

Clinical and Histopathological Patterns of Cancer in Tabuk City

Abstract

The incidence of cancer increased substantially in the previous decades. In addition, increasing mortality was observed. No researchers have assessed cancer prevalence in Tabuk, Saudi Arabia. The current study investigated the pattern of cancer in Tabuk City, Saudi Arabia. A retrospective hospital-based study was conducted in the Pathology Department at King Fahd Specialist Hospital from June 2023 to September 2023. All the records of patients diagnosed with malignancies between 2019 and 2020 were approached confidentially according to the Helsinki Declaration. A checklist has been used to record the age, sex, residence, and marital status. The type of cancer, behavior, extent, stage, and histopathology were recorded. Out of 354 patients (52.05±17.71, and 48% females), the majority were Saudis (79.4%), 48.3% were married, and 90.97% were from Tabuk City. The specimens were obtained from lymph nodes (18.1%), breasts, and colon (14.4% each). In this study, nearly two-thirds (61.3%) were carcinoma in situ, 18.4% showed lymph node metastasis, and 9% distant metastasis. The majority of cancer (99.4%) was malignant. The commonest histopathological finding was carcinoma (malignant and undifferentiated), followed by adenocarcinoma in 19.8% and papillary thyroid carcinoma in 10.5%. The commonest malignancies in Tabuk City were breast, colon, and thyroid, respectively. Carcinoma in situ was the most common, followed by lymph node and distant metastasis. The histopathology varied between carcinoma, adenocarcinoma, and papillary carcinoma of the thyroid. Further prospective studies investigating cancer risk factors are needed.

Keywords: Cancer, Pattern, Histopathological, Clinical, Tabuk

Introduction

According to the International Agency for Research on Cancer estimate (2020), there is 19.3 million new cancer cases and Ten million cancer death worldwide. The most prevalent cancer was breast, lung, and colon cancer, respectively.^[1] However, the Kingdom of Saudi Arabia is among the countries with the lowest cancer incidence. However, an increasing rate was reported, particularly for the Tabuk Region. Plausible explanations are Ramadan fasting, food full of special recipes filled with spices, significantly lower rates of smoking and alcohol drinking, and genetic predisposition. In Arab countries, Egypt and Lebanon reported the highest incidence and all ages, while Sudan and Saudi Arabia were the lowest.^[2, 3] Cancer is growing at an alarming pace in Middle Eastern countries. Long-term projections show that, by 2030, there will be a 1.8-fold increase in cancer incidence.^[4] There was an upsurge in liver cancer in Saudi Arabia. Riyadh, Najran, and Tabuk were the areas most affected by liver cancer during the period from 2004 to 2014. Saudi males from Jazan and females from

the Northern Region reported the lowest rate.^[5] The different rates of cancer across Saudi Arabia can be partially explained by the different risk factors, including viral hepatitis infection, obesity, and diabetes.^[6-9] Diet and other protective factors might protect against cancer. The results will be used as a baseline and for future preventive measures. Knowledge of the special and temporal profile of cancer in Tabuk City will help to identify possible risks and protective styles. No studies have assessed the pattern of cancer in Tabuk City. Therefore, this study aims to assess the pattern and histopathological features of cancer in Tabuk City, Saudi Arabia.

Materials and Methods

This retrospective study was conducted at the pathology department in King Fahd Specialist Hospital, Tabuk City, from June 2023 to September 2023. Tabuk is the capital of the Tabuk region (Northwest of Saudi Arabia), and the population number is 667,000, according to 2021 data.

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Furthermore, King Fahd Specialist Hospital is one of the three central hospitals in Tabuk City and receives a referral from the primary healthcare centers and regional hospitals in Tabuk Region. All the records of patients who were diagnosed with cancer during the period from January 2019 to January 2021 were eligible. The study was conducted over three months, from January to April 2023. The records in the Pathology Department were well-organized and easy to access and retrieve the data. A structured checklist was used to collect demographic data. Age, sex, nationality, marital status, residence inside Tabuk, type of cancer, stage, and histopathology were recorded. In addition, the extent and behavior of malignancies were recorded.

Inclusion criteria

All adults who were diagnosed with cancer.

Exclusion criteria

Children with cancer were not included.

Ethical issues

The author strictly adheres to the Helsinki Declaration. All the information was anonymous; no private information was taken. Ethical clearance was obtained from the ethical committee of the University of Tabuk (UT-282-125-2023).

Data analysis

The data were entered into an Excel sheet and presented as percentages and mean± SD. The Statistical Package for Social Sciences (IBM, SPSS, version 20, New York.)

Results and Discussion

There were 354 patients (48% women) with malignancies; their mean age was 52.05±17.71 years, the majority were Saudis (79.4%), 48.3% were married, and 90.97% were from Tabuk City **Table 1**.

In the present study, the biopsy source was lymph nodes in 18.1% and breast in 14.4%. Colon in 14.1%, and thyroid in 12.1%. Lung tissue constituted 3.9%, and nasopharyngeal, stomach, and mouth biopsy represented 3.7%, 3.7%, and 3.1%, respectively. **Table 2** depicts the cancer site in the study group.

In this study, nearly two-thirds (61.3%) were carcinoma in situ, 18.4% showed lymph node metastasis, and 9% distant metastasis (**Table 3**). Regarding the behavior of cancer, 99.4% were malignant, and 0.6% were paired sites (**Table 4**).

