

MORTALITY FROM MALIGNANT DISEASES IN A SAUDI POPULATION IN THE ASIR REGION: A FOUR-YEAR REVIEW

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The aim of this study was to determine the causes of mortality from different malignancies in the Asir region of Saudi Arabia. The Asir region is an area of about 80,000 km², with a population of about 1.2 million people.¹ Asir Central Hospital is the main referral hospital, and serves as the teaching hospital of the medical school in the region. All complicated and terminal cases from the 17 hospitals in the region are routinely referred to this hospital. As such, deaths from malignant conditions at the hospital provide a fair reflection of such deaths in this area. We decided, therefore, to study the causes of death from malignant conditions in a four-year period so as to identify the main malignant killers in the region.

Patients and Methods

In this descriptive study, all intrahospital deaths from various forms of malignant conditions recorded by the hospital over a four-year period (n=237) were studied. This period extended from June 1991 to May 1995. The International Classification of Diseases for Oncology (ICD-O) 1990 was used to classify the main causes of deaths. Data were analyzed using the EPI Info Software program for tabulation and computation. Pearson chi-squared test was applied (with Yates correction when needed) to compare the different proportions of causes of death.

Results

Liver cancer ranked first as the major cause of death from malignancy at Asir Central Hospital, representing 23.6% of all causes, followed by lymphoma and leukemia (10.1% each), cancer of the pancreas (9.7%), brain tumor (7.6%), stomach cancer (5.5%), and cancers of the esophagus and lung (5.1% each) (Table 1).

As regards sex (Table 2), hepatoma was the leading cause of death among males, constituting a significantly higher frequency than that among females (31.5% vs. 11.0%, $P=0.0003$). This was followed in descending order in males by lymphoma (11.0%), leukemia and brain tumors (8.2% each), gastric cancer (6.8%), and cancer of the pancreas and lungs (5.5% each). On the other hand, cancer of the pancreas ranked first among females, with a significantly higher frequency of deaths (16.5%) than that among males (5.5%) ($P=0.005$). This was followed in descending order by leukemia (13.2%), hepatoma (11.0%), lymphoma and cancer of the breast (8.8% each), brain tumors and cancer of the esophagus (6.6% each).

Discussion

The frequency of deaths from malignancies does not necessarily correlate with the incidence or prevalence of malignancies seen in a locality. Therefore, the non-estimation of the case fatality for each malignancy is one of the limitations of this study. This could not be done due to the difficulty in the identification of the total number of cases from which death has resulted. However, the identification of the malignant diseases that cause the death of patients has an important role in future planning. Another limitation of this study is the fact that some patients may have died at home or in other referral hospitals. Nevertheless, since the majority of difficult and terminal cases were handled at Asir Central Hospital, figures on malignancy deaths at the hospital fairly reflect that of the Asir region as a whole.

In a previous study from the same hospital, deaths over a four-year period at the hospital were reported.² There were a total of 1479 deaths, and malignancy accounted for 18% of these. Although skin cancer has topped all malignancies in the Asir Region,^{3,4} Al-Baha,⁵ Jeddah,⁶ and has accounted for 4.2% of all newly diagnosed cases at the national level,⁷ it did not show up in the present study, perhaps due to the fact that skin cancer is not life threatening and is often less fatal.

Hepatoma is the most common cancer in Saudi Arabia, according to the 1994 National Registry for Cancer,⁷ and the 4th most common malignancy in the Asir Region,³ 5th in Medina,⁸ 6th in Al-Baha,⁵ 7th in Riyadh,⁹ 12th in

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TABLE 1. Frequency (%) of deaths from different malignancies at Asir Central Hospital and their rank order during the years 1991-1995.

(n=237)		
Type of malignancy	No. (%)	Rank order
Hepatoma	56 (23.6)	1
Lymphoma	24 (10.1)	2.5
Leukemia	24 (10.1)	2.5
Pancreatic cancer	23 (9.7)	4
Brain tumor	18 (7.6)	5
Gastric cancer	13 (5.5)	6
Esophageal cancer	12 (5.1)	7.5
Lung cancer	12 (5.1)	7.5
Cholangiocarcinoma	9 (3.8)	9
Breast cancer	8 (3.4)	10
Colorectal cancer	7 (3.0)	11
Others (bladder, thyroid, cervix, prostate, etc.)	31 (13.1)	

TABLE 2. Frequency (%) of deaths from different malignancies at Asir Central Hospital and their rank order by sex during the years 1991-1995.

Type of malignancy	Male (n=146)		Female (n=91)		P*
	No. (%)	Rank order	No. (%)	Rank order	
Hepatoma	46 (31.5)	1	10 (11.0)	3	0.0003**
Lymphoma	16 (11.0)	2	8 (8.8)	4.5	0.59
Leukemia	12 (8.2)	3.5	12 (13.2)	2	0.22
Pancreatic cancer	8 (5.5)	6.5	15 (16.5)	1	0.005**
Brain tumor	12 (8.2)	3.5	6 (6.6)	6.5	0.65
Gastric cancer	10 (6.8)	5	3 (3.3)	9.5	0.31
Esophageal cancer	6 (4.1)	9	6 (6.6)	6.5	0.49
Lung cancer	8 (5.5)	6.5	4 (4.4)	8	0.81
Cholangiocarcinoma	7 (4.8)	8	2 (2.2)	11	0.41
Breast cancer	—	—	8 (8.8)	4.5	0.001**
Colorectal cancer	4 (2.7)	10	3 (3.3)	9.5	0.88
Others (bladder, thyroid, cervix, prostate, etc.)	17 (11.6)	—	14 (15.4)	—	0.41

*Pearson chi-squared test was applied with Yates correction when needed;
**statistically significant difference between males and females.

