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ROLE OF HERPES SIMPLEX VIRUSES IN BENIGN AND MALIGNANT THYROID TUMOURS IN IRAQ PATIENTS

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ABSTRACT

The present study aimed to investigate the relationship Herpes simplex viruse (HSV) with thyroid tumors. The study was conducted for the period from 2017/9/1 to 2018/6/10 and included 100 of the Infected of both sexes and different ages of the auditors to the Baquba Teaching Hospital and laboratories of external tissue diseases in the Diyala/Iraq Formed benign tumors of the thyroid gland 70% (70 samples), while samples formed malignant tumors (a thyroid carcinoma glandular papillary and follicular carcinoma thyroid communities) rate 30% (30 samples) of malignant tumor samples studied. The present study showed that 84% from benign tumors of the thyroid gland which covered the study were in female and rate 15.7% were in males, while all malignant thyroid gland tumors which covered the study were in female and no male cases were reported. Also the results of the distribution of tumors on the age groups showed that benign tumors in the age group (39-30) formed rate 37.1% from benign tumors which covered the study, followed by age groups (20-29, 40-49, 50-59 and >60) where rates were 28%, 22.9%, 7.1%, and 4.3%, respectively), where the age group (30-39) was more preparing to be infected, while the results of the distribution of malignant tumors on age groups showed the age group (29-20) and the age group (39-30) included a large proportion of malignant tumors of the thyroid gland 26.7% for each. Demonstrated the detection of the Herpes simplex virus I type and II type by polymerization reaction (PCR) that 21.4% of the samples of the benign tumors tissue of thyroid gland was carrying the simple virus type I, and was 20% of the samples of malignant tumors tissue of the thyroid gland carrying the virus type I and there was without significance different between the two types of tumor in the spread of the simple type I virus in the tumors tissue.Either at detection

on second type of virus was not reported found virus in any of the benign tumors of the thyroid gland. While 16.7% of the malignant tumors samples carried the Herpes simplex virus the second type, the difference between the two types of tumor in the spread of the Herpes simplex virus the second type was highly significant ($p<0.01$). As it was 13.3% of the malignant tumor tissue samples of the thyroid gland simultaneously contained both types of virus I and II with significant difference ($p<0.01$). The important point here is in the presence of the second type of virus in malignant tumors only and its possibility to coincide with the first type of the same tumor which may be It has a causal relationship with malignant tumors of thyroid gland.The present study showed that there was a relationship between gender and type of virus, which was more prevalent in females compared with males, the prevalence of the first type in females was 81.0% while 19.0% in males, while the prevalence rate of type II virus in females was 100%, there was no male infection reported, and all cases of synchronization of two types of virus in the tumor female samples 100%, There was no significant difference in the spread of the two types of virus in the tumor tissue. Either regarding the age groups, that the age group (30-39) include the most common cases of virus were the first type rate 38.1%, while the rate HSV- 2 was more prevalent in the age groups (20-29) and (30-39) where was 40% for both them, either synchronize the two types of the virus was spread more in the age group (30-39) was 50% and there was no significant difference in the prevalence of the two types of virus in the tumor tissue.

KEYWORD: human herpes viruses (HSV), Thyroid tumours.

INTRODUCTION

The herpes large viral families , which includes more than200species viruses, as it has widespread And infect different group such as, birds, reptiles, amphibians, fish and bivalves as there are kinds of what classification within the bacteria phages.[1] Worldwide rates of either HSV-1 or HSV-2 are between 60 and 95% in adults.HSV-1 is more common than HSV-2,with rates increasing as people age.[2] herpes simplex viruse world spread no specific season of infection.[3] HSV-1causes orofacial and genital infections.HSV-2causes primarily genital infection, Viral replication occurs in ganglia, viruse spread to other mucosal surfaces through peripheral sensory nerves.[4] Thyroid cancer is considered the most common malignancy that affects the endocrine system. Generally, thyroid cancer derives from follicular epithelial cells, and thyroid cancer is divided into well-differentiated papillary (80% of cases) and follicular (15% of cases) carcinoma.[5] In Iraq thyroid cancer ranks the eighth

