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Detection of Human Herpesvirus 8 Antibodies in Women with Breast Cancer in Kirkuk city

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ABSTRACT

The aim of the study is to evaluate the seroprevalence of human herpes virus type 8 (HHV-8) in women with breast cancer. The study has been conduct in Kirkuk city for the period from January 1, 2019 to April 1, 2019 on 50 breast cancer women with age group 21-70 years. The study has also included 40 healthy women as control group. The study included the collection of 3 ml of venous blood for identification and measurement of IgG antibodies towards the HHV-8 by using ELISA technique (KomaBiotech, Co, USA). The study also included taking of full information from cases like living situation, age. The study showed that the maximum frequency of HHV-8 infection (34%) recorded among breast cancer women comparing with the control group (10%), with highly significant relation. The majority of breast cancer women with positive IgG were within the age group 51-60 (41.18%) and the lowest rate was in the age group 21-3 years. The study showed that the maximum frequency of HHV-8 infection in breast cancer women was found in women with 2nd stage of breast cancer (58.83%) and the lowest rate was in the 1st stage. The highest rate of HHV-8 infection in breast cancer women (76.47%) were with metastasis to neighbor lymph nodes while compared with 23.53% without metastasis while all breast\t cancer women with HHV-8 negative were without metastasis. It has concluded that there was significant association between HHV-8 infection and occurrence of breast cancer and high rate of this infection has related to metastasis.

Keywords: HHV-8; Breast cancer; Kirkuk.

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الكشف عن الاجسام المضادة لفيروس الهربس البشري نوع 8 في النساء المصابات بسرطان الثدي في مدينة كركوك

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الخلاصة

كان الهدف من هذه الدراسة هو دراسة الانتشار المصلي لفيروس الهربس البشري نوع 8 لدى النساء المصابات بسرطان الثدي. أجريت الدراسة في مدينة كركوك للفترة من 1 يناير 2019 إلى 1 أبريل 2019 على 50 امرأة مصابة بسرطان الثدي مع الفئة العمرية 21-70 سنة. وشملت الدراسة أيضا 40 امرأة صحية كمجموعة سيطرة. تضمنت الدراسة جمع 3 مل من الدم الوريدي لتحديد وقياس الأجسام المضادة لـ IgG تجاه HHV-8 باستخدام تقنية ELISA . وشملت الدراسة أيضا أخذ معلومات كاملة من حالات مثل الوضع المعيشي ، والعمر. وأظهرت الدراسة أن اعلى نسبة للاجسام المضادة تجاه الفيروس (34%) تم تسجيلها بين النساء المصابات بسرطان الثدي مقارنة مع مجموعة السيطرة (10 ٪) ، مع وجود علاقة كبيرة للغاية. كانت غالبية النساء المصابات بسرطان الثدي مع وجود الاجسام المضادة لفيروس الهربس البشري نوع 8 كانت ضمن الفئة العمرية 51-60 (41.18 ٪) وكان أدنى معدل في الفئة العمرية 21-3 سنة. وأظهرت الدراسة أن الحد الأقصى لتكرار الإصابة بفيروس HHV-8 لدى النساء المصابات بسرطان الثدي وجد لدى النساء المصابات بالمرحلة الثانية من سرطان الثدي (58.83٪) وأدنى معدل كان في المرحلة الأولى. كانت أعلى نسبة للإصابة بفيروس HHV-8 عند النساء المصابات بسرطان الثدي (76.47 ٪) اللاتي لديهن انتشار للورم في الغدد الليمفاوية المجاورة مقارنة مع 23.53 ٪ النساء اللاتي ليس لديهن انتشار للورم في حين أن جميع النساء المصابات بسرطان الثدي مع HHV-8 سلبية لم يكن لديهن انتشار للورم . ويستنتج من الدراسة ان هناك علاقة كبيرة بين عدوى HHV-8 وحدوث سرطان الثدي وارتفاع معدل هذه العدوى كان مرتبطا بانتشار الورم وسوء الحالة المرضية

الكلمات المفتاحية: HHV-8 ؛ سرطان الثدي؛ كركوك.

