

PATTERN OF CANCER IN THE UNITED ARAB EMIRATES REFERRED TO AL-AIN HOSPITAL

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This retrospective study was performed at the Al-Ain Hospital, Al-Ain, in the United Arab Emirates. The objective of the study was to determine the common types of cancer in Al-Ain, and involved 612 cancer patients diagnosed and treated between 1981 and 1995 at the Al-Ain Hospital, which is the main referral teaching hospital in the Al-Ain Medical District. We analyzed the admissions of cancer patients to the hospital during this period, categorizing their age, nationality group and type of cancer. About 37% of the 612 patients were UAE and Omani citizens, followed by 35.5% who were of Asian origin. The male to female ratio was 3:2. The median age for males was 43 years and for females was 45 years. The most common male malignancy was gastric carcinoma (17.6%), followed by lymphoma (16.8%), colorectal cancer (14.9%), and skin cancer (14.5%). In females, the most common cancer was of the breast (31.6%), followed by cervix (27%), thyroid (8.3%), and colorectum (7.9%). The frequency of lymphoma, stomach, skin, lung, liver and esophageal cancer was higher in males than in females. Conversely, thyroid cancer was more common in females than males. The frequency of cervical and gastric cancers was significantly higher in the UAE and Omani citizens than in the others. We hope that this valuable information will help in the identification of possible risk factors that will help in plans for early cancer detection. *Ann Saudi Med* 1997;17(5):506-509.

Epidemiological observations indicate that environment and lifestyle are the major determinants of the geographical patterns of cancer.¹ During the last two decades, the United Arab Emirates (UAE), like other Arabian Gulf countries, has witnessed rapid development in many aspects of life. Increased development has led to a parallel increase in major public health problems.² The rapid socioeconomic changes have affected the prevalence and pattern of cancer. The widespread availability of modern medical facilities and increasing public awareness of cancer have made possible the early detection and reliable diagnosis of cancer in the UAE. These socioeconomic changes have played an important role in both increasing life expectancy and popularizing the lifestyle associated with smoking, obesity and hypertension. All these factors indicate that the UAE, like many other developing countries, show a continually increasing proportion of the world's cancer burden.³ Unfortunately, there has been no clear strategy to prevent this disease in the UAE community.⁴ Cancer is a dreadful

cancer may throw some light on the mysteries of this disease.⁶

To our knowledge there is no similar data available in the UAE. The aim of this study is to investigate and evaluate the common types of cancer in Al-Ain, UAE, and to compare the pattern of cancer with other studies available in the Gulf Cooperation Council countries.

Materials and Methods

Al-Ain Hospital is a teaching facility with over 500 beds. There is no tumor registry in the hospital, but all patients who have a histologically confirmed malignancy are entered in the hospital medical record. This study included all cancer patients who attended the Al-Ain Hospital over the 15-year period between 1981 and 1995. Data was obtained from the Pathology Department, and cases were coded according to the World Health Organization's International Classification of Diseases, 10th Revision, Clinical Modifications (ICD10-CM). Data collected from the hospital records comprised generic factors such as age, sex and nationality, and specific factors, such as the site of cancer and its histological type.

The records of 612 histologically confirmed cancer patients treated over this 15-year period were studied. These patients represent most of the cancer patients in Al-Ain Medical Health District, United Arab Emirates. Since age-standardized population data were not available, incidence rates could not be determined, but rank order and relative frequency rates could be calculated. However, proportional rates were used when no other data were

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Accepted for publication 22 June 1997. Received 26 January 1997. disease, which brings tremendous social distress, psychological suffering, and hardship to patients and their relatives.⁵ The study of the epidemiology and pattern of

available.⁷ Proportional rates were generally confirmed by incidence rates when these became available.

Results

Of the 612 patients, 228 were UAE and Omani citizens (37.3%), 129 were other Arabs (21%), 217 were Asians (35.5%), and 38 were of African origin (6.2%). It is worth mentioning that UAE and Omani citizens were merged together, because of the similarities in environmental, dietary and social lifestyle of both populations. The male to female ratio was 3:2. The median age for males was 43 years (range 3 to 85 years), and females was 45 years (range 1 to 100 years). The frequency of the different types of cancer according to each system is listed in Table 1.

