

## Pattern of Cancer in Madina Al-Munawara Region

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This is a retrospective study of 2237 histologically proven cases of cancer over a 12 year period from 1981 to 1993. There were 1687 (75.4%) Saudi and 550 (24.6%) non-Saudi patients. Among both sexes, the most common malignancies were from the gastrointestinal tract (29.3%), lymphoma/leukemia (18.4%), head and neck (8.8%) and breast (8.5%). The most common malignancies among males were lymphoma/leukemia, hepatoma, skin and stomach. Among females, the order of frequency of malignancy was breast, lymphoma/leukemia, esophagus, colon and thyroid. Comparison with other leading studies of the Kingdom has been made. The most common malignancies were discussed with the possible etiological factors. *Ann Saudi Med* 1995;15(4):

Cancer is a dreadful disease. It brings about tremendous psychological suffering, social distress and hardships to the

patients and their relatives. The study of its patterns is important and may throw some light onto the mysteries of this disease. The rapidly changing environmental and social conditions in the Kingdom of Saudi Arabia may affect the prevalence and pattern.<sup>1</sup>

The widespread availability of modern medical facilities and increasing public awareness of cancer has made possible the detection and reliable diagnosis of cancer in most regions of the Kingdom of Saudi Arabia.<sup>2</sup>

King Fahad Hospital, Medina Al-Munawara is a 500-bed referral hospital of the Medina health region. To the best of our knowledge, this is the first study for the pattern of cancer in this region.

The purpose of this study is to evaluate the pattern of cancer in Medina. Using a large amount of the published data regarding the pattern of cancer in different regions, we have tried to draw a map for cancer all over the Kingdom. This information would give insight into cancer in Saudi Arabia. We believe this study is helpful to the newly formed cancer registry in Saudi Arabia.

### Material and Methods

From 1981 to 1993, 2237 new patients with histologically confirmed malignancies were studied. These patients represented all cancer patients in the Medina Al Munawara region. Our study was based on information collected from the National Gulf Cancer Registry forms and

our histopathology department's files. Malignancies were categorized according to the system and organ affected. Sex and nationalities of these patients were also analyzed.

The data were expressed in percentage frequency and rank to make comparison with other regional published reports feasible.

### Results

This study includes a total of 2237 cancer patients of which 1687 (75.4%) were Saudis and 550 (24.6%) were of other nationalities. The overall male to female ratio is 1.4:1.

Table 1 shows the order of frequencies affecting different systems and organs, both among Saudis and non-Saudis. The most common malignancy encountered is affecting the gastrointestinal tract (29.3%), followed by

TABLE 1. Cancer type and frequency in Medina region.

System/Organ	Saudi	Non-Saudi	Total	%
Gastrointestinal (GIT)	510	145	655	29.3
Lymphoma	161	53	214	9.6
Leukemia	152	45	197	8.8
Head & neck	144	53	197	8.8
Breast	135	56	191	8.5
Female genital system	130	28	158	7.0
Skin	119	37	156	7.0
Urinary tract	71	35	106	4.7
Lung & pleura	61	28	89	4.0
Sarcomas	67	21	88	3.9
Male genital system	44	15	59	2.6
Central nervous system	34	13	47	2.1
Bone	32	8	40	1.8
Miscellaneous	27	13	40	1.8
Total	1687	550	2237	

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TABLE 2. Rank order and frequency of malignancy in 1306 males in Medina region.

Site of malignancy	Rank	No.	(%)
Lymphoma	1	147	11.3
Leukemia	2	123	9.4
Liver	2	123	9.4
Skin	3	115	8.8
Stomach	4	98	7.5
Colon	5	87	6.7
Esophagus	6	86	6.6
Lung	7	75	5.7
Urinary bladder	8	66	5.1
Sarcomas	9	49	3.6
Prostate	10	42	3.2
Bone	11	35	2.7
Central nervous system	12	29	2.2
Oral cavity	13	23	1.8

lymphoma/leukemia (18.4%), head and neck (8.8%) and breast (8.5%). There is no significant difference between the relative frequencies of malignancies among Saudis and non-Saudis.