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1. Introduction

Breast cancer is the most common female cancer worldwide and the second leading cause of cancer death (after lung cancer) [1]. Through decades of research, factors including family history of breast cancer in first-degree relatives, benign breast disease, mammographic density. endogenous hormone levels, younger age at menarche, low parity, older age at first birth, older age at menopause, postmenopausal hormone use, ionizing radiation exposure, height, high postmenopausal body mass index. Low premenopausal body mass index have established as risk factors of breast cancer [2]. A family history of breast and/or ovarian cancer is also an important risk factor, indicating that the inherited genetic background of the individual plays a crucial role in breast cancer development in up to 27% of patients [3]. Carriers of mutated BRCA1 and BRCA2 genes are at a very high risk of getting breast carcinoma, but they represent only a small proportion of women with this disease. An association of human herpesvirus (HHV)-8 with breast cancer has also been suggested [4]. In addition, herpes simplex virus (HSV)-1 DNA is detected in some of the tissues from patients with breast cancer or fibroadenoma [5]. Several factors make HHV-8 a reasonable candidate for breast cancer [6], HHV-8 can infect and replicate in epithelial cells [7]. The aim of the study is to evaluate the seroprevalence of HHV-8 in women with breast cancer.

2. Material and Methods

The study is conduct in Kirkuk city for the period from January 1, 2019 to April 1, 2019 on 50 breast cancer women with age group 21-70 years. It has included 40 healthy women as control group. The study included the collection of 3 ml of venous blood for identification and measurement of IgG antibodies towards the HHV-8 by using ELISA technique (KomaBiotech, Co, USA). The study also included taking of full information from cases like living situation, age.

2.1. Statistical Test

The study and analysis of the results is carry out using SPSS version 22.1, which included the extraction of the P. value, which indicates the level of the difference between all the subjects in the study. $P<0.01$ considered significant.

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3. Results

Table 1 shows that the maximum frequency of HHV-8 infection (34%) is record among breast cancer women comparing with the control group (10%), with highly significant relation.

Table 1: Seroprevalence of HPV in aborted and pregnant women.

HHV-8 IgG Abs	Breast cancer women		Control group		P. value
	No.	%	No.	%	
Positive	17	34	4	10	0.007
Negative	33	66	36	90	
Total	50	100	40	100	

Figure 1 shows the majority of breast cancer women with positive IgG are within the age group 51-60 (41.18%) and the lowest rate was in the age group 21-3 years.

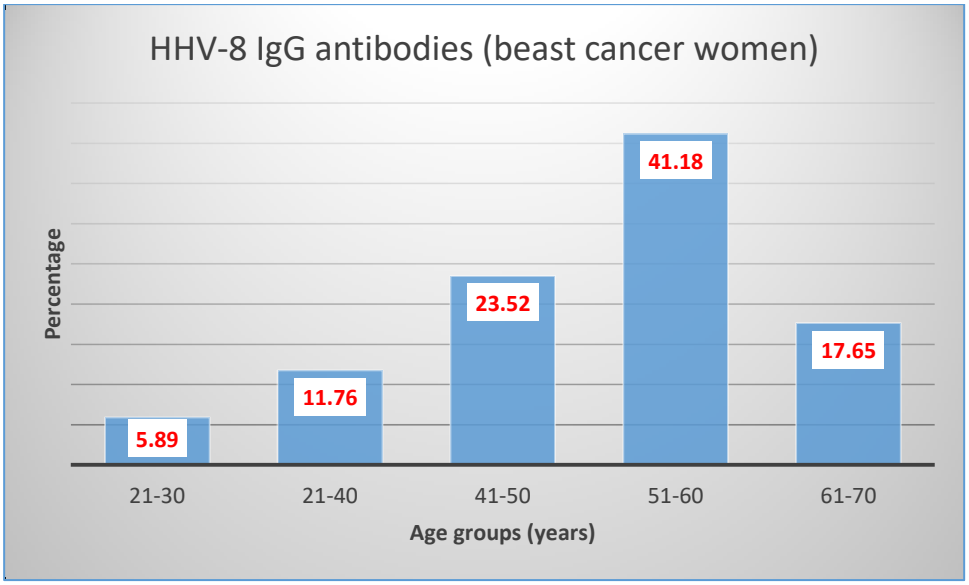

Figure 1: Distribution of breast cancer women with positive IgG according to age groups