The ten most common malignancies according to organ and their frequency in both sexes are given in Table 2. The most common male malignancy was gastric carcinoma (17.6%), followed by lymphoma (16.8%), colorectal carcinoma (14.9%), and skin cancer (14.5%). In females, the most common cancer was of the breast (31.6%), followed by cervix (27%), thyroid (8.3%) and colorectum (7.9%). The frequency of lymphoma, stomach, skin, lung, liver and esophageal cancer was higher in males than females. Conversely, thyroid cancer was more common in females than males.

A comparison of the highest numbers of malignancies in UAE and Omani citizens as opposed to other nationalities is given in Table 3. This table shows that the frequency of cervical cancer (19.4%) and gastric cancer (17.2%) was higher in UAE and Omani citizens than in the other population groups. However, breast cancer (18.8%) and colorectal cancer (13.7%) were higher in the other groups than in the UAE and Omani group.

Table 4 shows the ranking of cases by organ system involved over three five-year periods. Cancer of the gastrointestinal system was the most common, followed by the female genital system, respiratory system, breast and skin.

Discussion

There are very few reports on the pattern of cancer in the UAE, and those available tend to focus only on one type of cancer.⁸ Although this study deals with a small number of cancer cases, it sheds some light on the relative incidence of most types of malignancies. More

TABLE 1. Frequency of different types of cancer in Al-Ain, UAE.

Site/type	Number	Percentage
Gastrointestinal system	193	31.5
Breast	71	11.6
Female genital system	58	9.4
Respiratory system	57	9.3
Lymphoma	56	9.2

Skin	52	8.5
Urinary system	32	5.2
Thyroid	30	4.9
Soft tissue sarcoma	20	3.3
Metastatic	17	2.8
Male genital system	12	2.0
Others	14	2.3
Total	612	100

TABLE 2. Most common malignancies according to sex in Al-Ain, UAE.

Site/type	Male	Female	Both sexes
	No. (%)	No. (%)	No. (%)
Stomach	46 (17.6)	16 (7.4)	62 (13)
Breast	3 (1.2)	68 (31.6)	71 (15.6)
Lymphoma	44 (16.8)	12 (5.6)	56 (11.7)
Colorectum	39 (14.9)	17 (7.9)	56 (11.7)
Skin	38 (14.5)	14 (6.5)	52 (10.9)
Lung	28 (10.7)	5 (2.3)	33 (6.9)
Esophagus	21 (8.0)	5 (2.3)	26 (5.4)
Liver	19 (7.3)	2 (1.0)	21 (4.4)
Thyroid	12 (4.5)	18 (8.4)	30 (6.3)
Genitals	12 (4.5)		
Cervix		58 (27)	
	262 (100)	215 (100)	477 (100)

importantly, it shows the differences in the pattern of cancer among different nationalities in the UAE, which has a heterogeneous population.²

The most common site of malignancy in the current study was that of the gastrointestinal system, which accounted for 31.6% of all cancers. This frequency is similar to the reported data from Saudi Arabia in which the incidence of gastrointestinal malignancies were reported to be 25% in Dhahran,⁹ and 29.3% in the Madinah⁶ and Riyadh regions.¹⁰

When the data was analyzed according to the involved organs and patient's sex, gastric cancer was noted to be the most common malignancy in males (17.6%). This is

TABLE 3. Relative frequencies of the most common malignancies according to nationality in Al-Ain Hospital, UAE.

Site/type	UAE & Omani	Others
	No. (%)	No. (%)
Cervix	36 (19.4)	22 (7.5)
Stomach	32 (17.2)	30 (10.3)
Lymphoma	23 (12.4)	33 (11.3)
Breast	16 (8.6)	55 (18.8)

Colorectum	16 (8.6)	40 (13.7)
Skin	16 (8.6)	36 (12.4)
Lung	14 (7.6)	19 (6.5)
Esophagus	11 (5.9)	15 (5.1)
Thyroid	9 (4.9)	21 (7.2)
Male genital	7 (3.8)	5 (1.7)
Liver	5 (3.0)	16 (5.5)
	185 (100)	292 (100)

TABLE 4. Ranking of adult cancer cases by system over five-year periods (1981-1995) in Al-Ain Hospital, UAE.