among commonest ten cancer in females.[6] HSV have been associated with various human malignancies and with thyroid autoimmunity, presence of these viruses in blood and thyroid tissue.[7] The incidence rates in thyroid cancer gradually increased in both women and men and in different age groups but Women are three times more likely than men.[8] The thyroid is a major human endocrine gland that controls metabolism, heart rate, blood pressure and temperature.[9] HSV DNA was detected in thyroid samples from patients with autoimmune disorders.[10] Detection DNA of viral in both benign and malignant thyroid lesions, as well as the expression of nectin-1 is mediator to entry viral , in the thyroid tissues and cancer cell lines.[11] Data from the above-mentioned studies have revealed that thyroid cancer specimens and small biopsy has been achieved using polymer chain reaction PCR High sensitivity to detection DNA viral.[9] There are several indicatorsof a possible role for viruses in thyroid cancer. Activation of virus inducible signalling pathways such as Toll-like receptor (TLR) signalling has been shownin papillary thyroid carcinoma.[12] Iraq, when several studies on the presence of a virus were detected Human parvovirus B19 in the Samples taken from patients with thyroid cancer.[13,14] This study aimed to Detection of DNA herpes simplex viruse type1 and2 In tumor tissue in patients with thyroid tumors using Polymerase Chain reaction PCR. Study of the relationship between the infection of the herpes simplex viruse type Iand2 withe Demographic factors such as age and sex in addition to their relationship with the type of tumor

MATERIALS AND METHODS

Human thyroid tissue samples

The sample type is a tissue that is placed as a sample of the tumor tissue After getting it from Processes hall or When sent to laboratory in the tube contein normal slain And shall be kept in the freezer Until the completion of the pathologist to diagnose the tumor tissue, which was in accordance with the standards of the World Health Organization(WHO,2004) Where it was divided Samples into two groups of benign tumor sample(70)sample And samples malignant tumors(30)sample .The study did not include the collection of tissue samples from healthy tumors because This is due to the lack of authorization from the committee of ethical approvals so as He did not risk with drawing the unwarranted tissue biopsy.

Extraction DNA

Table1. Primers used for HSV DNA amplification(Jensen etal.,2010)

primer	Gene
Forward	Reverse
HSV-1 TACGACGGCCAGCAGATCCGCGTC	CCCCCCCGGCGCCCCTAAATCG
HSV-2 ATCAACTTCGACTGGCCCTT	CCGTACATGTCGATGTTCAC

Genomic DNA was obtained from fresh thyroid tissue. The Pinpoint Slide DNA Isolation System was used to extract the DNA according to the manufacturer's instructions. The HSV DNA polymerase gene was amplified by PCR with two sets of HSV1 or HSV2 specific primers (Table1). For HSV1 detection, the amplification was performed for 40 cycles at 94 ◦ C for 30 s, 58 ◦ C for 30 s, and 72 ◦ C for 30 s. To detect HSV2, amplification was performed for 40 cycles at 94 ◦ C for 30 s, 61 ◦ C for 30 s, and 72 ◦ C for 30 s .Kit DNA exteraction from (Promega–USA)

RESULTS

Thyroid tissue samples from 100 patients(70) benign and (30) malignant tumours were examined for HSV1 and HSV2 DNA polymerase by PCR the results HSV1and HSV-2 from thyroid tissues Table 2, Figure 1. Agarose gel electrophoresis of PCR HSV-1in Benign tumours, Figure 2 Agarose gel electrophoresis of PCR of HSV-1inmalignant, and Figur 3. Agarose gel electrophoresis of PCR of HSV-2 in malignant tumour.

Table. 2. HSV1 and HSV2 DNA amplification in human thyroid.

