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IMMUNOLOGICAL STUDY OF HUMAN PAPILLOMAVIRUS ASSOCIATED WITH TRICHMONAS VAGINALIS INFECTIONS ISOLATED FROM WOMEN WITH CERVICITIS

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Abstract

A total of 100 samples were divided into 50 samples of infected patients and 50 as a control group. They were collected from women attended to Al- Elwea Hospetal for delivery during the period from March 2021 to February 2022. According to the results in our study, the mean and SD of patients (M±SD) was 34.82±11.004 compared to the control group (40.160±13.69), (SN). The Mean±SE of Papilloma IgM was (96.41±3.69) in comparison to the controls (19.14±1.009), with highly significant differences (P=0.001). The Mean±SE of pap IgG was (68.70±6.90) compared to the healthy controls (19.58±0.95) with (H.S). While the Trichomonas- IgM mean and SD was (1.53±0.19) compared to the control group (0.09±0.02) with (H.S). Also the Trichomonas- IgG Mean±SE was (9.56±1.22) compared to the healthy control (0.07±0.016) with (H.S), (P<0.001). The No. and rate of Papiloma-IgM was 19 (54.3%) , and with Trichmonas infections-IgG was 50 (100.0%), (S>N), (p=0.9). The No. and rate of Papiloma-IgG was 14 (36.8%), and with Trichmonas infections-IgM was 50 (100.0%) with a (S>N), (p=0.7). The No. and rate of Papiloma-IgG was 13 (37.1%) and in Trichmonas –IgG was 50 (100.0%) with significant diffrences (p=0.8). The Mean±SE of Tumor necrosis Factor (TGF) was (97.93±4.07) compared to the control group (22.06±1.519) with (H.S), (P=0.001), while the Mean±SE of MPC-1 was (61.67±22.65) compared to the helthy control (15.83±0.43, (H.S), (P=0.04) and the Mean±SE of IL-10 was (4.42±0.16) compared to the healthy cases (4.37±0.15) with (N.S) while the Mean±SE of LTB-4was (94.24±4.03) compared to the control group (19.36±0.99) (H.S), (P<0.001). The purpose of this study to detct the association of Human Papillomavirus with Trichmonas vaginalis infections in women with Cervicitis.

Keywords: Human Papillomavirus, Trichmonas, women, Cervicitis.

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Introduction

The role of HPV in causing cervical cancer was established, and factors which determine if HPV infections will resolve to normal conditions or develop to high grade lesions (HSILs or to cervical cancers) are not well understood [1]. To solve such question, data from the enrollment phase from a large, population-based cohort in Guanacaste, Costa Rica have been recently analyzed [2] during searching for non-HPV factors related to HSILs and cancer. In women with HPV-infection and with <3 pregnancies, parity, smoking and oral contraceptive use were related to high grade lesions. Sexually transmitted infections (STIs) other than HPV were suggested as causative co-factors of cervical cancers, although no agent of them was shown to have constant importance [3]. The epidemiological cervical cancer studies focused on the symptoms that occurs, like Vaginal bleeding, Watery, bloody vaginal discharge and Pelvic pain or pain during intercourse. "vaginal douching" which may be associated with genital infection [4]. Former studies on non-specific genital infections/sores related to cervicals cancer proposed a relationship between cervical cancers and genital tract infections, although neither of these studies were controlled for HPV kinfection [5]. The correlation between self-reported yellow vaginal discharges and cervical neoplasia in women infected with papillomavirus provides more suggestions that there is a combination between vervical cancers and genital tract diseases. IL-6 & IL-8 levels in cervicovaginal lavages related to cervical cancers, and increased IL-6 levels related to cervical intraepithelial neoplasm [6]. This infection was also regarded as a risk factor in several cancers such as squamous cell carcinoma. This type of carcinoma which is mostly induced by HPV, supports the idea of cervical inflammations as risk factors for cervical cancers among women infected with HPV. Cervicitis is a clinical condition characterized by inflammation of the columnar epithelium of endocervix of uterus [7]. Cervicitis may be acute or chronic, and acute have infectious sources, while chronic have mainly non-infectious causes. There is a wide variation in the clinical spectrum of cervicitis, from cases with no symptoms to women showing mucopurulent cervical discharges with systemic signs and symptoms. Any of such cases can develop destructive complications e.g. pelvic inflammatory diseases (PID), regardless of the primary presentations [8]. There is an evidence that *Trichomonas vaginalis* is correlated with HPV acquisitions, so, there might be an indirect relation between cervical cancers and TV infections. İn a meta-analysis, it was revealed that TV is related to a 1.9 fold risks of cervical carcinomas [9]. Studies conducted on Dutch, Finnish, Belgian and Chinese women found increased odds (1.4–2.0) of cervical cancers in women infected with TV and visa versa [10.11]. Another study revealed a relationship between prostatic cancer and TV infections [12]. Our study aimed to determine Papilmavirus associated with Trichmonas infection and thier ractivity with some cytokines and chemokines.

