Relationship between Age, Gender and ABO Blood Groups in Childhoods Cancer

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Abstract

Background: Cancer also known as a malignant tumor or malignant neoplasm, is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. Not all tumors are cancerous; benign tumors do not spread to other parts of the body. Many studies were summarized that strong correlation between the ABO groups and cancer. Types of childhood leukemia are more commune than other types of cancer.

Objective: To study the relationship between cancer and different parameters such as age, gender and ABO groups type in children.

Material and Methods: The study was conducted at cancer center in Al-Batool teaching hospital for maternity and children in Baquba city, during the period from August 2014 till July 2015, ages ranged between (1-15) year, were organized the patients by information form, diagram paper of development the disease, treatment program and other chemotherapy.

Result: A number was one hundred cases with different types of cancer, the results showed that high percentage (65%) of patients with cancer was males compare with females (35%) significance difference was noticed ($p<0.05$). Most cases (44%) in children was born O type group compare than other types of blood groups, (5%) had type AB, (24%) had type B and (27%) had type A. high percent of disease occur at age (1-5) year recorded differential significance ($p<0.05$).

Conclusion: Cancer rate was very high in males and in blood group type O, according to age most cases recorded in age group (1-5) years.

Key words: Childhood, ABO groups, cancer registry, incidence**.**

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Introduction

Cancer is one from a group of 100 diseases characterized by the uncontrolled growth of abnormal cells which divided without control and fast separation of new cells. Organs of the human body are made up of cells with normal division to produce new cells when the body needs them, If the body aren't' needed, they form a mass of excess tissue called a tumor; Tumors classified either non-cancerous or malignant (cancerous) [1]. Cancer cells can invade nearby tissues and can spread through the bloods stream and lymphatic system to other parts of the body [2]. The classification of cancers in children differs from adult; This Classification based on tumor morphology and in addition the site of the tumor [3].

High significant correlation was found between age and skin cancer in old patients 1.238 times higher risk with another ages, and further studies on blood group antigens are needed to explain the relationship between these antigens and skin cancer [4].

The new Para blood group antigens are the major alloantigens in humans body, presented on the surface of RBCs and various epithelial cells [5]. The changes in blood group antigens are an important factor of human cancer and the majority of cancers are derived from epithelial cells [6]. The relationship of cancer with blood groups were studied throw clinical pathology, incidence of the disease and prognosis in many cancers such as cardiac, esophagus, lung, gastric, laryngeal, hypo pharyngeal, salivary gland, gynecologic, colorectal, pancreatic, bone, urinary bladder, ureter, renal, breast, testicular tumors and uveal melanoma, prostate tumors [7].

Socioeconomic status is one of the risk factors for disease and ABO genes are distributed differently among socioeconomic groups [8]. Breast cancer no clear relationship was found with blood groups but in other cancers highest frequency occurred in blood group B [9]. In other study, there are strong correlations between the ABO group and breast cancer and the highest frequency was in blood group A [10].

Leukemia is more common of cancers in childhood, which accounts for 8% of leukemia's for people of all ages, but Myeloid leukemia accounted for 15.4% of all child hood leukemia, and monocytic 1.9%, Hodgkin's lymphoma 5.1% of all child hood cancers, nonHodgkin's lymphoma in clouding Burkett's lymphoma 5.3% and unspecified lymphomas 1.1% [11] . The causes of childhood cancers are largely unknown, only a small percentage of cases can be explained by a few conditions such as specific chromosomal/genetic abnormalities (e.g., Down's syndrome) and ionizing radiation exposure [12].

The aims of study to determine the relationships between cancer and different parameters such as age, gender and ABO groups type in children.

Material and Methods

This study carried out of (100) childhood outpatients infected by different types of cancers, were recording in cancer center of Al Batool teaching hospital for maternity and childhood in Baquba city in period from August 2014 till July 2015, ages ranged between (1-15) year, were organized the patients by information form, diagram paper of development the disease, treatment program and other chemotherapy.

Information form and diagram paper of child patient was including the following information age, gender, blood group and another questionnaire on details.

Diagnoses of disease was conducted in laboratory examination by physician depend on symptoms and clinical signs, biopsy (conduct osteotomy surgical operation), radiography class, ultrasonography, magnetic resonance imaging, chromosome karyotyping and gene examination.

Statistical analysis

Examination of data was performed using Chi-square, using a p-value ≤ 0.05 as a level of significance

Results

The results showed in table (1) demonstrated that high percentage (65%) of patients with cancer was males compare with females (35%) significance difference was noticed ($p<0.05$), and when compared males blood groups with females we showed high percentage (26%) of males born O+ type recorded the same significance, compare with another types of blood groups in male and female.

Table (1): Relation of gender, blood groups in study group.

Gender		O+	A+	B+	AB+	O-	A-	B-
Male	65%*	26%*	15 %	15 %	2 %	2 %	2 %	3 %
Female	35%	14%	8 %	5%	3 %	2%	2 %	1 %

*** Significance at level p< 0.05.**

Regarding blood groups, table 2 showed high percentage (44%) in child who born O type group compare with another blood groups in male and female, such as (5%) in type AB, (24%) type B and (27%) type A recorded differential significance p< 0.05 , although type A is dominant from another types in nature.