Type tumore	Sample positive of (No.)% HSV-1	Sample positive of HSV-2 (No.1)%	Sample positiveof both HSV(No)%
Bengin	(15/70) 21.4%	0/70)0.0%	0/70)0.0%
Malignant	(6/30)20%	(5/30)16.7%	(4/30)13.3%
pvalu	p>0.05	p<0.05	P<0.05

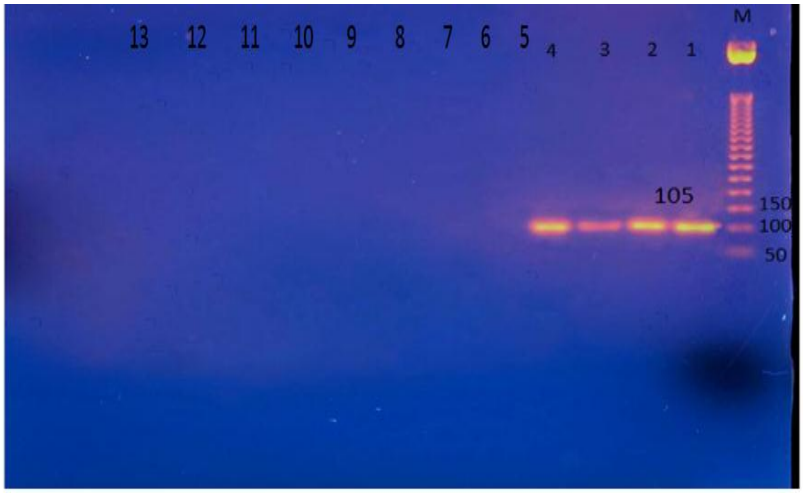

Figure. 1. Agarose gel electrophoresis of PCR products detection herpes simplex viruse-1 in Malignant. (1, 13) DNA ladder; (1,2,3,4) positive, negative (5,6,7,8,9,10,11,12,13) ,pb105 .

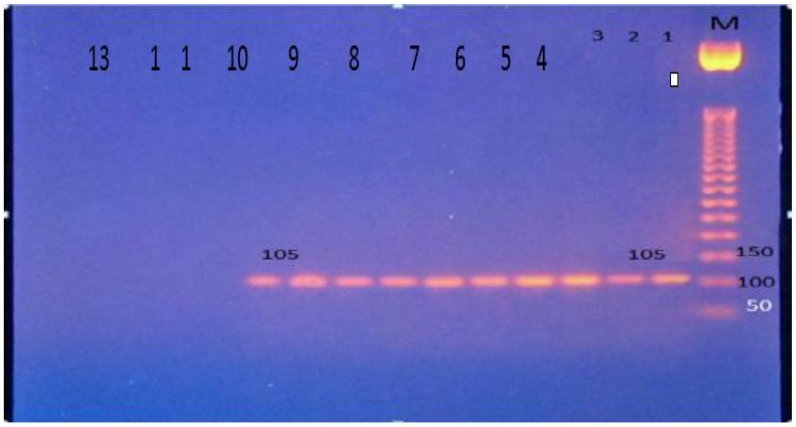

Figure. 2. Agarose gel electrophoresis of PCR products detection herpes simplex viruse-1 in benign tumor. (1, 13) DNA ladder; (1-10) positive, negative (11-13) ,pb105.

Figure. 3. Agarose gel electrophoresis of PCR products detection herpes simplex viruse-2 in malignant tumor. (1, 13) DNA ladder; (1,2,11,12,13) positive, negative (3-10) ,pb179

-pathological characteristics and HSV status in patients with thyroid cancer Clinico.

Table. 3. Clinico-pathological characteristics and HSV status in gender patients with thyroid.

Type viruse	Male	Femal	Total	
Hsv-1 Number	19.0% (4\100)	81.0% (17\100)	100% (21/100)	p>0.05
Hsv-2 Number	0.0% (0/100)	100% (5/100)	%0.0 (0/100)	
Hsv-1&hsv-2	0.0% (0/100)	100% (4/100)	100% 4/100	

Table. 4. Clinico-pathological characteristics and HSV status in age patients with thyroid tumor.

viruse	Group age						
	(20-29)	(30-39)	(40-49)	(50-59)	60>	Total	
HSV-1 Number	28.9% 6	38.1% 8	19.0% 4	14.3% 3	0.0% 0	100% 21	P>0.05
Hsv-2 Number	40.0% 2	40.0% 2	0.0% 0	20.0% 1	0.0% 0	100% 5	
HSV-1&HSV-2	25.0% 1	50.0% 2	%0.0 0	25.0% 0	0.0% 0	100% 4	

Table. 5. Clinico-pathological characteristics and status gender patients with thyroid tumor.