Martials and Methods

A total of 100 samples were divided into 50 samples of infected patients and 50 as a control group. They were collected from women that aged between (17-60) years old and they attended to Al- Elwea Hospetal for delivery during the period from March 2021 to February 2022. IgM & IgG antibodies against HPV antigens were detected in the patient's sera by using ELISA kit. Also IgM & IgG antibodies against Trichomonas antigens were detected in patient's sera by by using ELISA kit. the TGF, MCP-1, IL-10 and LTB-4 cytokines were examined by ELISA technique too.

Statistical analyses: Data were introduced as mean ± SD or as numbers & percentages as applicable. The Student t-test was applied for comparing between normal and abortion group.

Results

Table 1 showed that age (M±SD) (34.82±11.004) compared to the control group (40.160±13.69), with significant differences (P=0.03). While no significant difference were found between rural and urban patients (P =1.0).

Table 1: Demographical Picture of studied group (N=100)

Parametors		Case (N=50)	Control (N=50)	P-value
Age (17-60) years (M±SD)		34.82±11.004	40.160±13.69	0.03 (S)
Age (Years)	13 (59.1%)	13 (59.1%)	(N.S)	(N.S)
	18 (56.3%)	18 (56.3%)		
	11 (57.9%)	11 (57.9%)		
	5 (26.3%)	5 (26.3%)		
	3 (42.9%)	3 (42.9%)		
	0 (0.0%)	0 (0.0%)		
Residency	Rural	25 (51.0%)	1.0 (N.S)	1.0 (N.S)
	Urban	25 (49.0%)	26 (51.0%)	

Table 2 illstrated that Mean±SE of Papilloma IgM was (96.41±3.69) compared to the control group (19.14±1.009), with highly significant differences (P=0.001). The Mean±SE of pap IgG was (68.70±6.90) compared to the healthy control (19.58±0.95) with highly significant differences (P<0.001). While the Tricho- IgM was (1.53±0.19) in comparison with the controls (0.09±0.02) with a highly significant difference (P=0.001). Also the Tricho- IgG was (9.56±1.22) compared to the healthy control (0.07±0.016) with highly significant differences (P<0.001).

Table 2: The levels of IgG and IgM of studied parameters among cases (N=50) and control (N=50).

Type of Igs	**Study Groups**	**Mean±SE**	**T-test**	**P-value**
Pap- İgM	Case (N=50)	96.41±3.69	20.18	0.001 (H.S)
	Control (N=50)	19.14±1.009		
Pap-İgG	Case (N=50)	68.70±6.90	7.044	<0.001 (H.S)
	Control (N=50)	19.58±0.95		
Tricho- İgM	Case (N=50)	1.53±0.19	7.44	0.001 (H.S)
	Control (N=50)	0.09±0.02		
Tricho- İgG	Case (N=50)	9.56±1.22	7.77	<0.001 (H.S)
	Control (N=50)	0.07±0.016		

The levels of Papiloma-IgM 19 (54.3%) with Trichmonas infections-IgG 50 (100.0%) and was significant diffrences p-value= p-value=0.9, as shows in table 3.