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The study showed that the maximum frequency of HHV-8 infection in breast cancer women was found in women with 2nd stage of breast cancer (58.83%) and the lowest rate was in the 1st stage, Figure 2.

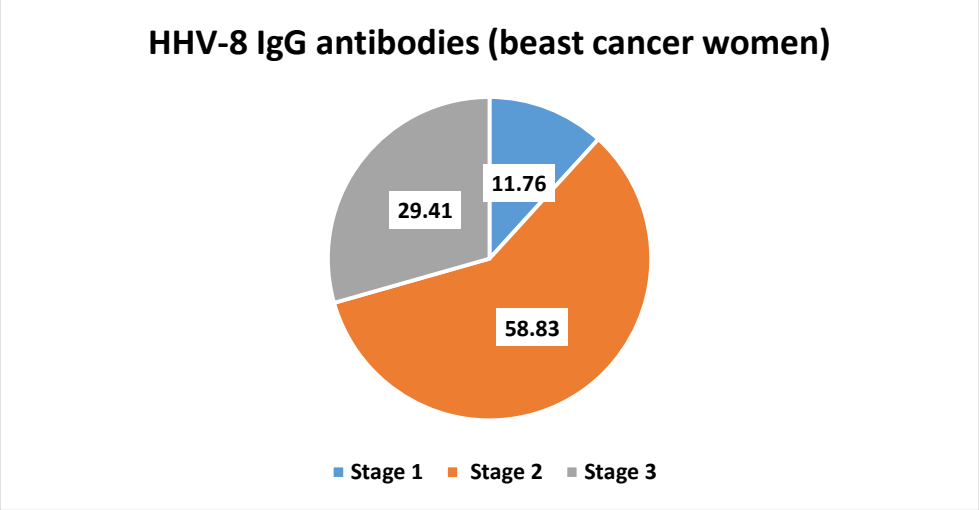

Figure 2: Distribution of HHV infection breast cancer women in according to stage of cancer

Figure 3 shows that the highest rate of HHV-8 infection in breast cancer women (76.47%) were with metastasis to neighbor lymph nodes while compared with 23.53% without metastasis while all breast\t cancer women with HHV-8 negative were without metastasis

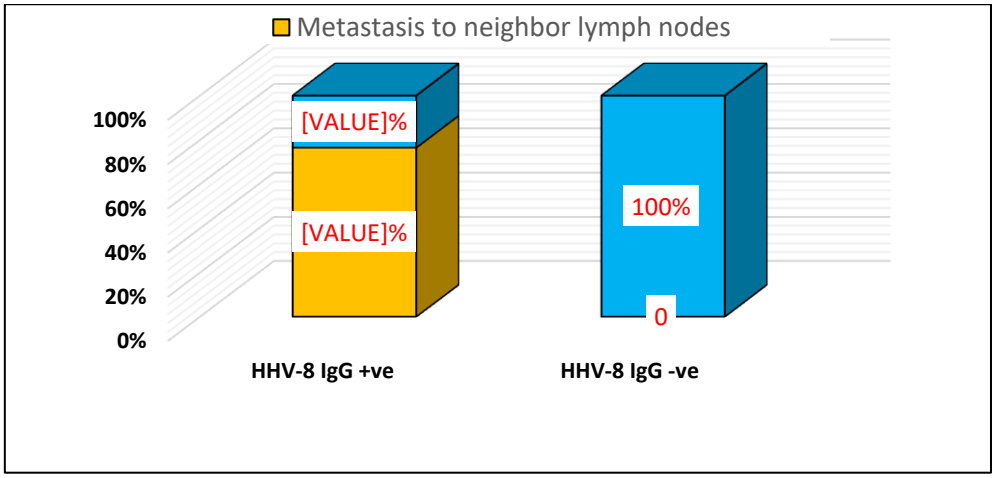

Figure 3: Distribution of HHV infection breast cancer women in relation to metastasis to neighbor lymph nodes.

