Signs and symptoms</u>			
Epigastric pain	18 (33.9%)	10 (18.9%)	8 (15%)
Anemia	11 (20.7%)	9 (16.9%)	2 (3.8%)
Upper gastrointestinal bleeding	7 (13.2%)	5 (9.4%)	2 (3.8%)
Weight loss	6 (11.3%)	3 (5.7%)	3 (5.7%)
Nausea or vomiting	6 (11.3%)	2 (3.8%)	4 (7.5%)
Dysphagia	3 (5.7%)	1 (1.9%)	2 (3.8%)
Ascites or liver metastases	2 (3.8%)	1 (1.9%)	1 (1.9%)
<u>Site of tumor</u>			
Pyloric antrum	23 (43.4%)	16 (30.2%)	7 (13.2%)
Body	15 (28.3%)	6 (11.3%)	9 (16.8%)
Cardia	10 (18.9%)	7 (13.2%)	3 (5.7%)
pylorus	5 (9.4%)	2 (3.7%)	3 (5.7%)
<u>Histologic types</u>			
Tubular adenocarcinoma	33 (62.2%)	20 (37.7%)	13 (24.5%)
Signet ring cell carcinoma	8 (15%)	5 (9.4%)	3 (5.7%)
Papillary adenocarcinoma	4 (7.5%)	2 (3.8%)	2 (3.8%)
Lymphoma	3 (5.7%)	2 (3.8%)	1 (1.9%)
Adenosquamous carcinoma	1 (1.9%)	1 (1.9%)	0
Hepatoid adenocarcinoma	1 (1.9%)	0	1 (1.9%)
Carcinoid	1 (1.9%)	0	1 (1.9%)
GIST	1 (1.9%)	0	1 (1.9%)
<u>Hepatic metastases</u>	6 (11.3%)		

A total of 3 cases of small intestine tumors were identified. Most common symptoms were: vomiting (1 case), cholestatic jaundice (1 case), and weight loss (1case). The histologic type was adenocarcinoma in all cases without any hepatic metastasis.

A total of 78 patients with colorectal tumor had one sign or symptom. Lower gastrointestinal bleeding was the most common manifestation (42.3%) followed by abdominal pain (19.2%). Tumors were distributed between the parts of colon. Ascending colon was the most common site (19.3%) followed by sigmoid colon (16.7%). All tumors were adenocarcinoma (100%), and hepatic metastasis were present in 9 (11.5%), Table (5).

**Table (5) Clinical manifestation and histological types of colorectal tumors according to sex**

Variable	N (%)	Male	Female
<b><u>Tumor sites</u></b>			
Rectum	43 (55.1%)	23 (29.5%)	20 (25.6%)
Transverse colon	1 (1.3%)	0	1 (1.3%)
Ascending colon	15 (19.3%)	9 (11.5%)	6 (7.7%)
Descending colon	3 (3.8%)	0	3 (3.8%)
cecum	3 (3.8%)	3 (3.8%)	0
Sigmoid colon	13 (16.7%)	9 (11.5%)	4 (5.1%)
<b><u>Clinical manifestations</u></b>			
Change in bowel habits	6 (7.7%)	1 (1.3%)	5 (6.4%)
Lower gastrointestinal bleeding	33 (42.3%)	22 (28.2%)	11 (14.1%)
Weight loss	3 (3.8%)	1 (1.3%)	2 (2.6%)
Intestinal obstruction	12 (15.4%)	7 (8.9%)	5 (6.4%)
Anemia	8 (10.3%)	5 (6.4%)	3 (3.8%)
Abdominal pain	15 (19.2%)	5 (6.4%)	10 (12.8%)
Liver metastasis or ascites	1 (1.3%)	0	1 (1.3%)
<b><u>Histologic types</u></b>		Adenocarcinoma	

Patients with Pancreatic tumors were presented with cholestatic jaundice (52%), epigastric pain (40%) and weight loss (8%). Adenocarcinoma was observed in all cases with presence of hepatic metastasis in (20%). The principle presenting symptoms for patients with gallbladder tumors were cholestatic jaundice (80%) and epigastric pain (20%). Histologic type was adenocarcinoma in all cases with presence of hepatic metastasis in (60%).

Cholestatic jaundice was the only clinical presentation in all tumors of ampulla of vater and biliary tract tumors, with presence of hepatic metastasis in 1case (6.7%), Table (6).