Tumor	Male	Femal	Total	
Benign Number	**15.7% 11**	**84.3% 59**	**100% 70**	**p<0.05**
Malignant Number	**0.0% 0**	**100% 30**	**100% 30**	

Table. 6. Clinico-pathological characteristics and status in age patients with thyroid tumor.

Viruse	Group age						
	(20-29)	(30-39)	(40-49)	(50-59)	60>	Total	
HSV-1 Number	28.6% 6	38.1% 8	19.0% 4	14.3% 3	0.0% 0.0	100% 21	p>0.05
HSV-2 Number	40.0% 2	40.0% 2	0.0% 0	20.0% 1	0.0% 0	100% 5	
HSV1&HSV-2 Number	25.0% 1	50.0% 2	0.0% 0	25.0% 1	0.0% 0	100% 4	

DISCUSSION

The study was not conducted in Iraq about herpes simplex viruse HSV But there has been a study of thyroid tumors in another family virus(*Parvoviridae)* is viruse B19 Where used shaghat and group immunohistochemistry (IHC) Technique To shown that thyroid tumors are

infected with a virus B19to positive benign tumor B1948.4% (40\20), 66%(35 /53) of malignant thyroid tumors.[13] in world, Previous studies have shown Jensen and group In benign tumor, HSV1 DNA was detected in 11/44 (25%) and HSV2 DNA was detected in 1/44(2%). HSV2 DNA was thyroid tumor was significantly higher compared with benign tumor (p <0.001).[11] Italian shown Almeida and group using Serological analysis to detection HSV-2in the benign tumor 28%(23/83), malignant thyroid tumors18%(18/100), also shown thyroid tumor infected with other viruse EBV and CMV those detection by Serological analysis in benign tumor was positive 97%,91% Respectively, , And in malignant tumor serological detection was positive 98%,88% Respectively.[6]

Did not study in Iraq about the relationship of the herpes simplex viruse with gender in thyroid tumors But there is a study in Iraq about a relationship herpes simplex viruse -1 with gender on in dermal lesion s Shown Al kafaji and group a However, 31 cases (65.96%) was from females community, while 16 cases (34.04%) were males.[15] The results of this study was the same tendency recorded in the current study towards the increase in the rate of infection with the herpes simplex viruse type in females Compared with males ,in world Jensen and group when detection herpes simplex viruse In male rotia herpes simplex -1 14\1,HSV-2 2/14,HSV-1&HSV-2 0/3.[11]

Corelation herpes simplex viruse , Did not study in Iraq about the relationship of the herpes simplex viruse with age group in thyroid tumors But there is a study in Iraq about a relationship herpes simplex viruse -1 with age group on dermal lesions ,Shown Al-Kafaji and group The HSV1 infection was more dominant in 21-25 years age group, it comprised 44.7% of the total positive cases, followed 15-20 years age group.[15] In the world shown Jensen and group correlation age group with herpes simplex viruse -1 47.6±16.8,also HSV-245.5±10.9 ,while HSV-1&HSV-2 43.3±14.9.[11]

In this study, polyps formed more than double the number of malignant tumors, benign tumor(70%), of malignant thyroid tumors(30%) in sample study , he increase in benign tumors compared to malignant tumors of the same or the same is logical for a qualitative universe Note that this study was not targeted epidemiological Prevalence thyroid tumor in the social Iraq, but some study about thyroid tumor in the Iraq ,shown M o hammed and group The malignant tumor were more common 23 (64%), while benign were 12 (28) ,also show Thirty five of Iraqi patients with thyroid tumors are study . Patient's age ranged from (20-75) years with a mean of 36.91±11.17 years.[16] Shaghat and group reported The age of

patientswith malignant thyroid tumors was (40.6+11.63). The age of patients with benign thyroid tumors was (37.6+11.19) years, Regarding gender distribution of the study cases, out of 53malignant thyroid tumors patients 44 (77.4%) were females and 12 (22.6%) were males.[13] in the world show Kilfoy and group thyroid cancer rates have increased from 1973–1977 to 1998–2002 for most of the populations of ez Americas , in which the incidence rates decreased about 18% for both males and females. The average increase was 48.0% among males and 66.7% among females.[17]

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