Site/type	1981-1985	1986-1990	1991-1995
	No. (%)	No. (%)	No. (%)
Gastrointestinal	36 (27.7)	65 (29)	92 (35.6)
Breast	11 (8.5)	22 (9.8)	38 (14.7)
Female genital system	16 (12.3)	25 (11.2)	17 (6.6)
Respiratory system	19 (14.6)	23 (10.3)	15 (5.8)
Lymphoma	8 (6.2)	25 (11.2)	23 (8.9)
Skin	10 (7.7)	18 (8.0)	24 (9.3)
Urinary system	10 (7.7)	10 (4.5)	12 (4.7)
Thyroid	4 (3.1)	16 (7.1)	10 (3.9)
Soft tissue sarcoma	6 (4.6)	8 (3.6)	6 (2.3)
Metastatic	5 (3.8)	1 (0.4)	11 (4.3)
Male genital system	4 (3.1)	5 (2.2)	3 (1.2)
Others	1 (0.8)	6 (2.7)	7 (2.7)
	130 (100)	224 (100)	258 (100)

comparable with the results of Jaffer,¹¹ who reported that gastric cancer was the most common among males in Oman (15.5%). Most recently, Ezzat et al.¹⁰ reviewed 22,836 adult cancer cases referred to King Faisal Specialist Hospital and Research Centre in Riyadh from 1976 to 1993, and showed that the gastrointestinal system was the most common site. This data might reflect similar environmental and dietary predisposing factors. The possible pathogenic role of these factors is supported by the finding that 67% of gastric carcinomas reported in this study were of the intestinal type which was known to be more related to epidemiological influences.¹² On the other hand, several studies from Western countries have reported that high incidence of *Helicobacter pylori* infection is associated with an intestinal type of gastric carcinoma.¹³ A similar study is available from Saudi Arabia.¹⁴ It has also been reported in the UAE that *H. pylori* infection is commonly associated with chronic gastritis,¹⁵ which is believed to be a step in the evolution of gastric carcinoma. Therefore, it is suggested that *H. pylori* infection may play a role in the development

of gastric cancer in the UAE. Future epidemiological studies will be of great importance in the detection of the specific etiologic factors. These studies would be of special interest for the local population from whom more than half of the cases of gastric cancer were recorded.

Our study showed breast cancer to be the most common malignancy among female patients (31.6%), as in most studies in Saudi Arabia.^{6,16-18} Of the various nationalities, breast cancer was much higher in the non-nationals (19.5%) than in UAE and Omani nationals (9.9%). This relative low frequency of breast cancer in the UAE and Omani nationals seems to be related to the common habits of early pregnancy, multiparity and breast feeding, which are known to have a protective effect against breast cancer.¹⁹ The mean age of breast cancer patients was higher among the UAE and Omani nationals (48 years) than the other nationalities (40 years). This can be explained by the fact that most of the non-national females are of the young working age group.

The reason for the high incidence of skin cancer in the UAE is not clear, but may be due to the use of pesticide and fertilizer among the expatriate farming population. Conversely, cervical cancer was nearly twice as high in the UAE and Omani nationals than in the other groups (Table 3). Again, this can be explained by the common habits of early marriage and multiparity among the local population. Evidence exists supporting the association of such factors with a high incidence of cervical cancer.²⁰ It is worth mentioning that the frequency of cervical cancer appears to be higher in the UAE than in Saudi Arabia, in spite of similarities between the two cultures. This may be due to routine application of the pap smear for all females referred to the gynecology clinic in our hospital.

Among the twelve leading malignancies, lymphoma currently ranks fifth, accounting for 9.2% of all cancers. Studies from Saudi Arabia showed a similar pattern.⁶ The reason for this high incidence of lymphoma in the Gulf area is not clear. Possibly viral, genetic or environmental factors may play a role.²¹ Some malignancies show a significantly higher frequency in males, for example, skin cancer, which represented 14.5% of male cancers as compared to 6.5% in the female group. This higher frequency in males may simply be due to longer exposure to sunlight. On the other hand, thyroid malignancy was higher in females (8.3%) than in males (4.5%). This female preponderance has also been confirmed by other studies.¹⁶

In conclusion, the pattern of cancer in Al-Ain Hospital reveals some striking information which indicates the need for establishing a national cancer registry in the UAE. Awareness of the most common types of cancer will help to initiate research protocols for the identification of the risk factors. This valuable information will help in developing plans for cancer prevention, and programs for the early detection and treatment of cancer can grow with the availability of modern medical facilities.

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