

## Patterns of Gastrointestinal Malignancies in a Tertiary Referral Center in Jordan 1993- 1996

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**Introduction:** Gastrointestinal tumors (GI) have diverse pattern of distribution worldwide, with ethnic, environmental and presentation variations. This study aims to look at the cases of GI tumors referred to Al- Basheer Hospital, a large tertiary referral center in Jordan in the years 1993- 1996.

**Methods:** A retrospective review of all cases referred to Al-Basheer Hospital, over the four years period, with emphasis on age, geographic location, anatomical area, and the histologic type of the tumor.

**Results:** Among the 5411 cases of malignancies referred to the Hospital (mean 1353 cases/ year), there were 585 GI tumors (10.8%) of all tumors. The male to female ratio was 1.4: 1. According to age, 29% of cases were in the 6<sup>th</sup> decade of life, 27% were in the 7<sup>th</sup> decade and 18% in the 5<sup>th</sup> decade. As Amman area has the largest population, 52.8% of all cases were from it, with Tafila having the lowest percentage of 0.4% of referrals. Colonic tumors were the commonest GI tumors registered (34%), rectum (26%), stomach (13%), pancreas (9%), esophagus and gall bladder (6%) each, liver (5%), and small intestine in 1% of the cases. The histopathologic types were adenocarcinoma in 90% of the cases. There was no significant difference between the number of all malignant cases registered each year.

**Conclusion:** Although this study is restricted to referred cases from the public sector, we feel that this can be generalized to Jordan. Further studies on a nationwide scale are needed.

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Gastrointestinal tumors have diverse patterns of distribution worldwide. Each country and even every part of the country has its own distribution of gastrointestinal tumors<sup>1</sup>.

In recent years there was a shift in the distribution, mortality and treatment of many gastrointestinal tumors<sup>2,3</sup>. In Jordan, no studies of the patterns of gastrointestinal tumors have been published, and with the formation of the National Cancer Registry, it is hoped that nation wide studies will come to light soon; this study over 4 years period aim to look at the gastrointestinal tumors evaluated at Al-Basheer Hospital. This is a large tertiary referral center in Jordan, with cases referred from all parts of the country as well as referrals for radiotherapy as it is the only center in Jordan with this facility.

### METHODS

A retrospective review was done on all the adult cases referred to Al-Basheer Hospital over the years

1993-1996. The tumors of the oral cavity were excluded from the study. All the cases were histologically confirmed using the standard methods of staining. They were referred from all parts of Jordan for evaluation and/or treatment either with chemotherapy and/or radiotherapy whether palliative or curative. A special register that includes age, sex, marital status, geographic location was established, and the site of tumor, histologic type and grade of differentiation when indicated were recorded. Staging procedures also were considered when indicated. All cases with suspected metastatic lesions were reviewed.

### RESULTS

There were 5411 cases of malignancies that were referred to Al-Basheer Hospital with a mean of 1353 cases/year and a prevalence of 38 cases/100.000 population. Of these 585 cases were gastrointestinal tumors (10.8 % of all tumors). The male to female ratio was 1.4:1.

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Table 1. Number of cases and sex distribution.

Years	Total Number of cancer cases	Number of GI cases (% of total)	Males	Females
1993	1323	126 (9.5%)	81	45
1994	1365	136 (9.6%)	83	53
1995	1394	162 (11%)	88	74
1996	1329	161 (12%)	85	76
Total	5411	585 (10.8%)	337	248

GI : Gastrointestinal.

Table 1 - shows the total number of cases registered each year and the GI tumors among them over the 4 years. In the year 1993, 126 cases of GI tumors were recorded among 1323 cancer cases registered, while in the year 1996, there were 161 cases among 1329 cancers registered. There was an increase of the percentage of cases of gastrointestinal tumors of 28% over the years 1993 through 1996. It is noted also that females increased in number over 68% over the same period while the number of males was almost constant.

Table 2. The geographic distribution of the cases according to governorates.