Dhahran,¹⁰ and 15th in Jeddah.⁶ This malignancy ranked first as a cause of death in males in the present study, a finding that reflects its position as a major killer in the Kingdom as a whole.

Liver diseases have been shown in a previous report by one of the authors to represent 10% of all cases of mortality at the same institution.² The national hepatitis vaccination program, which was started in 1989, as well as improvements in healthcare delivery, seem to have had a positive impact on the prevalence of hepatitis B.^{11,12} Nevertheless, more efforts are needed. Blood transfusion policies, especially regarding indication and screening, need urgent and major changes.

Lymphoma among Saudis was shown to have a crude incidence rate of 4.2% and 2.2% for males and females, respectively, at the national level,⁶ while the incidence rate of leukemia was reported to be 3.6% and 2.2% among males and females, respectively. Therefore, these two

groups of diseases represent a major health concern from the incidence and mortality point of view.

Brain tumors ranked 9th in frequency in males both in the Asir Region³ and at the national level.⁷ However, the malignancy ranked 3rd as a cause of death in the present study in males, after hepatoma and lymphoma. Similarly, cancer of the pancreas was not among the 10 most common malignancies in the Asir Region, but it was the leading cause of death among females in the present study. These findings indicate that although both types of cancers are not generally common in the Kingdom, they constitute a major cause of mortality, especially in the face of possible limited experience in their management.

It has been reported that the crude relative frequency of bladder cancer in the Southwestern region of Saudi Arabia is about double that of the rest of the country.¹³ It was also reported by Khan et al.³ to be the 4th most common malignancy in males. Cancer of the bladder ranked 5th for males and 33rd for females at the national level.⁷ However, in the present study, it ranked 12th as a cause of death. This finding indicates that although cancer of the bladder is relatively prevalent in the Asir Region, it has a low mortality rate compared to other neoplasms. The same conclusion applies to cancer of the thyroid, which ranked 5th in frequency in females in Asir, but was ranked 12th as a cause of death.

Breast cancer is the most common malignancy among females, according to different studies in the Kingdom.^{6,7,10,12,13} This is in agreement with the rate in the Asir region,³ where it ranks second in frequency in females. With regards to mortality, breast cancer and lymphoma each accounted for 4.5% of deaths in females in the present study. This relatively high fatality of breast cancer necessitates more efforts towards early detection, such as education of females on self-examination of their breasts, and regular check-ups at the primary health care level.

The malignant diseases that caused the deaths in Asir Central Hospital were identified in this study. This information should be of help in health planning, resource allocation and future research.

References

1. Alshehri MY, Abu-Eshy SA, Ajao OG, Batouk AN, Jastaniah S, Al-Naami M, et al. Colorectal carcinoma: review of 63 cases at Asir Central Hospital. *Emirates Med J* 1996;14:21-6.
2. Alshehri MY. Hospital deaths at Asir Central Hospital. *Saudi Med J* 1999;20:793-6.
3. Khan AR, Hussain NK, Al-Saigh A, Malatani T, Sheikh AA. Pattern of cancer at Asir Central Hospital, Abha, Saudi Arabia. *Ann Saudi Med* 1991;11:285-8.
4. Bahamdan KA, Morad NA. Pattern of malignant skin tumors in the Asir region, Saudi Arabia. *Ann Saudi Med* 1993;13:402-6.
5. Willen R, Pettersson BA. Pattern of malignant tumors in King Fahad Hospital, Al-Baha, Saudi Arabia. *Saudi Med J* 1989;10:498-502.
6. Stirling G, Khalil AM, Nada GN, et al. Malignant neoplasms in Saudi Arabia. *Cancer* 1979;1:89-94.
7. Al-Hamdan NA, Al-Zahrani A, Michels-Harper D, Koriech O,

- Bazarbashi S. The Kingdom of Saudi Arabia, Ministry of Health. National Cancer Registry 1994 Report, 1996:15-41.
8. Al Saigh AH, Allam MM, Khan KA, Al Hawsawi ZM. Pattern of cancer in Madina Al-Munawara region. *Ann Saudi Med* 1995;15: 350-2.
 9. Amer MH. Pattern of cancer in Saudi Arabia: a personal experience based on the management of 1000 patients. Part 1. *King Faisal Specialist Hosp Med J* 1982;203-15.
 10. Rabadi SJ. Cancer at Dhahran Health Center, Saudi Arabia. *Ann Saudi Med* 1987;7:288-93.
 11. Shobokshi OA. Overview of viral hepatitis: a true TT virus (abstract). *Saudi J Gastroenterol* 2000;6:102-3.
 12. Al Faleh FZ. Changing epidemiology of hepatitis B and A in Saudi Arabia: eight years after undertaking of HBV vaccination program (abstract). *Saudi J Gastroenterol* 2000;6:103.
 13. El-Akkad SM, Amer MH, Lin GS, et al. Pattern of cancer in Saudi Arabs referred to King Faisal Specialist Hospital. *Cancer* 1986;58: 1172-8.