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The pattern of cancer in Iraq: Three-year (2005-2007) Updated report

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Abstract

Background: Cancer is a major public health problem worldwide [1]. In 2007 cancer was the third leading cause of deaths in Iraq after cardiovascular diseases and accidents and the seventh leading cause of morbidity. The aim of this paper is to report the pattern of new cancer cases reported during 3 years period (2005-2007).

Patients and methods: During a three-year period (2005-2007) 44611 Iraqi patients, with various types of newly diagnosed cancer were registered by the Iraqi Ministry of Health from all Iraqi provinces including the 3 Northern provinces (Sulaimanyia, Erbil, and Dohouk). 21538 patients were males (48.3 %) and 23073 patients were females (51.7%).

Results: Breast was the most common site of cancer accounting for 18% of all cases of cancer. The histomorphological types seen among breast cancers were 5069 cases with histology of Infiltrating duct carcinoma accounting for 63% of all cases of breast cancer, which was found to be the most common type. This histopathology was followed in decreasing order by adenocarcinoma carcinoma in 257 cases accounting for 3% of all cases and infiltrating lobular carcinoma in 218 cases accounting 2.7 % of all cases.

Lungs and the bronchi were the second most common site of cancer accounting for 8.43% of all cases of cancer, and the first most common site in males. The three commonest histopathological types of lung cancer are squamous cell carcinoma accounting for 20% of the cases, adenocarcinoma accounting for 7% of the cases small cell carcinoma accounting for 4% of the cases.

Leukemia was the third most common cancer in Iraq accounting for 7.54% of all cancers.

Conclusion: The pattern of cancer in Iraq by primary tumor site is rather different from the pattern in other countries like USA, Nigeria and European countries. The histopathological cancer pattern of breast and cancers of the lung and bronchi which are the commonest cancer in Iraq differs from the previously reported patterns.

Keywords: Cancer, Iraq, adenocarcinoma, squamous cell carcinoma.

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INTRODUCTION

Cancer is a major public health problem worldwide ⁽¹⁾. In 2007 cancer was the third leading cause of deaths in Iraq after cardiovascular diseases and accidents and the seventh leading cause of morbidity ⁽²⁾. The Iraqi Ministry of Health is responsible for collecting the information relating to every newly diagnosed cancer patients who are registered from governmental and nongovernmental health institutions (hospitals and pathological laboratories) in Iraq. However, cases

occurring in Kurdistan Region (Sulaimanyia Erbil and Duhook) were not included during the years from 1995 to 2004. A total of 166729 new cancer cases were registered by the Iraqi Ministry of Health during the previous 17 years.

Figure (1) shows the annual number of cancer cases registered by the Iraqi Ministry of Health from 1991 to 2007.

The Iraqi Ministry of health previously published ⁽³⁾ the pattern of cancer in Iraq by primary tumor site in the largest series of Iraqi patients with cancer. The need for comprehensive knowledge about cancer forms in Iraq is mandatory to plan and establish control programs for the common cancer which may be amenable to prevention, early detection and cure.

The aim of this paper is to report the pattern of new cancer cases reported during 3 years period (2005,2006,2007).These statistics could be primary resource not only for epidemiological research on

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cancer determinants but also for planning and evaluating health services for the prevention, early detection diagnosis and treatment of these diseases.

PATIENTS AND METHODS

During a three-year period (2005-2007) 44611 Iraqi patients, with various types of newly diagnosed cancer were registered by the Iraqi Ministry of Health from all Iraqi provinces including the 3 Northern provinces (Sulaimanyia, Erbil, and Dohouk). 21538 patients were males (48.3 %) and 23073 patients were females (51.7%).

RESULTS

Breast was the most common site of cancer accounting for 18% of all cases of cancer. Figure -2 shows the incidence rate per 10000 for breast cancer in Iraq during 12 years (1996-2007). The histomorphological types seen among breast cancers were 5069 cases with histology of Infiltrating duct carcinoma accounting for 63% of all cases of breast cancer, which was found to be the most common type. This histopathology was followed in decreasing order by adenocarcinoma carcinoma in 257 cases accounting for 3% of all cases and infiltrating lobular carcinoma in 218 cases accounting 2.7 % of all cases.

Lungs and the bronchi were the second most common site of cancer accounting for 8.43% of all cases of cancer, and the first most common site in males.

The three commonest histopathological types of lung cancer are squamous cell carcinoma accounting for 20% of the cases, adenocarcinoma accounting for 7% of the cases small cell carcinoma accounting for 4% of the cases.