4. Discussion

The virus known as HHV-8, also known as Sarcoma-associated virus is the eighth type of the herpesvirus family and is a common cancer in AIDS patients, as well as the most important etiological cancer of primary lymph nodes and some types of recurrent Castleman disease. Books and studies have indicated that this virus has a wide alkalam in causing crabs over the past decades to [8]. As in previous studies, the HHV-8 virus has a strong and positive relationship in the formation and development of cancerous tumors in and adjacent lymph nodes [9], although there is no evidence of association with uterine cancer and its associated sites [6,10]. Several studies have indicated that the HHV-8 virus has been found and found DNA in breast tissue for patients with cancer in many studies [5,8]. Newton *et al.* [3] The HHV-8 virus is demonstrate by detecting the presence of antibodies in the serum of women with breast cancer. Separately, another study revealed that the HHV-8 virus had a frequent presence in patients' tissues, where it is detect by the EBV method [11]. Other researchers said that the HHV-8 virus had a strong positive association with breast cancer and that its presence was directly proportional to the progression of the disease and the spread of the tumor to nearby lymph nodes [12]. The seropositivity of HHV-8 is different with age-explicit gatherings. As opposed to a few epidemiological examinations did in various locales that have recorded high paces of HHV-8 with advancing age[13,14], this might be identified with an uneven appropriation over the populace in different land zones, and that the pediatric age gatherings were avoided on the grounds that every one of the members were grown-up women[15]. The examination results are bolster by an investigation did in Uganda demonstrating a huge decrease in the pervasiveness of HHV-8 with an expanding age among women [16]. The present examination demonstrates a modestly critical relationship concerning HHV-8 antibodies among the ladies with bosom malignancy in connection to age, which might be credited to the unsettling influences in their immunological reactions, notwithstanding the

expanded pressure prompting the reactivation of quiet HHV-8 diseases or encouraging new HHV-8 contaminations. The present examination uncovered a high level of ductal carcinoma when contrasted and different kinds of bosom disease, and that the vast majority of the patients were in stage II. Comparative outcomes were acquired from the Iraqi national bosom disease explore unit documents [17]. The blood transfusion history showed a positive association with the HHV-8 serostatus among the immunocompromised beneficiaries. One conceivable speculation is that in influenced nations there exists a functioning viral flow, intense diseases with lytic viral replication, and higher blood viral burdens. Despite what might be expected, in non-endemic areas, sound immunocompetent people who are HHV-8 seropositive may harbor dominatingly dormant HHV-8 tainted cells that would not experience lytic replication except if presented to explicit upgrades. By and by, if both the lytic and dormant cycles happen simultaneously, the viral burden might be low and every now and again underneath the discovery edge. Additionally, there might be an absence of a leukodepletion convention in the blood segments in the blood donation center procedure, except if it is demonstrated for sure in danger patients [18,19].

5. Conclusions

It is conclude that there is significant association between HHV-8 infection and occurrence of breast cancer and high rate of this infection is relate to metastasis.

6. References

[1] P.F. Coogan,, L.F. White,, , T.J. Adler, K.M. Hathaway, J.R. Palmer, and Rosenberg, L., "***Prospective study of urban form and physical activity in the Black Women's Health Study",*** American journal of epidemiology , 170 (9), 1105, (2009).

[2] Q. Huo, N. Zhang and Q. Yang," ***Epstein-Barr virus infection and sporadic breast cancer risk: a meta-analysis***". PloS one, *7*(2), e31656 (2012).