Governorate	Percent of cases Recorded	Percent of total population of Jordan <sup>4</sup>
Amman	52.8	40.5
Irbid	17.8	24.4
Zarqa	15.6	15.5
Balqa	4.5	6
Mafraq	3.3	4
Karak	2.7	4.2
Ma'an	2.9	3.7
Tafiela	0.4	1.7

Table 2 shows the geographical distribution of the cases in the governorates (as of 1996 the number of governorates became 12) with Amman area being the site of living of 52.8% of the total cases, and Tafiela the smallest governorates in population occupying only 0.4% of total cases. The ratio of the percentage of the cases noted to the percentage of the total population that live in the area was almost constant; being less than one except in Amman and Zarqa governorates, these area are the closest to tertiary referral centers.

Table 3 shows the age distribution, divided into decades of age, according to the site of the tumor. Fifty six percent of all the cases were between ages 50- 69 years, although these age groups constitute 8.4% of the total population of Jordan, while the age group 20- 39

years contributed to 16% of the total GI tumors, while this group constitute 29% of the total population of Jordan. The age group above 70 years made 10% of all GI tumors while their percentage of population is only 2%. Table 4 shows the anatomical distribution of the cases, with colorectal tumors being the commonest tumors (60 % of cases), followed by stomach in 13%, pancreatic in 9%, esophagus and gall bladder 6% each; liver in 5% and small intestine tumors in 1% of the cases.

Table 5 show the histopathologic type of the cases, with adenocarcinoma diagnosed on the basis of endoscopy (upper or lower GI) and/or fine needle aspiration, confirmed by post operative specimens in the cases which underwent surgery. Adenocarcinoma of various grades of differentiation, and mucin secreting was the commonest histopathologic type noted in the colon, rectum, pancreas and stomach, while in the esophagus the commonest histopathological type was squamous cell carcinoma. In the liver the commonest histopathologic type was metastatic adenocarcinoma and melanoma; with primary hepatocellular carcinoma noted in 13 patients (46%) of the patients with liver tumors.

## DISCUSSION

Gastrointestinal tumors contributed to 10.8 % of all registered cases of malignancies over the 4 years period. There was insignificant increase over the years 9.5%, 9.6%, 11%, 12% respectively and this can be explained by many factors including increased awareness by doctors and or patients, as well as the access to diagnostic procedures in different sectors. A study performed in western Saudi Arabia during the period of 1975-1978, excluding mouth and tongue, showed GI tumors to contribute to 13.2% of all the malignant cases during that period<sup>5</sup>. A similar study in Saudi nationals, during the period of 1984-1986 (1404-1406 H) showed the percentage of GI tumors to all histopathological examinations, in that period to be 29.5% of 1772 malignancies diagnosed histologically<sup>6</sup>. In Abha, Saudi Arabia, and during the period of 1987-1989; among 697 cases of cancers registered; liver, stomach, colon and esophageal tumors constituted 33.9% of their cases, while the rest of GI tumors were recorded among "uncommon" tumors<sup>7</sup>. This wide variation in the studies, as well as, other studies from different parts of Saudi Arabia<sup>8,9</sup>, Algeria<sup>10</sup>, and Arabs in Zanzibar<sup>11</sup> may be due to selection bias in some studies, but is also related to different environmental, social factors and the progress in availability of diagnostic methods in different parts of the Arab population.



Table 3. The age distribution of the cases and site of the tumor

Age group	% population*	Esophagus	Stomach	Pancreas	liver	Colon	Rectum	Gall bladder	Total (%)**
20-29 years	18.8%	3	2	--	3	16	6	--	30 (5%)
30-39 years	11.4%	1	14	3	3	16	27	--	64 (11%)
40-49 years	6.5%	6	13	7	5	47	24	2	104 (18%)
50-59 years	5.3%	12	19	20	9	55	43	13	171 (29%)
60-69 years	3.1%	11	20	17	5	49	38	14	154 (27%)
70-79 years	1.3%	1	10	4	2	12	11	3	43 (7.5%)
- 80 years	0.7%	1	--	1	1	5	5	1	14 (2.5%)

\* % population is the percentage of each age group to the total population of Jordan according to Department of Statistics<sup>4</sup>. 53% of the total population was below the age of 20 years.

\*\* Excluding 5 cases of small intestine tumors of which no data was available.