The first 14 most common malignancies among males in order of frequency are shown in Table 2. The most common was lymphoma/leukemia, (20.7%) followed by liver, skin, stomach, colon and esophagus malignancies.

Table 3 shows the rank order and percentage frequency of malignancies in females. The most common was breast (20.1%) followed by lymphoma/leukemia, esophagus, colon and thyroid malignancies.

Table 4 summarizes our results compared with data published from Riyadh, Asir, Dhahran, Al Baha and Jeddah. Lymphoma has topped the lists in two out of six studies.

## Discussion

In our study, GIT malignancy was the most common (29.3%) neoplasm followed by lymphoma (9.6%), leukemia, head and neck (8.8%) each and breast cancer (8.5%), Table 1. The incidence of GIT malignancy in our study is comparable with the results of Rabadi (25%)<sup>4</sup> and that of Koreich and Al Kuhaymi (20%)<sup>7</sup> while it was the second most common malignancy after skin cancer in the Asir region.<sup>3</sup>

Further analyzing our data, considering the involved organs and the sex of the patients, nodal lymphoma was the most common (9.5%) malignancy (Table 4). It comes to be the most common malignancy in males (11.3%) and ranked third among females (7.2%). This is in comparison with the study of Riyadh<sup>2</sup> whereas it ranked second in the Asir and Dhahran studies.<sup>3,4</sup> From the above collected data, lymphomas appear to be very common in most regions of Saudi Arabia.

TABLE 3. Rank order and frequency of malignancy in 931 females in Medina region.

Site of malignancy	Rank	No.	(%)
Breast	1	187	20.1
Leukemia	2	74	7.9
Lymphoma	3	67	7.2
Esophagus	4	59	6.3
Colon	5	55	5.9
Thyroid	6	43	4.6
Skin	7	41	4.4
Uterus	8	40	4.3
Stomach	9	39	4.2
Sarcomas	9	39	4.2
Cervix	10	38	4.1
Ovary	11	28	3.0
Liver	12	27	2.9
Oral cavity	13	18	1.9

In our patients, leukemia was the second most common (8.8%) malignancy in both males and females, whereas it is the third most common malignancy in the Asir and Al Baha regions.<sup>3,5</sup> In the studies of Dhahran<sup>4</sup> and Riyadh,<sup>2</sup> it ranked fifth and sixth respectively. Leukemia/lymphoma together constituted 18.3% of our patients. Rabadi,<sup>4</sup> Willen, Pettersson<sup>5</sup> and Tylor<sup>8</sup> have reported leukemia/lymphoma as the leading malignancies in their patients. The etiology of the high incidence of lymphoma and leukemia in our population is not fully understood. Probably some unrecognized viral, genetic, ethnic or environmental factors may be involved.<sup>9</sup>

Head and neck malignancy constituted 8.8% of our patients. In the national literature, there is a wide range of incidence quoted, varying from 4.3% to 18%.<sup>2,4</sup> In the head and neck, thyroid malignancy was the most common among females. It ranked as the sixth most common malignancy among females (4.6%), which is in comparison with that reported by Rabadi,<sup>4</sup> while it is slightly lower than that reported by Khan et al,<sup>3</sup> Koreich and Al Kuhaymi,<sup>7</sup> Sebai<sup>9</sup> and Mahboubi.<sup>10</sup> Koreich and Al Kuhaymi reported a very high incidence of 14.6% in females, which is not in correspondence with any other study and may be due to the small number of patients in their study. From our observations, the Madina region is an area endemic for nodular goiter. Whether there is a cause and effect relationship between this and thyroid malignancy is not understood.

Oral cavity malignancy is only 1.8% which is less frequent compared to other studies.<sup>1,2,6</sup> Oral cancer has been observed to be more common among patients who use tobacco substances such as shamma and qat.<sup>11</sup> This low incidence can be explained by less common usage of shamma and qat in the Madina region.

As in the most leading studies in the Kingdom,<sup>4,6,7,10</sup> breast cancer is the most common malignancy among

TABLE 4. Comparison by rank order and percentage for the most frequent cancers in different region of the Kingdom.

