EPIDEMIOLOGICAL STUDY OF CANCERS AMONG IRAQI PEOPLE IN ONCOLOGY TEACHING HOSPITAL IN MEDICAL CITY IN BAGHDAD FOR 2018

Janan M. Al-Akeedi*[1], Nawar A. Abd Noor[2] and Mustafa A. J. Alhiti[3]

[1]PhD Immunologist and Immunopathophysiology in Al-Farabi College/Baghdad/Iraq.
[2]FICMS (Immunologist) Oncology Teaching Hospital, Baghdad Medical City / Baghdad / Iraq.
[3]B.Sc. Agri. (Molecular Genetic) in Pathological Analysis Laboratory, In Biotechnology & Environmental Center, In Fallujah University/Bagdad / Iraq.

*Corresponding Author: Janan M. Al-Akeedi
PhD Immunologist and Immunopathophysiology in Al-Farabi College/Baghdad/Iraq.
Email id: Jananmajeed934@gmail.com, Mustafa.j.alhiti@uofallujah.edu.iq

ABSTRACT

Background: Cancer is a generic term for a large group of disease that can affect any part of the body. Other terms used are malignant tumors and neoplasms. Cancer in the second leading cause of death in the world after cardio-vascular disease. **Aim:** Investigation of cancer in Oncology Teaching Hospital in Medical City in Baghdad. **Method:** This study include (1152) cases, (542) case have excluded because lake of medical note or diagnosis. Medical notes and histopathological reports of patients with confirmed diagnosis of cancer types between January 2018 to January 2019, were reviewed for age, site and type of cancer. **Results:** A total of (1152) patients were included in this study. The ages which show high prevalence was (41-60Y) (42.7%) ($p<0.01$) and (61-80Y) (36.02%) ($p<0.01$) which show significant relationship between age and cancer types. Most cases were detected in Baghdad (72%) ($p<0.05$) then Dayala (7.6%) ($p<0.05$), then Anbar (4.6%) (Non-significant) and wasit (4.5%) ($p<0.05$) and other sites were non-significant. The most prevalent cancer type generally was gastro-intestinal tract cancer (26.8%) ($p<0.01$), then respiratory tract cancer (14.3%) ($p<0.01$), then uterine cancer (8.1%) ($p<0.05$) and then prostate cancer (6.1%) (Non-significant). **Conclusion:** The high prevalence and incidence rates of many cancers were concern especially for older ages mainly in Baghdad.

INTRODUCTION

Cancer is among the top four causes of human mortality.[1] In global epidemiological investigation de mortal et al., found that 2 millions cases (16%) of 12.7 million newly diagnosis cancer were attributed exposure to infectious agents with a higher rate recorded in developing countries.[2] Globally in 2013, there were (14.9) million incident cancer cases and (8.2) million cancer related deaths.[3] While the incidence and mortality rates for most cancers are decreasing in the United States and among other western countries, the incidence and mortality rates are both rising in developed countries.[4]

The Eastern Mediterranean Region (EMR) countries are experiencing marked variation in cancer incidence.[5] The incident cancer cases have increased by (46.1%) between 2005 and 2015.[6] The countries registered in EMR are (United Arab Emirate, Bahrain, Saudi Arabia, Oman, Qatar and Kuwait) had reported (95, 183) newly diagnosis cancer cases from January (1998) to December (2007).[7]

MATERIAL AND METHODS

Study design

A survey of different cancer types in Iraqi males and females during 2018were designed in order to determine the age, governorate and types of cancers in Iraq.

Methods

Data of (1152) patients collected from register of pathological laboratories and from the medical records of patients from Oncology Teaching Hospital in Medical city in Baghdad during the period of one year from January 2018 to January 2019. (452) Cases were excluded due to luck of medical records and diagnosis. The information includes age ranged from (1-99y.), governorate and types of cancer.

Data

All data were analyzed by the statistical analysis system-SAS (2012) program was to detect the effect of differences between study parameters. Chi-square test was used to significant compare between percentage (0.05 and 0.01 probability) in this study.[8]

RESULT
A total of (1152) subjects were diagnosed with deferent types of cancer in the Oncology Teaching Hospital in Medical city in Baghdad during 2018. The data showed high percentage and prevalence age specific rate in the range (41-60y.) (42.7%), then the age (61-80y.) (36.02%), as shown in table (1) and (2).