[3] R. Newton, J. Ziegler and D. Bourboulia, ***"The sero-epidemiology of Kaposi's sarcoma-associated herpesvirus (KSHV/HHV-8) in adults with cancer in Uganda",*** Int. J. Cancer. 2003;103:226–232.

[4] J.H. Tsai, S.J. Lin, F.L Xu, and Yang C.C, ***"Association of viral factors with non-familial breast cancer in Taiwan by comparison with non-cancerous; fibroadenoma; and thyroid tumor tissues***" J. Med. Virol, 75:276 (2005)

[5] IARC ***"Kaposi's sarcoma herpesvirus IARC Monogr Eval Carcinog Risks Hum"***, 100B: 169 (2012).

[6] Cerimele F., Curreli F., Ely E., Friedman-Kien A. E., Cesarman E. and ***Flore O ,"Kaposi's sarcoma associated herpesvirus can productively infect primary human keratinocytes and alter their growth properties",*** J. Virol., 75: 2435 (2001).

[7] Akula, S. M. Naranatt, P. P. Walia, N. S. Wang, F.-Z. Fegley, B., and Chandran, B. ***"Kaposi's Sarcoma-Associated Herpesvirus Human Herpesvirus 8) Infection of Human Fibroblast Cells Occurs through Endocytosis",*** Journal of Virology, 7714), 7978 (2003).

[8] A. Richardson, "***Is breast cancer caused by late exposure to a common virus?"*** Med. Hypotheses, 48:491 (1997)

[9] J.G. Baseman and L. Koustsky, ***"The epidemiology of human papillomavirus infections",*** J. Clin. Virol 32:16(2005).

[10] J.S. Smith, L. Lindsay, B. Hoots, J. Keys, and S. Franceschi, ***"Human papillomavirus type distribution in invasive cervical cancer and high-grade cervical lesions: a meta-analysis update***. Int. J. Cancer, 121:621(2007).

[11] Y. Yang, L. Koh and J. Tsai, ***"Correlation of viral factors with cervical cancer in Taiwan***", J. Microbiol. Immunol. Infect, 37:282 (2004).

[12] E.F.Wong, S.J. Lin, and C.C. Yang, ***"Involvement of HHV-8 in breast cancer",*** J. Virol, 13:133(2008).

[13] P. Edoardo, ***"Human Herpesvirus-8 and other viral infections, Papua New Guinea***", Emerging Infectious Diseases, 12(2): 137(2003).

[14] F.M. Shebl, Sh.Dollard, R. Pfeiffer, and Biryahwaho, ***"Human Herpesvirus 8 Seropositivity Among Sexually Active Adults in Uganda",*** PLoS One.; 6(6): 21286 (2011).

[15] F. He, X. Wang, B. He and Z. Feng, ***"Human herpesvirus 8: serovprevalence and correlates in tumor patients from Xinjiang",*** China.J Med Virol, 79(2): 161 (2007).

[16] M. Wawer, S. Eng, D. Serwadda, N. Sewankambo, and R.H. Gray, "***Prevalence of Kaposi Sarcoma-Associated Herpesvirus compared with selected sexually transmitted diseases in adolescents and young adults in rural Rakai district, Uganda",*** STD 28(2): 77 (2001).

[17] T.Y. Elyass, ***"Molecular study of Human Mammary Tumor virus and immunohistochemistry of hormonal receptors in women with breast carcinomas"***. MSc. thesis, College of Medicine, Baghdad (2012).

[18] X. Wang, T. Liu , H. Deloshi, ***"Human herpesvirus-8 in north western China: epidemiology and characterization among blood donors",*** Virology Journal, 7: 62 (2010).

[19] C. Sosa, J. Benetucci, C. Hanna, L. Sieczkowski, and G. Deluchi, ***"Human herpesvirus8 can be transmitted through blood",*** Medicina(Buenos Aires), 61(3): 291 (2001).