Organ	KFH, Medina		KFSH, Riyadh		ACH, Abha		DHC, Dhahran		KFH, AlBaha		CL, Jeddah	
	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%
Lymphoma	1	9.5	1	13.9	2	9.1	2	10.5	4	8.6	2	12.8
Leukemia	2	8.8	6	3.8	3	8.3	5	5.8	3	8.9	na	
Breast	3	8.5	2	7.6	9	3.6	4	7.3	8	4.1	4	7.4
Skin	4	7.0	14	3.2	1	13.8	na		1	14.7	1	15.5
Liver	5	6.7	7	3.5	4	7.7	12	3.2	6	5.3	15	2.4
Esophagus	6	6.5	3	5.6	8	3.7	9	3.7	12	2.0	5	5.9
Colon	7	6.3	na		7	4.7	5	5.8	7	5.0	8	4.0
Stomach	8	6.1	6	3.8	5	6.7	3	7.7	2	11.3	9	3.3
Lung	9	3.9	5	4.3	12	2.0	1	10.7	11	2.2	8	4.0
Urinary bladder	10	3.4	na		6	6.5	14	2.3	5	5.8	15	2.4
Central nervous system	11	2.1	7	3.5	11	2.6	na		13	1.5	na	
Prostate	12	1.9	na		13	1.4	8	4.2	10	2.4	25	0.7
Oral	13	1.8	5	4.3	10	2.9	na		9	3.8	3	8.1
Cervix	14	1.7	4	4.6	14	1.4	14	2.3	14	1.3	7	4.2
Total		2237		7251		697		428		582		1000

na=not available;KFH=KingFahad Hospital;KFSH=King Faisal Specialist Hospital;ACH=Asir Central Hospital;DHC=Dhahran Health Center; CL=Central Laboratory.

female patients (20%) in our study. This high incidence is consistent with the increasing trend of breast cancer worldwide. Adopting a Western diet with high fat content may play a role in the high incidence of breast cancer.<sup>2</sup> In spite of early pregnancy, multiparity and breast feeding habits in our population, which are supposed to have a protective effect against breast cancer, these have apparently not influenced this high incidence.

Hepatocellular carcinoma is the fifth most common malignancy (6.7%) in both sexes in our study, which closely agrees with the figures quoted by Khan et al.<sup>3</sup> and Willen and Pettersson.<sup>5</sup> The striking feature is that it is the second most common among males; among females it goes down to the 12th rank (Table 1 and 2). This male preponderance is also noted by Al-Akkad, Khan, et al.<sup>3</sup> and Mahboubi.<sup>10</sup>

It has been established that hepatitis B virus infection is the predominant cause of liver disease in areas of the world where the incidence of primary hepatocellular carcinoma is high.<sup>12</sup> Prevalence of HBsAg is 8.3% in the Saudi population as reported by Al-Faleh.<sup>13</sup> In the Madina study, the percentage of HBsAg positivity is 7.6%.<sup>14</sup> Some studies suggest schistosomiasis, a common disease in Saudi Arabia, as an important factor in liver cancer.<sup>15</sup>

Among the 14 leading malignancies, skin cancer has occupied the fourth rank (Table 4). A significant observation in three studies by Willen and Pettersson,<sup>5</sup> Stirling et al.,<sup>6</sup> and Bahamdan and Morad<sup>16</sup> is that it has topped all the malignancies. The relatively low incidence of skin cancer reported in our study could be because most of the skin cancers are not life-threatening and therefore are not referred. Another factor might be the high temperature in the Madina region which keeps people indoors, avoiding sun exposure during the peak hours. Avoiding sunlight

exposure between 10 AM and 2 PM would reduce the carcinogenic effect of UV light up to 50%.<sup>2</sup>

In conclusion, the pattern of cancer in the Madina region is mostly in comparison with that of other regions of the Kingdom. The necessity of establishing a National Cancer Registry has been felt by all the authorities. Fortunately, the newly established National Cancer Registry will bring valuable information about this dreadful disease. With the availability of modern medical facilities in all the regions, early cancer detection and diagnosis is now possible. As a result of this, a large number of patients are waiting for treatment. All the modalities of cancer management are not available in all the health regions of the Kingdom. Therefore we strongly feel and recommend establishing a full-fledged cancer treatment center in all regions.

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