Table (1): Frequency of ages of cancer types monthly during 2018.

Month	1-20 years	21-40 years	41-60 years	61-80 years	81-99 years	Total	Chi-Square (X^2)
1	1 0.7%	27 19.7%	52 37.4%	50 36.4%	7 5.1%	137	10.83 **
2	6 5.1%	12 10.3%	52 44.8%	40 34.4%	6 5.1%	116	10.06 **
3	2 2.9%	5 7.4%	35 52.2%	20 29.8%	5 7.4%	67	11.48 **
4	2 4.4%	8 17.7%	15 33.3%	20 44.4%	0 0%	45	9.85 **
5	0 0%	20 18.1%	50 45.4%	40 36.3%	0 0%	110	11.37 **
6	0 0%	10 15.3%	37 56.9%	18 27.6%	0 0%	65	11.61 **
7	1 2.3%	1 2.3%	13 30.9%	25 59.5%	2 4.7%	42	11.94 **
8	2 5%	10 25%	11 27.5%	16 40%	1 2.5%	40	9.33 **
9	3 2.8%	25 23.5%	39 36.7%	35 33.01%	4 3.7%	106	9.08 **
10	4 3.8%	17 16.3%	55 52.8%	27 25.9%	1 0.9%	104	10.73 **
11	5 3.3%	17 11.4%	57 38.5%	65 43.9%	4 2.7%	148	9.62 **
12	5 2.9%	25 14.5%	76 44.1%	59 34.3%	7 4.06	172	10.57 **
Chi-Square (X^2)	1.08 NS	6.97 **	8.55 **	8.91 **	2.47 NS	--	_
** (P<0.01), NS: Non-Significant							

Table (2): Demonstrate the Percentage of Age Range During 2018.

Age Range	Percentage
1-20 Years	2.6 %
21-40 Years	15.3 %
41-60 Years	42.7 %
61-80 Years	36.02 %
81-99 Years	6.3 %

Baghdad showed higher frequency of different cancer types (72%), then Dayala (7.6%), Anbar (4.6%) (Non-significant) and Wasit (4.5%), than others. As show in table (3) and (4).

Table (3): Showed the Frequency of cancer types in different area of Iraq monthly during 2018.

Month	Baghdad	Anbar	Salahalden	Wasit	Dayala	Babel	Karbala	Najaf	Maysan	Basra	Naseria	Samaia	Dewania	Kirkuk	Irbel	Mosul	Total	Chi-Square (X^2)
1	105 76.6%	9 6.5%	4 2.9%	6 4.3%	8 5.8%	3 2.1%	0 0%	1 0.7%	0 0%	0 0%	1 0.7%	0 0%	0 0%	0 0%	0 0%	0 0%	137	12.48 **
2	83 71.5%	5 4.3%	4 3.4%	4 3.4%	6 5.17%	5 4.3%	2 1.7%	0 0%	0 0%	0 0%	4 3.4%	0 0%	0 0%	1 0.8%	1 0.8%	1 0.8%	116	12.18 **
3	44 65.6%	4 5.9%	1 1.4%	0 0%	10 14.9%	3 4.4%	2 2.9%	0 0%	0 0%	0 0%	0 0%	0 0%	1 1.4%	0 0%	0 0%	2 2.9%	67	11.73 **
4	36 80%	3 6.6%	1 2.2%	0 0%	4 8.8%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	1 2.2%	45	13.47 **
5	89 72.7%	6 5.4%	4 3.6%	4 3.6%	10 9.09%	1 0.9%	2 1.8%	2 1.8%	1 0.9%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	110	12.36 **
6	46 70.7%	2 3.07%	3 4.6%	3 4.6%	9 13.8%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	1 1.5%	1 1.5%	0 0%	0 0%	65	10.47 **
7	33 78.5%	2 4.7%	0 %	4 9.5%	2 4.7%	0 0%	0 0%	1 2.3%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	42	12.84 **
8	28 70%	1 2.5%	0 0%	2 5%	6 15%	3 7.5%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	40	10.36 **
9	70 66.03%	8 7.5%	2 1.8%	8 7.5%	5 4.7%	4 3.7%	0 0%	1 0.9%	3 2.8%	0 0%	1 0.9%	0 0%	1 0.9%	3 2.8%	0 0%	0 0%	106	10.02 **
10	72 69.2%	3 2.8%	7 6.78%	4 3.8%	10 9.6%	3 2.8%	0 0%	1 0.9%	2 1.9%	1 0.9%	0 0%	1 0.9%	0 0%	0 0%	0 0%	0 0%	104	11.47 **
11	110 74.3%	2 1.3%	8 5.4%	5 3.3%	10 6.7%	2 1.3%	1 0.6%	2 1.3%	0 0%	0 0%	5 3.3%	0 0%	0 0%	0 0%	0 0%	3 2.02%	148	12.04 **
12	124 72.09%	8 4.6%	3 1.7%	12 6.9%	8 4.6%	6 3.4%	1 0.5%	3 1.7%	0 0%	0 0%	0 0%	2 1.2%	1 0.5%	1 0.5%	0 0%	3 1.7%	172	11.93 **
Chi-Square (X^2)	5.03 *	2.07 NS	2.32 NS	4.63 *	5.11 *	2.74 NS	0.84 NS	0.72 NS	0.76 NS	0.24%	0.93 NS	0.33 NS	0.41 NS	0.52 NS	0.07 NS	0.73 NS	--	—