Table 3: The levels of Papiloma-IgM according to cutoff point with levels of Trichmonas-IgG (N=50)

Papiloma-IgM		Trichmonas-IgG		Total	*p*-value
		Hyper	Normal level		
Normal level	Count	7	16	23	Chi-sequare=0.04
	%	46.7%	45.7%	46.0%	*p*-value=0.9
Hyper	Count	8	19	27	
	%	53.3%	54.3%	54.0%	
Total	Count	15	35	50	
	%	100.0%	100.0%	100.0%	

The levels of Papiloma-IgG infection 14 (36.8%) with Trichmonas infections-IgM 50 (100.0%) and was significant diffrences p-value=0.7, as shows in table 4.

Table 4: The levels of Papiloma-IgG according to cutoff point with levels of Trichmonas-IgM (N=50)

Papiloma-IgG		Trichmonas-IgM		Total	*p*-value
		Normal level	Hyper		
Normal level	Count	7	24	31	Chi-sequare=0.09
	%	58.3%	63.2%	62.0%	*p*-value=0.7
Hyper	Count	5	14	19	
	%	41.7%	36.8%	38.0%	
Total	Count	12	38	50	
	%	100.0%	100.0%	100.0%	

The levels of Papiloma-IgG infection 13 (37.1%) with Trichmonas infections-IgG 50 (100.0%) and was significant diffrences p-value=0.8, as shows in table 5.

Table 5: Distribution the levels of Papiloma-IgG according to cutoff point with levels of Trichmonas-IgG (N=50)

Papiloma-IgG		Trichmonas IgG		Total	*p*-value
		Normal level	Hyper		
Normal level	Count	9	22	31	Chi-sequare=0.03
	%	60.0%	62.9%	62.0%	*p*-value=0.8
Hyper	Count	6	13	19	
	%	40.0%	37.1%	38.0%	
Total	Count	15	35	50	

	%	100.0%	100.0%	100.0%	

Table 6 and figure 1 showed the TGF Mean±SE was (97.93±4.07) compared to the control group (22.06±1.519) with a highly significant difference (P=0.001), the MPC-1 Mean±SE was (61.67±22.65) compared to the helthy control (15.83±0.43) with highly significant differences (p=0.04) and the IL-10 Mean±SE was (4.42±0.16) compared to the healty cases (4.37±0.15) with no significant difference (P=0.8), while the LTB-4 Mean±SE was (94.24±4.03) compared to the control group (19.36±0.99) with a highly significant difference (P<0.001).

Table 6: Comparision between the levels of TGF (94-105), MCP-1 (1-20) , IL-10 (1-10) and LTB-4 (94-109) among cases (N=50) and control (N=50).

Type of Igs	Study Groups	Mean±SE	T-test	P-value
TGF	Case (N=50)	97.93±4.07	17.45	0.001 (H.S)
	Control (N=50)	22.06±1.519		
MCP-1	Case (N=50)	61.67±22.65	2.03	0.04 (H.S)
	Control (N=50)	15.83±0.43		
IL-10	Case (N=50)	4.42±0.16	0.24	0.8 (N.S)
	Control (N=50)	4.37±0.15		
LTB-4	Case (N=50)	94.24±4.03	18.0	<0.001 (H.S)
	Control (N=50)	19.36±0.99		