Leukemia was the third most common cancer in Iraq accounting for 7.54% of all cancers. Table (1): Type of cancer by primary tumor site. Figure -3 shows the annual number of leukemia cases registered by the Iraqi Ministry of Health from 1991 to 2007.

The four most commonly diagnosed types of cancer among males were cancers of the lung and bronchus, bladder, leukemia and Non-Hodgkin lymphoma , accounting for about 39.5% of all cancer cases in males.

The four most commonly diagnosed types of cancer among females were cancers of the breast, leukemia, brain cancers and CNS and NHL, accounting for about 49% of estimated cancer cases in females. Breast cancer alone is accounted for % (31%) of all new cancer cases among females.

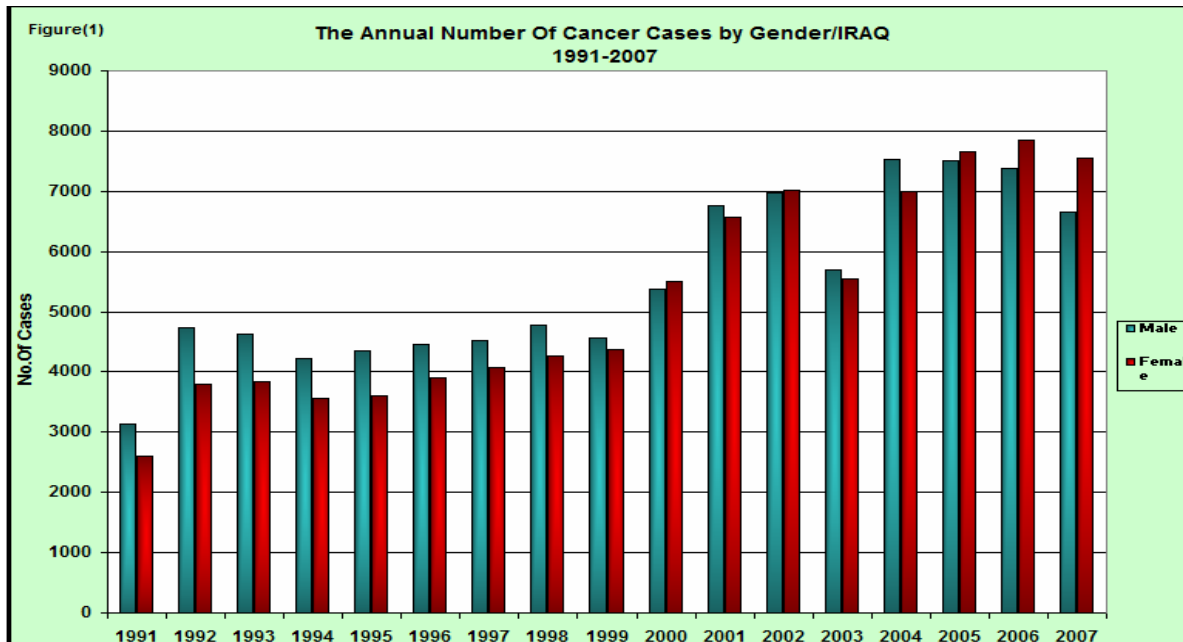


Figure (1): The Annual Number of Cancer Cases Registered By The Iraqi Ministry of Health From 1991 To 2007.