* (P<0.05), ** (P<0.01), NS: Non-Significant

Table (4): Show the frequencies of many cancer types in Iraq during 2018.

Site	Percentage
Baghdad	72 %
Anbar	4.6 %
Salah Alden	3.2 %
Wasit	4.5 %
Dayala	7.6 %
Babel	2.6 %
Karbala	0.6 %
Najaf	0.9 %
Mesan	0.5 %
Basra	0.08 %
Naseria	0.9 %
Samaoa	0.2 %
Dewania	0.3 %
Kirkuk	0.5 %
Erbil	0.08 %
Mosul	0.8 %

The data also showed that the prevalence of gastro-intestinal tract higher than other cancers (26.8%) ($p<0.01$), then respiratory tract cancers (14.3%), then uterus (8.1%), and then the prostate cancer (6.1%) (Non-significant) than other types as illustrated in table (5) and (6).

Table (5): Illustrate percentage of each type of cancer during 2018.

No.	Cancer Types	Percentage
1	Gastro intestinal tract	26.8 %
2	Respiratory tract	14.3 %
3	Pancreas	2.6 %
4	Skin	4.6 %
5	Kidney	5.3 %
6	Urethra	1.9 %
7	Bladder	1.8 %
8	Testis	1.3 %
9	Prostate	6.1 %
10	Bone	3.03 %
11	Brain	0.5 %
12	Hodgkin's	0.1 %
13	Non- Hodgkin's	1.2 %
14	Uterus	8.1 %
15	Ovary	4.5 %
16	Soft Tissue	2.6 %
17	Liver	2.4 %
18	Thyroid	2.8 %
19	Lymphatic System	2.0 %

Table (6): Show the Frequency of different type of cancer in monthly during 2018.