**Table (6) Clinical manifestation and histological types of pancreatic, gallbladder, and biliary tract tumors according to sex**

Variable	N (%)	Male	Female
<u>Pancreatic tumors (25)</u>			
<u>Clinical manifestations</u>			
Cholestatic jaundice	13 (52%)	8 (32%)	5 (20%)
Epigastric pain	10 (40%)	9 (36%)	1 (4%)
Weight loss	2 (8%)	1 (4%)	1 (4%)
<u>Histologic types</u>		Adenocarcinoma	
<u>Hepatic metastasis</u>		5 (20%)	
<u>Gallbladder tumors (5)</u>			
<u>Clinical manifestations</u>			
Cholestatic jaundice	4 (80%)	0	4 (80%)
Epigastric pain	1 (20%)	1 (20%)	0
<u>Histologic types</u>		Adenocarcinoma	
<u>Hepatic metastasis</u>		3 (60%)	
<u>Ampulla of vater (6)</u>			
<u>Clinical manifestations</u>			
Cholestatic jaundice		(100%)	
<u>Histologic types</u>		Adenocarcinoma	
<u>Hepatic metastasis</u>		0	
<u>Biliary tract (15)</u>			
<u>Clinical manifestations</u>			
Cholestatic jaundice		(100%)	
<u>Histologic types</u>		undifferentiated	
<u>Hepatic metastasis</u>		1 (6.7%)	

There were 4 cases of primary hepatic tumors, all of the hepatocellular carcinoma (HCC) type with presence of pulmonary metastases in one case. The following risk factors were found as (one risk factor /one case): Hepatitis B, hepatitis C, alcoholic liver disease non- alcoholic steatohepatitis.

As shown in Table (7), majority of liver metastasis originated from the gastrointestinal system (58.3%). The most common primary sites were large intestine (25%) followed by stomach (12.5%) and breast (12.5%). The origin of metastasis was unknown in 20.8%.

**Table (7) Frequency of liver metastasis according to primary site**

Origin of liver metastasis	N (%)
<b><u>Gastrointestinal system</u></b>	28 (58.3%)
Large intestine	12 (25%)
Stomach	6 (12.5%)
Pancreas	5 (10.4%)
Gallbladder	3 (6.2%)
Biliary tract	1 (2.1%)
Esophagus	1 (2.1%)
<b><u>Extra- gastrointestinal system</u></b>	
Breast	6 (12.5%)
Lung	2 (4.2%)
Cervix of uterus	1 (2.1%)
Ovaries	1 (2.1%)
<b><u>Unknown origin</u></b>	10 (20.8%)

#### **Risk factors associated with cancer:**

Cigarette smoking was present in 118 (53%), more frequently in patients with colorectal, stomach, and pancreas tumors. Alcohol consumption was present in 35 (15.7%), especially in patients with gastric cancer followed by colorectal and pancreas tumors. Family history of tumor in relatives was present in 37 (16.5%): gastrointestinal system tumors (5.8%) and extra- gastrointestinal tumors (10.7%). Infection with bacterium *Helicobacter pylori* was present in 38 (71.6%) of patients with gastric cancer. A history of inflammatory bowel disease (IBD) was present in 3 (3.8%) patients with colorectal tumor.

#### **Discussion.**

GI cancers are a major medical and economic burden worldwide and have the largest number of new cancer cases and deaths each year.

Our study demonstrated that the most frequent tumors were colorectal followed by gastric and pancreatic tumors, and there were differences in the incidence of tumors according to sex and age group. The incidence of GI cancers rises progressively with age in which 82% of tumors were in patients older than 50 years, with peak incidence at 51- 60 and 61- 70 years. Men are more susceptible than women except of gallbladder and biliary tract tumors were more frequently in women. The clinical manifestations are heterogeneous depending on the location of the tumor including frequently dysphagia (esophageal tumors), epigastric pain (gastric tumors), lower gastrointestinal bleeding (colorectal tumors) and cholestatic jaundice (liver, gallbladder and biliary tract tumors). The most common subtypes of tumors



were: squamous cell carcinoma (esophageal tumors), and adenocarcinoma for other tumors. Liver metastasis were originated from the gastrointestinal system (58.3%). Several factors have been noted to have a significant impact on the increased risk of developing GI cancers, like family history of tumor, alcohol consumption, smoking, Helicobacter pylori, IBD, and Hepatitis B, C. These results are comparable to the findings reported by previous studies.

Lail *et al.*, (2012) found that majority of the GI cancers were in the age group 45- 65 years, colorectal cancer is the most common GI tumor (35%) followed by esophagus (13.9%), liver and bile ducts (11.9%) [12].

Mahmoud *et al.*, (2014) demonstrated that median age was 58 years and 61.4% of patients were males. Pancreatic cancer was the most common malignancy accounting for 30.7% of cases in males and 36% in females, followed by hepatocellular carcinoma. Hepatitis B was prevalent in patients with HCC and Helicobacter pylori in 60% of gastric tumors [13].

Yasemi *et al.*, (2015) also demonstrated that median age of the participants was 63.8 years, 58.3% were men. The most common site of GI cancer was esophagus (38.1%) followed by stomach (34.2%), and small intestine was allocated the least prevalence (1%). The most common pathology type was adenocarcinoma (68%). Smoking was present in 70% Of patients [14].

Obayo *et al.*, (2017) found that median age was 53.9 years, esophageal cancer was the most common (28.8%) followed by liver (25.8%), stomach (18.4%) and colorectal (14.3%). Hepatitis B was prevalent in most patients with HCC and Helicobacter pylori was present in 70% of gastric tumors [15].

In summary, identify factors of significance in the etiology of specific cancers will reduce the incidence and mortality, and thus lower the burden of tumors especially colorectal tumors.

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