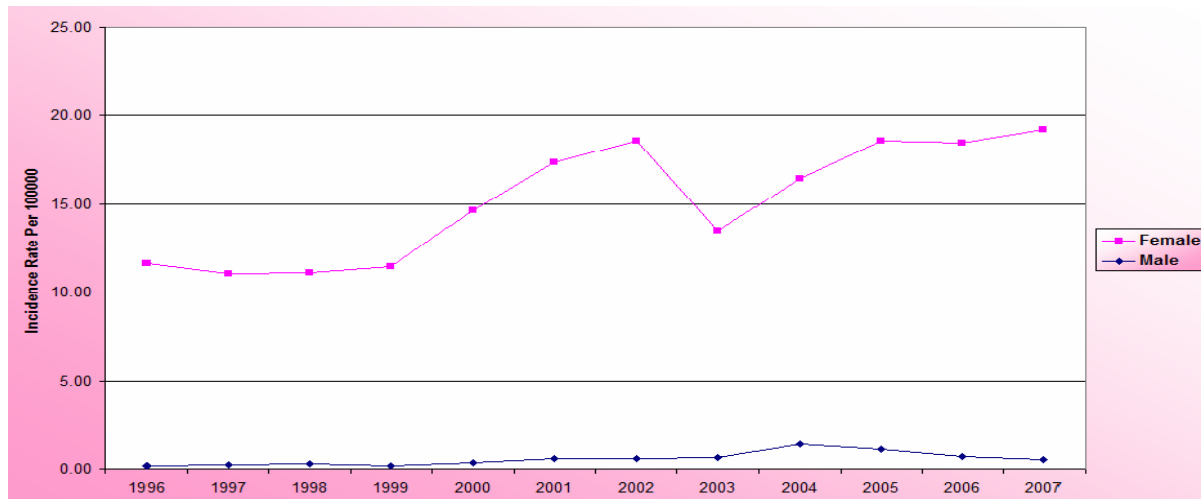


Figure (2): Incidence Rate Per 10000 For Breast Cancer In Iraq (1996-2007)

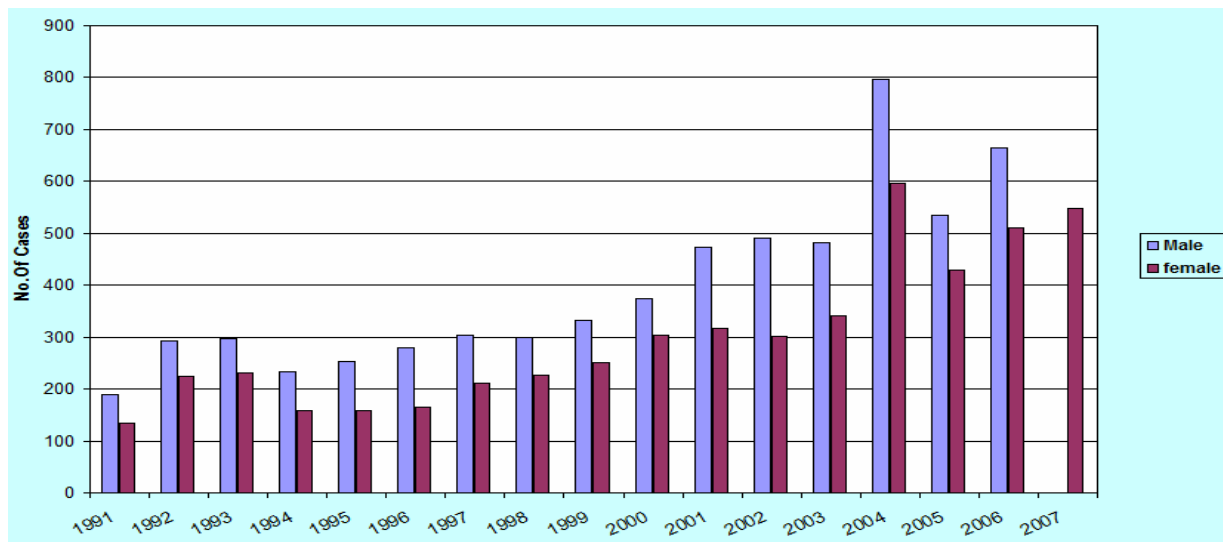


Figure (3): The Annual Number of Leukemia Cases Registered By The Iraqi Ministry of Health From 1991 To 2007.

Table (1): Type Of Cancer By Primary Tumor Site.

Primary Site	Total Number	M	F	% of the Total
Breast	8066	337(4.2%)	7729(95.3%)	18%
Bronchus and lung	3765	2870(76.2%)	895(23.8%)	8.43%
Leukemia*	3366	1877 (55.8%)	1489(44.2%)	7.45%
Bladder	2849	2230 (78.3%)	619 (21.7%)	6.38%
NHL**	2512	1522(60.6%)	990(39.4%)	5.63%
Brain and Other CNS***	2459	1338 (54.4%)	1121	5.5%
Colorectal	2023	1088 (53.8%)	935(46.2%)	4.53%
Stomach	1472	822(56%)	650(44%)	3.3%
Skin, others (excluding Melanoma)	1366	797	569	
ALL Sites	44611	21538	23073	

DISCUSSION

In our previous publication ⁽³⁾ we reported the largest series of Iraqi patients with cancer over 5 years period (2000-2004). In the previous study there was higher number of males with cancer than females. The previous study included 63923 Iraqi patients, with various types of newly diagnosed cancer were registered by the Iraqi Ministry of Health from all Iraqi provinces with exception of 3 Northern provinces (Sulaimanyia, Erbil, and Dohouk). In that study 32281 patients were males (50.5%) and 31652 patients were females (49.5%). In this updated study 44611 Iraqi patients, with various types of newly diagnosed cancer were included from all Iraqi provinces including the 3 Northern provinces (Sulaimanyia, Erbil, and Dohouk). In the current study 21538 patients were males (48.3 %) and 23073 patients were females (51.7%).