Table 4. The anatomical distribution of the cases and percentages

Colon	Rectum	Stomach	Pancreas	Esophagus	Gallbladder	Liver	Small intestine
34%	26%	13%	9%	6%	6%	5%	1%
200	154	78	52	35	33	28	5

Table 5. The histological types of the tumors

	Adenocarcinoma Unspecified	Moderately differentiated	Poorly diff. adenocarcinoma	Well-diff. adenocarcinoma	Squamous cell carcinoma	Mucinous adenocarcinoma	Others
Colon	119	48	9	11	7	6	1
Rectum	81	36	12	10	5	8	2
Pancreas	39	3	6	2	--	1	1
Stomach	48	9	10	5	3	--	3
Esophagus	--	13	--	--	22	--	--
Liver	Hepatocellular CA		Adenocarcinoma		Melanoma		
	13		11		4		

The ratio of males to females in our study showed a predominance of the percentage of the males in all the years and all tumors except in the rectum, and gall bladder. This is keeping with other studies from different countries as Riyadh area in Saudi Arabia<sup>12</sup>, among gastric tumors in the study of Al-Mofleh<sup>13</sup>, and in India<sup>14</sup>. This male predominance may be the norm in these tumors, but in our country, as most other developing countries women usually seek medical advice late, if ever, which may be a contributing factor in this finding.

The age distribution of the tumors is uniform in all the governorates of Jordan; with increasing percentage as age increases. In a similar study in Italy<sup>3</sup> by the Colorectal Cancer Study Group, only 14 patients were under the age of 40 years during the study time from 1984-1992; while 76 and 78 patients were between the

ages 41-50 and 51-55 respectively. Among Saudi nationals<sup>6</sup>, the age distribution for the GI tumors peaked between 45-74 years. This may be a reflection of the young age groups in our population of Jordan, and also as a result of various occupational, environmental, and other factors yet to be identified.

The histological types of all the tumors were recorded; with adenocarcinoma of unspecified differentiation being the commonest type in the colon, rectum, stomach and pancreas. In the esophagus, 63% (22 cases) were squamous cell carcinoma, while the rest were adenocarcinoma. Similarities between our findings and histopathologic findings in Saudi Arabia in the stomach tumors were noted, with 96% of Saudi nationals having adenocarcinoma of unspecified differentiation<sup>6</sup>. In a study in southern Saudi Arabia by Hamdi et al<sup>16</sup>, the histologic diagnosis of their cases was intestinal



adenocarcinoma and diffuse adenocarcinoma in 86% of the cases. The pattern noted in esophageal tumors is different from nearby countries that showed a predominance of squamous cell tumors in 85% in Al-Mofarreh et al series<sup>6</sup>. The histopathology of liver tumors showed 11 cases of metastatic adenocarcinoma, 4 cases of malignant melanoma, and 13 cases of primary hepatocellular carcinoma. This pattern is different from other studies from Riyadh Al-Kharj<sup>9</sup> that showed primary liver and esophageal tumors as the commonest GI tumors, but is similar to studies by Rabadi et al from Dhahran Health center<sup>17</sup> with liver tumors being the 6th commonest GI tumors, with a percentage of 13% of 108 GI tumors recorded. There was insufficient data to comment on the histology of the small intestinal tumors owing to poor registration, and infrequency of the cases (6 cases). The commonest tumors recorded in our study are the colorectal tumors, with a percentage of 60% of our cases. These figures are different from studies in Saudi Arabia that showed the percentage of colorectal tumors ranged from 18-23% in different parts of Saudi Arabia<sup>8</sup>, but is similar to studies from western countries<sup>18</sup>. We do not have an explanation for this difference, but as 79% of Jordanian population lives in urban areas<sup>4</sup>, and colorectal tumors are diseases of urban areas and adoption of "westernized" food habits. Also, it is known that there are many geographic variations in the incidence of colorectal tumors between developed and developing countries, and among different areas in the same country<sup>19-21</sup>.

As our study is a retrospective analysis, we are aware of the limitations; these may be improper registration, inaccurate recording, and lack of awareness of the importance of registering any predisposing factors.

## CONCLUSION

Although this study is restricted to referred cases from the public sector, we feel that this can be generalized to Jordan. Further studies on a nationwide scale are needed. In Jordan, the distribution and pattern has similarities with other developing countries with similar life styles. We did not note any change in the pattern over the 4 years period. The National Registry of Cancer patients was appreciated, and we hope to gather more details on the cancer cases in Jordan.

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