Table (2): Relation between blood group and cancer

Blood group AB	Blood group B	Blood group A	Blood group O
%5	%24	%27	%44 *

*** Significance at level p< 0.05.**

Table 3 and 4, the results showed a high percentage (24%) in child born O+ type and (58%) at age (1-5) year recorded differential significance (p<0.05), the causes are increased in age (1-5) year, related to low immunity level in this period and more with acute lymphoblastic leukemia in this age compared with other cancers and ages.

Table (3): Relation of blood groups, child ages and cancer

Age	O+	A+	B+	AB+	O-	A-	B-
(1-5)	24% *	11 %	9 %	4 %	3%	4 %	3%
(6-10)	19 %	5 %	4 %	1 %	1 %	1%	1 %
(11-15)	6 %	6 %	8 %	-	-	-	-

*** Significance at level p< 0.05.**

Table (4): Relation of blood groups, cancer and ages

Age from (1-5) years	Age from (6-10) years	Age from (11-15)years
58% *	%22	%20

Discussion

This result showed high correlation between gander and different cancers, male childhood is more affected by cancers rather than female, this result was agreement with study done by Peter (2010) who reported that childhood cancer incidence and survival rates as well as time trends and geographical variation, at 12%, represent the largest diagnostic groups among the under 15-year olds. The most frequent single diagnoses are: acute lymphoblastic leukemia, astrocytoma, neuroblastoma, non-Hodgkin lymphoma, and nephroblastoma.

Our results showed high percentage 26% of patients male born group type O+, this results was disagreement with study of Sahar *et al.*, (2013) who referred to

distribution ABO blood groups among patients with breast cancer was as follow: blood group type (A) 64% (160), blood group type (O) 18% (45), (B) 9.6% (24) and (AB) 8.4% (21) in Kirkuk Governorate.

High percentage (44%) in child patient who born O type group although type A is dominant from another types in nature, comparative with another blood groups in male and female, this result was unacceptable with study done by Steliarova-Foucher *et al.*, (2005) who found type A is more in breast cancer [10].

This may be related with genetic factor and mutations which leading to changes in blood groups as well as effecting like of radiation on chromosomal genetic abnormalities

About incidence of cancer in group A more than another groups and showed a high percentage (24%) cases was born O+ group and (58%) was at age group (1-5) year and the causes are increased of infection in age (1-5) year, this related to increase of exposure of child to infection with low body immunity level in this period such as acute lymphoblastic leukemia, this study summarized and agreement with [12].

In conclusion, cancer rate was very high in males and in blood group type O, according to age most cases recorded in age group (1-5) years.

In recommendation more studies are need about this decline, many programs required to protect the environment from radiation and other factors that effect on human health.

References

[1] Costantini M, Fassio T, Canobbio L, *et al.* Role of blood groups as prognostic factors in primary breast cancer Oncology 1990;47(4):308.

[2] NCI. Dictionary of cancer terms. 2004. http:// www.cancer.gov/dictionary/.

[3] Stellarova-Foucher, E, Stiller C, Lacour B and Kaatsch P. International Classification of Childhood Cancer, Third Edition.Cancer.2005; 103(7):145.

[4] Dabelsteen E. Cell surface carbohydrates as prognostic markers in human carcinomas. J Pathol 1996; 179:358-69.

[5] Lee JS, Ro JY, Sahin AA, Hong WK, Mountain CF *et al.* Expression of blood-group antigen A-a favorable prognostic factor in non-small-cell lung cancer. N Engl J Med 1991; 324:1084-90.

[6] Coon JS, Weinstein RS. Blood group-related antigens as markers of malignant potential and heterogeneity in human carcinomas. Hum Pathol.1986;17:1089-106.

[7] Su M, Lu SM, Tian DP, Zhao H, Li XY, Li DR, Zheng ZC. Relationship between. ABO blood groups and carcinoma of esophagus and cardia in Chaosan inhabitants of China. World J Gastroenterol.2001; 7: 657-661.

[8] Gunjan Sharma, Ruchira Choudhary and Deepak Bharti. 129 Studies Showing the Relationship between ABO Blood Groups and Major Types of Cancers . Asian J Exp Sci. 2007; 21(1):129-132.

[9] Sahar MZ, Maran MS and Vaz AA. The Association and Relation of ABO Blood Group with the Breast Cancer in Kirkuk Governorate. Diyala Journal of Medicine. 2013; 5(1): 108- 113.

[10] E Steliarova-Foucher, C Stiller, B Lacour, P Kaatsch-Cancer. Wiley Online Library. You have free access to this content. Cancer .2005; 103 (7).

[11] Peter Kaatsch.Epidemiology of childhood cancer. Cancer treatment prevention 2010; 36 (4): 277–285.

[12] NCI. Surveillance, Epidemiology, and End Results (SEER) Program SEER Stat Database: Incidence - SEER 9 Regs Limited-Use, 2011.
http://seer.cancer.gov/canques/incidence.html