Month	Gastro intestinal	Respiratory	Pancreas	Skin	Kidney	Urethra	Bladder	Testis	Prostate	Bone	Brain	Hodgkin's	Non-Hodgkin's	Uterus	Ovary	Soft Tissue	Liver	Thyroid	Lymphatic's	Total	Chi-Square (X^2)
1	23 16.7%	20 14.5%	3 2.1%	13 9.4%	11 8.02%	1 0.7%	3 2.1%	3 2.1%	13 9.4%	3 2.1%	8 12.1%	5 3.6%	1 0.7%	13 9.4%	6 4.3%	1 0.7%	3 2.1%	4 2.9%	2 1.04%	137	6.25 **
2	22 18.9%	20 17.2%	4 3.4%	9 7.7%	4 3.4%	4 3.4%	1 0.8%	0 0%	8 6.8%	4 3.4%	10 8.6%	3 2.5%	2 1.7%	10 8.6%	3 2.5%	3 2.5%	2 1.7%	3 2.5%	4 3.4%	116	6.87 **
3	26 38.8%	7 10.4%	3 4.4%	2 2.9%	3 4.4%	0 0%	1 1.4%	0 0%	3 4.4%	1 1.4%	7 10.4%	0 0%	0 0%	7 10.4%	2 2.9%	2 2.9%	2 2.9%	0 0%	1 1.4%	67	9.52 **
4	14 31.1%	12 26.6%	1 2.2%	0 0%	0 0%	1 1.2%	1 2.2%	1 2.2%	2 4.4%	2 4.4%	2 4.4%	1 2.2%	0 0%	4 8.8%	0 0%	2 4.4%	0 0%	2 4.4%	0 0%	45	8.77 **
5	26 23.6%	21 19.09%	0 0%	4 3.6%	5 4.5%	2 1.8%	1 0.9%	3 2.7%	10 9.09%	0 0%	6 5.4%	4 3.6%	3 2.7%	6 5.4%	5 4.5%	1 0.9%	3 2.7%	5 4.5%	5 4.5%	110	7.03 **
6	22 33.8%	8 12.3%	2 3.07%	3 4.6%	1 1.5%	2 3.7%	0 0%	1 1.5%	2 3.7%	1 1.5%	4 6.1%	2 3.07%	1 1.5%	4 6.1%	7 10.7%	1 1.5%	4 6.1%	0 0%	0 0%	65	8.63 **
7	13 30.9%	10 23.8%	3 7.1%	1 2.3%	2 4.7%	0 0%	1 2.3%	0 0%	3 7.1%	1 2.3%	2 4.7%	0 0%	1 2.3%	2 4.7%	1 2.3%	0 0%	2 4.7%	0 0%	0 0%	42	8.47 **
8	14 35%	2 5%	2 5%	2 5%	2 5%	0 0%	0 0%	1 2.5%	4 10%	3 7.5%	1 2.5%	0 0%	0 0%	5 12.5%	3 7.5%	1 2.5%	0 0%	0 0%	0 0%	40	7.92 **
9	32 30.1%	5 4.7%	3 2.8%	1 0.9%	9 8.4%	9 8.4%	3 2.8%	0 0%	4 3.7%	3 2.8%	5 4.7%	2 1.8%	0 0%	12 11.3%	6 5.6%	4 3.7%	1 0.9%	1 0.9%	1 0.9%	106	7.86 **
10	47 45.1%	15 14.4%	2 1.9%	5 4.8%	5 4.8%	1 0.9%	0 0%	1 0.9%	2 1.9%	4 3.8%	3 2.8%	0 0%	0 0%	5 4.8%	6 5.7%	3 2.8%	0 0%	3 2.8%	3 2.8%	104	10.26 **
11	37 25%	21 14.1%	2 1.3%	6 4.5%	12 8.1%	2 1.3%	4 2.7%	4 2.7%	6 4.05%	7 4.7%	6 4.05%	3 2.02%	5 3.3%	13 8.7%	5 3.3%	3 2.02%	3 2.02%	4 2.7%	4 2.7%	148	10.50 **
12	33 19.1%	24 13.9%	5 2.9%	7 4.6%	8 4.6%	1 0.5%	6 3.4%	2 1.16%	14 8.1%	6 3.4%	12 6.9%	2 1.16%	1 0.5%	13 7.5%	8 4.6%	9 5.2%	8 4.6%	4 2.3%	4 2.3%	172 1152 Total	6.87 **
Chi-Square (X^2)	8.37 **	7.55 **	2.38 NS	4.58 *	2.41 NS	4.33 *	0.87 NS	0.90 NS	2.48 NS	0.97 NS	4.72 *	0.84 NS	0.77 NS	4.19 *	1.73 NS	1.66 NS	0.86 NS	0.71 NS	0.63 NS	--	--