The higher number of females with cancers than males in the current study was associated with a change in the female /male ratio and male/ female ratios for the top 10 cancers.

In the previous study [3] the female/male ratio for breast cancer was (21 / 1) while its higher (23/ 1) in the current study. In the previous study the male/ female ratio for lung and bronchus cancers was (3.9 / 1) while its lower in the current study (3.2/ 1). In the previous study the male/ female ratio for leukemia was (2.4 / 1) while its lower in the current study (1.2/1).). In the previous study the male/ female ratio for brain and CNS cancers was (1.34 /1) while its lower in the current study (1.2/1).

The pattern of cancer in Iraq by primary tumor site is rather different from the pattern in other countries like USA. The four most commonly diagnosed types of cancer among males in the USA are cancers of the prostate, lung and bronchus, colon and rectum, and bladder, accounting for about 57% % of estimated cancer cases in males⁽³⁾. The four most commonly diagnosed types of cancer among females in the USA are cancers of the breast, lung and bronchus, colon and rectum, and uterine corpus, accounting for about 56 % of estimated cancer cases in males ⁽⁴⁾. Cancer of the lung and bronchus is the second leading cause of cancer in the USA accounting for 15% of all newly diagnosed cancer in females.

This difference is obviously attributed to the high incidence of smoking in females in the USA. Cancer of the lung and bronchus in USA females accounted for a higher percentage than Iraqi males. Cancer of the prostate is the leading cause cancer in males in the USA accounting for 29% of the newly diagnosed cases ⁽⁴⁾. The continued increase in the incidence of prostatic cancer has been attributed to screening with prostate-specific antigen testing ^(5,6).

The most common form of cancers in Europe are breast cancer (13.5% of all cancer cases), followed by colorectal cancers (12.9%) and lung cancer (12.1%) ⁽⁷⁾.

In Nigeria cancers of the cervix (22.9%), breast (18.9%), ovary (8.2%), non-melanoma skin cancer (6.3%), and uterus (6.2%) were the most frequent female cancers. In males, cancer of the prostate (16.5%), bladder (10.2%), non-melanoma skin (9.9%), colorectal (9.3%) and connective tissue (6.3%) were most common ⁽⁸⁾. Cancer in Africa is not only different from the cancer pattern in Iraq but also differs from the pattern observed in USA and Europe.

Breast Cancer is the most frequent cancer in women worldwide with 1.05 million new cases every year and represents over 20% of all malignancies among females ⁽⁹⁾. Over 50% of breast cancer incidence occurs in the developed world. High-risk areas include Europe and North America. The lowest rates are reported from Africa and Asia. However, it still ranks as the commonest cancer among women in these regions. Incidence of breast cancer is increasing in most countries, including the areas, which have had previously low rates ^(10, 11, and 12). It is estimated that in 2001 there were approximately 80,000 new breast cancer. In Iraq, it is the most common cancer accounting for 16% of all cancers in Iraqi patients in a previous study by the Iraqi Ministry of Health ⁽¹³⁾, and accounting for 18% in the current study.

The continuing rise in breast cancer incidence has created an urgent need to develop strategies for prevention. Few studies of international variation in breast cancer have considered tumor histology.

Few studies of international variation in breast cancer have considered tumor histology.

It is important to understand the relationship of histological type to etiology, and to allow separation of entities with distinct etiologies. Histology as a prognostic factor has been well documented. Patients with histology of Infiltrating duct carcinoma (IDC) (NOS) have a poor survival compared to other types ^(12, 14). In a previous study, Infiltrating duct Carcinoma (NOS) was found to be the most common type occurring in cases (76.6%) in Iraqi patients ⁽¹³⁾. Infiltrating duct carcinoma was followed in decreasing order by infiltrating lobular carcinoma in 562 cases (5.46 %); adenocarcinoma carcinoma in 558 cases (5.43%) in that study. In the current study the histomorphological types seen among breast cancers were 5069 cases with histology of Infiltrating duct carcinoma accounting for 63% of all cases of breast cancer, which was found to be the most common type. This histopathology was followed in decreasing order by adenocarcinoma carcinoma in 257 cases accounting for 3% of all cases and

infiltrating lobular carcinoma in 218 cases accounting 2.7 % of all cases.