The commonest histopathological finding was carcinoma (malignant and undifferentiated), followed by adenocarcinoma in 19.8% and papillary thyroid carcinoma in 10.5% (**Table 5**).

Sex	
Males	184 (52%)
Females	170 (48%)
Nationality	
Saudi	281 (79.4%)
Non-Saudi	73 (20.6%)
Marital status	
Married	171 (48.3%)
Single	61 (17.2%)
Widowed	02 (0.6)
Unknown	120 (33.9%)
Residence	
Tabuk City	322 (90.97%)
Outside Tabuk	32 (9.03%)

Table 2. Malignancy by site among patients in Tabuk City, Saudi Arabia

Character	No%
Breast	51 (14.4%)
Lymph nodes	64 (18.1%)
Lymphoma	57 (16.1%)
Other	07 (02%)
Colon	50 (14.1%)
Thyroid gland	43 (12.1%)
Ovary and uterus	13 (3.7%)
Nasopharynx	13 (3.7%)
Stomach	13 (3.7%)
Mouth and vocal cords	11 (3.1%)
Liver	11 (3.1%)
Lung	14 (3.9%)
Skin	06 (1.7%)
Pancreas	05 (1.4%)
Kidney	02 (0.7%)
Prostate	02 (0.7%)
Miscellaneous (rare)	54 (15.2%)

Table 3. The extent of malignancies among patients in Tabuk City, Saudi Arabia

Character	No%
Carcinoma in situ	217 (61.3 %)
Regional (direct spread)	06 (2%)
Regional lymph nodes	65 (18.4%)
Distant metastasis	32 (9%)
Unknown	33 (9.3%)

Table 1. Basic characteristics of the study group

Character	No%
Age	52.05±17.71

Table 4. The behavior of malignancies among patients in Tabuk City, Saudi Arabia

Character	No%
Malignant	352 (99.4 %)
Paired site	02 (0.6%)

Table 5. Histopathological Findings among Patients with Cancer in Tabuk City

Character	No%
Adenocarcinoma	70 (19.8%)
Squamous cell carcinoma	26 (7.3%)
Papillary carcinoma	37 (10.5%)
Carcinoma (malignant and undifferentiated)	104 (29.4%)

There is an increasing trend of cancer in Saudi Arabia. Breast cancer was the most common cancer in this study, followed by colon cancer; our findings are in a systematic review and meta-analysis published in Saudi Arabia and included thirty-nine studies.^[10] The risk factors were various genetic polymorphism,^[11-13] a lower folate uptake,^[14] and vitamin D deficiency.^[15] The trial conducted by Yousef *et al.* (2013) found an association between the incidence and invasiveness of breast cancer and low vitamin D levels. However, a single trial with a small sample size cannot conclude a cause and effect. Similar studies from Mexico and Iran^[16] concluded the association between vitamin D deficiency and breast cancer. In this study, colon cancer constituted 14.1% of all types of cancer and was second most common; the current findings are in line with previous studies conducted in Saudi Arabia^[17, 18] and found colon cancer second cancer after breast cancer. The authors explained their findings by the high rate of polymorphisms. However, Al-Ghafari *et al.* (2019) explained the high prevalence of breast cancer by vitamin D deficiency.^[19] Aldiab *et al.* (2017), and Alqahtani *et al.* (2017) explained the high prevalence of prior ulcerative colitis and family history of Lynch syndrome. Thyroid cancer has increased substantially in the Kingdom of Saudi Arabia over the past three decades (fifteenfold in women and 22 times among men). Importantly, 2056 deaths occurred from thyroid cancer during the same period (the mortality increased three times in women and sixfold in men). In this study, thyroid cancer stands third among cancers in Tabuk City, in line with world trends^[20] and contradicting previous observations.^[10] The higher prevalence of thyroid cancer might be explained by the increasing detection and diagnosis.^[21] Factors increasing mortality need future studies to reduce the mortality rate. A previous study conducted in Riyadh, Saudi Arabia^[22] reported that thyroid cancer was the second most common cancer (10%); the current findings supported Hussain and colleagues' findings. However, the current findings were higher than studies conducted in the USA and reported a prevalence of 2.9%.^[23] A study conducted in the southern region of Saudi Arabia^[24] found that breast, colonic, and liver cancers are the most dominant in line with the current observation.

The geographic and spatial variation in cancer can be explained by radiation exposure,^[25] lifestyles,^[26] and iodine deficiency.^[27] In the present study, the mean age group of the patients was 52.05±17.71 years, with an equal female/male ratio similar to Alshatwi *et al.* (2012).^[11]

The study limitations

The study limitation was the retrospective nature, and the study was conducted at a single tertiary center.

Conclusion

The commonest malignancies in Tabuk City were breast, colon, and thyroid, respectively; carcinoma in situ was the commonest, followed by lymph node and distant metastasis. The histopathology varied between carcinoma, adenocarcinoma, and papillary carcinoma of the thyroid. Further prospective studies investigating cancer risk factors are needed.

Acknowledgments

None.

Conflict of interest

None.

Financial support

None.

Ethics statement

The records were approached confidentially with strict adherence to the Declaration of Helsinki. No patient identities were taken. The information collected was used only for this research. The ethical approval has been obtained from the ethical committee of the University of Tabuk, Saudi Arabia (ref. number, dated April 30, 2023).

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