* ($P<0.05$), ** ($P<0.01$), NS: Non-Significant

DISCUSSION

The Iraqi people are sometime colloquially, Mesopotamians or other people.[9] The total population of Iraq 38,872,655 according to the latest statistical data. The number of patients with cancer disease is also expected to increase in association with the increase of population. Cancer surveillance, a key attribute of epidemiology and public health practice, provides intelligence data on the burden of different types of cancer in a specified population and through evidence based on health programs, assesses the success of actions against cancer.[10] The study demonstrated that high prevalence in age groups (41-60y.) & (61-80y.) (42.7% & 36.02%) respectively than other age groups. Advanced age is important risk factor of cancer and associated with poor prognosis. Approximately half of all malignancies are diagnosed in patients older than (65 years).[11] Aging is a complex process that deeply affects the immune system. The decline of immune system with age is reflected in the increase susceptibility to disease, poorer response to vaccination, increase prevalence of cancer, auto-immune disease and other chronic diseases.[12] Aging also characterized by a progressive loss of physiological integrity leading to impaired function. This deterioration is the primary risk factor for major pathologies including cancer.[13]

The study revealed that Baghdad showed higher incidence of different cancer types (72%), then Dayala (7.6%), Anbar (4.6%), and Wasit (4.5%), as mentioned in the results. The increasing incidence in Baghdad due to high risk of exposure to different war contaminants because it's the political capital of Iraq. While Dayala, Anbar and Wasit beside the war factor, is the exposure to organo-chlorines which include pesticides which were used in agricultural process, these chemical as carcinogenic agents.[14] Also Baghdad has developed cancer detection centers more than the rest of governorates.

Gastrointestinal tract cancer showed high prevalence (26.8%), and then respiratory tract cancers (14.3%), then Uterine cancer (8.1%), then prostate cancer (6.1%) than other types. This higher incidence of gastrointestinal tract cancer is generally seen in high-income countries, while gastric and esophageal cancers are generally seen in low-income countries.[15] The gene expression pattern of human colon comprises a very heterogeneous group of disease driven by vast array mutations and mutagenes.[16] There are many predisposing factors in gastrointestinal cancers and Colon Rectal Cancer (CRC) which is age, Inflammation Bowel Disease (IBD), abdominal radiation, cystic fibrosis.[17]

Respiratory tract cancer usually uncommon in people younger than (55 years) as it's partly a disease of aging.[18] Other factors are high pollution due to diesel-fueled of electric generators that are present in Iraq and high traffic load.[19] Inherited variant alleles of the genes that encode glutathione-s-transferases (GSTM1 and GSTT1) protein involved in metabolism of tobacco carcinogenes (Cytochrome P450 – CYP 1Z1 genes) as well as other genes responsible for DNA damage repair are associated with increase susceptibility to respiratory tract cancer especially the lungs.[20] Respiratory tract cancer is the most commonly diagnosis cancer worldwide and the leading cause of mortality.[21] Uterine cancer is a top-ranking women cancer worldwide with wide increase variation across countries and by rural and urban area.[22] Abnormal uterine bleeding is most common presenting symptom for women diagnosed with endometrial cancer. Although genetic factors account for a small percentage of women.[23]

Prostate cancer develops in the gland of the male reproductive system.[24] Prostate cancer increase rapidly during the last few years, the heterogeneity in the genomic landscape of metastatic prostate cancer has become apparent through several comprehensive profiling efforts, but little is known about the impact of this heterogeneity on clinical outcome.[25] The gastrointestinal microbiome may help a role though metabolism of estrogen, an increase of which has been killed to the induction of prostatic neoplasia. Specific microbiota such as *bacteroides*, *streptococcus*, *fecalibacterium*, *prausnitzii*, *Mycoplasma genitalium*, has been associated with differing risk of prostate cancer development or extensiveness of prostate cancer disease. The microbiome has the ability to regulate chemotherapy of prostate cancer treatment.[26]

At the international level, the burden of cancer in absolute numbers continues to increase mainly due to the aging of population in many countries and the overall growth of the world population.

In addition changing lifestyle with increasing cancer causing behaviors, like cigarettes smoking, changing dietary habits and sedentary life are among other, major contibutory risk factors [27]. Some other factor like incomplete pregnancies and hysterectomy which affect ovarian cancer.[28] Obesity factor which increased risk for Hodgkin's Lymphoma (HL).[29] Radio frequency, or mobile phone possible carcinogenic to human and expose to gliomas and acoustic neuromas.[30]

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