The histopathological cancer pattern of breast cancer in Iraq differs from the previously reported pattern in Asian and African countries such as India and Nigeria ^(15,16).

The commonest histological types of breast cancer in Nigerian women in a study conducted over a twelve-year period (January 1993-December 2004) were IDC (not otherwise specified) constituted the majority of breast cancer accounting for 75.5% while papillary carcinoma was the least common (2.7%). Ductal carcinoma in situ accounted for 6.6% ⁽¹⁵⁾.

In India the histomorphological types seen among 569 female breast cancers indicated that there were 502 cases (88.2%) with histology of IDC not otherwise specified (NOS), which was found to be the most common type. This was followed in decreasing order by infiltrating lobular carcinoma in 21 cases (3.7%); colloid carcinoma in 6 cases (1.1%), ductal carcinoma-in-situ in 6 cases (1.1%), metaplastic type in 5 cases (0.9%), schirrous carcinoma in 5 cases (0.9%), apocrine type in 4 cases (0.7%) and the rest 20 cases (3.5%) with other types of carcinoma ⁽¹⁶⁾.

Primary lung cancer is essentially carcinoma of the bronchus. Occasionally cancer occurs in the trachea and pleura. Lung cancer is the leading cause (28%) of cancer deaths worldwide ^(17, 18) and accounted for 163,500 new cases of cancer in the United States in 2004 ⁽²⁾. Compared with the other major cancers, breast, colorectal, and prostate has witnessed only modest improvements in its survival rates and clinical outcome up to the present time, and is the only major cancer type to have increased in the number of deaths annually ^(18,19). Histopathological heterogeneity is a major confounding factor in lung cancer diagnosis and treatment ⁽²⁰⁾. Classically, lung cancer comprises three primary histological subtypes: carcinoid, small cell, and non-small cell, which account for about 2%, 13%, and 86% of lung cancers, respectively. Non-small cell lung cancer (NSCLC) is further subdivided into at least three histological subtypes: adenocarcinoma (AD), squamous cell carcinoma (SQ)/epidermoid and large cell carcinoma. Small cell lung cancer (SCLC) is the most aggressive form of lung cancer, includes small cell carcinoma, mixed small cell/ large cell carcinoma, and combined small cell carcinoma.

In this study, lungs and the bronchi were the second most common site of cancer accounting for 8.43% of all cases of cancer, and the first most common site in males. The three commonest histopathological types of lung cancer are Squamous cell carcinoma accounting for 20% of the cases, adenocarcinoma accounting for 7% of the cases small cell carcinoma accounting for 4% of the cases.

Geographical differences have been observed in the incidence of various histological pattern of lung cancer. Shifts in histological tumor type distribution, chiefly an increase in adenocarcinoma, have been reported to accompany changes in lung cancer incidence during the last two decades in the United States and several other developed countries.

In Europe, the squamous cell type still predominates and an increase in incidence of adenocarcinoma has only been reported in the Netherlands. In Asia, in the 1960s and 1970s, the proportion of adenocarcinoma was higher than in North America or Europe and seems to be increasing ⁽²¹⁾.

In Varse lung cancer incidence rates in the period 1976-1992 overall, lung cancer had stopped increasing in males since the late 1980s, and had started declining in middle-aged men. Conversely, upward trends persisted in females up to 1991-1992. Although it decreased from 13 to 9, the male-to-female incidence ratio was, in 1991-1992 still substantially higher than in the U.S. and North Europe. Specific trends emerged according to histological type(s), with declines (males) or stabilization (females) for squamous-cell carcinoma and gradual increases for small-cell carcinoma in males. Adenocarcinoma was the only lung cancer type whose incidence rates increased similarly (2.5-fold) in males and females thus approaching, in 1991-1992, in the two sexes combined, the rate for squamous-cell carcinoma ⁽²²⁾.

The shifts in histological tumor type distribution, chiefly an increase in adenocarcinoma, have been reported to accompany changes in lung cancer incidence in the last two decades in the United States and several other developed countries were not observed in this study and a previously published Iraqi study ⁽²³⁾.

CONCLUSION

The pattern of cancer in Iraq by primary tumor site is rather different from the pattern in other countries like USA, Nigeria and European countries. This provided an important information about cancer forms in Iraq which can be useful in planning and establishing control programs for the common cancer which can be amenable to prevention, early detection and cure. The histopathological cancer pattern of breast and cancers of the lung and bronchi which are the commonest cancer in Iraq differs from the previously reported patterns.

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