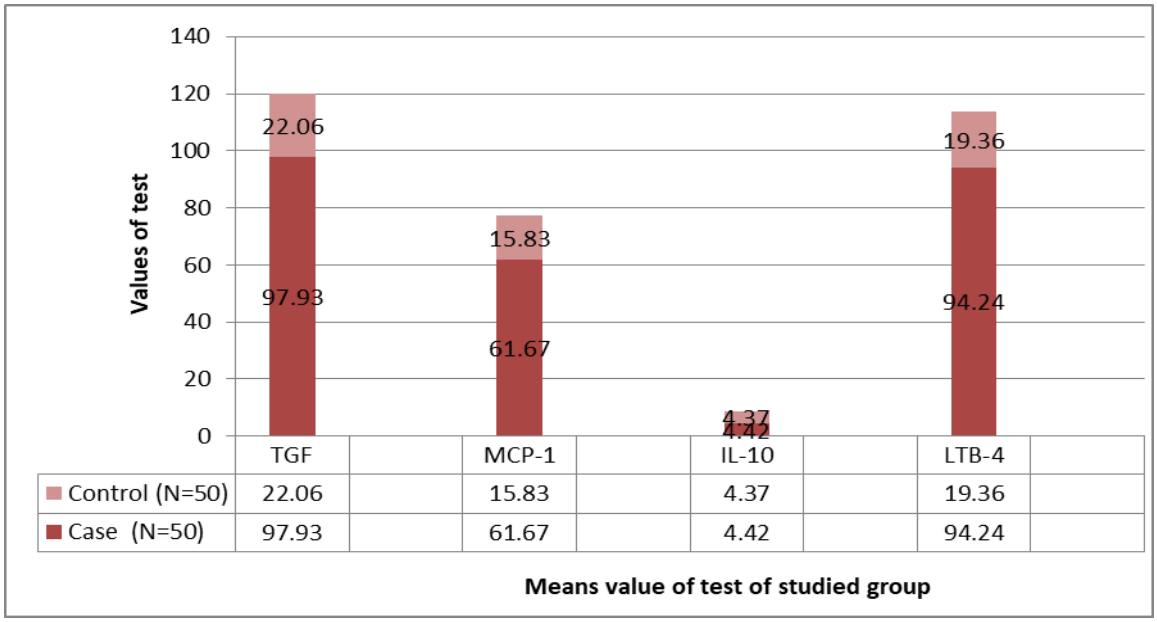

Figure1: Comparision the levels of TGF (94-105), MCP-1 (1-20) , IL-10 (1-10) and LTB-4 (94-109) among cases (N=50) and control (N=50).

Discussion

The role of HPV in causing cervical cancer was established. There is an evidence that *Trichomonas vaginalis* is correlated with HPV acquisitions, so, there might be an indirect relation between cervical cancers and TV infections. The Age (M±SD) (34.82±11.004)

compared the control group (40.160±13.69), with significant differences. While no significant difference in rural and urban patients. These findings agreed with (Lopes, *et al.*, 2019) who reported that a mean of 39 yrs, a standard deviation of 14.06 yrs and a median of 33 yrs, with ages ranging between (23-60) yrs, the reason may be due to physiological changes at those ages, while the median of 35.3 yrs, a standard deviation of 10.49 yrs and a median of 34.5 yrs. [13]. Lusk, *et al.*, (2015) reported that no significant variation between the rural and urban patients [14]. The Mean±SE of Papilloma IgM (96.41±3.69) compared with control group (19.14±1.009), with highly significant differences. The Mean±SE of pap IgG (68.70±6.90) compared to the Healthy control (19.58±0.95) with higher significant differences. While the Tricho- IgM (1.53±0.19) in comparison with the controls (0.09±0.02) with highly significant effected. Also the Tricho- IgG (9.56±1.22) compared with healthy control (0.07±0.016) with highly significant differences. These results matched with (Pruski, *et al*, 2022) who explained that the levels of antibody were significantly higher in the experimental group as compared with both the control group (1) and control group (2). The levels of antibodies divided by the cut-off value (0.303) was shown also to be significantly higher in the experimental group compared to both control groups (1) and (2). Significant dependences were shown between the control group and samples being reactive ($p < 0.001$ for both analysis—experimental group [15]. The level of TGF, Mean±SE was (97.93±4.07) compared to the control group (22.06±1.519) with a highly significant difference these results agreed with (Lopes, *et al.*, 2019) [16]. The level of MPC-1 Mean±SE was (61.67±22.65) compared to the healthy control (15.83±0.43) with highly significant differences Kashyap, *et al.,* (2019), reported there was a highly significant differences of MCP-1 level with cervical cancer [17]. The level of IL-10, Mean±SE was (4.42±0.16) compared with the healthy cases (4.37±0.15) with no significant effected, Kelly, (2017) reported that there was highly significant effected with IL-10 and TGF levels [18]. While the level of LTB-4, Mean±SE was (94.24±4.03) compared to control group (19.36±0.99) with highly significant difference, our study was first study that touched at LTB-4 measurement and we did not find a previous study to compare the results of our current study.

Conclusion

According to the results, we concluded that the level of TGF was highly affected compared with the controls with (H.S), (P=0.001). Also the level of MPC-1 was highly affected compared to the helthy control with (H.S), while the level of LTB-4 was highly affected compared to controls with (H.S), (P<0.001).

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