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Evaluation of Serological Test Results of Other Sexually Transmitted Diseases in Patients with Anogenital Warts

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ABSTRACT

Background: Anogenital warts (AGW) are a highly infectious disease caused by the human papilloma virus (HPV). HPV infection is the most common sexually transmitted viral infection in the world.

Materials and Methods: In our study we aimed to determine coexistence of other sexually transmitted diseases in patients with AGW. Our study is a retrospective cross-sectional study, and the files of all cases diagnosed with AGW in Ankara City Hospital between December 2020-December 2021 were examined.

Results: Of the 1,111 patients 858 were male and 213 were female patients. The mean age was 32.69 years. Hepatitis B surface antigen positivity in 2.4% of the cases, human immunodeficiency virus (HIV) antibody positivity in 2.9% of the cases, hepatitis C virus antibody positivity in 1.1% of the cases, Venereal Disease Research Laboratory-rapid plasma reagin positivity in 0.6% of the cases were detected. While 3 of 32 HIV-positive cases were newly diagnosed cases, 29 were already under treatment. We think that this situation may be related to the fact that our hospital is a tertiary referral hospital in Ankara (the capital city of Turkey). Other tests routinely performed in patients with AGW in our clinic enabled the diagnosis of 3 HIV-positive cases and the treatment of 7 asymptomatic syphilis cases.

Conclusion: We recommend that all cases with AGW should be evaluated in terms of other sexually transmitted diseases.

Keywords: Anogenital warts, Serological test, Sexually transmitted infections, Human papilloma virus, Hepatitis, HIV, Syphilis

Introduction

Human papilloma virus (HPV) infection is the most common sexually transmitted viral infection in the world. HPV in the anogenital area can be the trigger of malignant lesions as well as can cause benign lesions such as anogenital warts. Four distinct subtypes of anogenital warts have been defined: condyloma acuminata (spiky warts), flat/macular lesions, papular and keratotic lesions [1]. Clinical symptoms include itching, burning, dysuria and bleeding. HPV 6 and 11 are the most common infections but oncogenic types such as HPV 16 and 18 can also prevail in some cases. Although the frequency of anogenital warts is not known completely, its annual incidence was calculated as 160-289 per 100 thousand in a systematic review [1]. It can be conceived that the risk of another sexually transmitted disease may increase in a patient with a sexually transmitted disease [2]. Our aim in this study is to evaluate the demographic characteristics and serological test results of patients with anogenital warts.

Materials and Methods

Our study is a retrospective cross-sectional study, and all cases diagnosed with anogenital warts in Ankara City Hospital between December 2020-December 2021, following the approval of the Ankara City Hospital Non-interventional Clinical Research Ethics

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Committee (decision number: E1-21-2214, date: 15.12.2021), were examined. Demographic data of patients, hepatitis B surface antigen (HBsAg), HBs antibody (anti-HBs), hepatitis C virus antibody (anti-HCV), human immunodeficiency virus antibody (anti-HIV), Venereal Disease Research Laboratory (VDRL), rapid plasma reagin (RPR) test results were obtained from patient files.

Statistical Analysis

While evaluating the findings obtained in the study, SPSS (Statistical Package for the Social Sciences) Statistics 24.0 program was used for statistical analysis. Chi-square test, Fisher's Exact chi-square test, Fisher-Freeman-Halton Exact chi-square test were used to compare the qualitative data besides the descriptive statistical methods of the study data. Significance was evaluated at the $p<0.05$ level.

Results

The total number of cases was 1,128 and 17 cases with deficiency of data were excluded from the study. In our study, there were 1,111 cases, 858 males and 213 females, aged between 18 and 76. The mean age was 32.69 years and 77.3% (n=859) of the cases were under the age of 40, and 22.7% (n=252) were over the age of 40. It was observed that the female cases in our study were mostly under the age of 25 (38.5% of all female cases), while the male cases were mostly between the ages of 26-35 (42.5% of all male cases). HBsAg positivity in 2.4% (n=27) of the cases, anti-HBs positivity (n=565) in 50.9%, anti-HIV positivity (n=32) in 2.9%, anti-HCV positivity (n=12) in 1.1%, VDRL-RPR positivity (n=7) in 0.6% were detected (Table 1). Treponema pallidum hemagglutination (TPHA) tests were also performed in 7 positive VDRL-RPR cases, and TPHA was found positive in all of them. When all cases were examined there was no statistically significant difference between male and female cases in terms of HBsAg, anti-HCV and anti-HIV positivity. The incidence of HBsAg positivity among age groups is significantly higher in the patient groups aged 46-55 and over 55 years of age compared to the patient groups aged under 25 years old. The incidence of anti-HBs positivity in the patient group over 55 years of age is significantly higher than in the 36-45 age group. The incidence of anti-HCV positivity in the 46-55 age group is significantly higher than the age groups under 25, 26-35 years and 36-45 years old. When the rates of anti-HIV positivity among age groups were evaluated, it was found that the 36-45 age group was significantly higher than the other age groups ($p<0.05$) (Table 2).

Discussion

Genital warts are a common health problem especially in urbanized societies. In a meta-analysis conducted with female sex workers in China, it was found to be the most common sexually transmitted disease with a rate of 27% [3]. Because of the oncogenic nature of HPV, it is a problem that should be considered in terms of public health. Due to the potential to be a carrier of sexually transmitted diseases such as HIV, hepatitis B, hepatitis C and syphilis, it is possible to transmit other diseases as well as genital warts [4]. There are few recent studies in the literature evaluating the relationship between anogenital warts and other sexually transmitted diseases [2,4,5,6]. When the studies in the last 15 years are examined, one of the most comprehensive studies is the retrospective cohort study of Sturgiss et al. [5] with 1,015 patients with a diagnosis of newly diagnosed anogenital warts. Our study is the study with the highest number of cases in the literature as far as we have examined.

80.8% of our cases were male and 19.2% were female. When we examine other studies in the literature, the male/female ratio was found to be 88.3/11.7% in the study of Ünal et al. [6] and 88.8/11.2% in the study of Mueller et al. [2]. It was observed that the distribution of men and women was similar to the literature. The reason for this distribution may be that risky sexual behaviors are more common in men and some women apply to gynecology clinics. The mean age in our study was 32.69 years. The mean age was 36.3 years in

Table 1. Distributions of study parameters

		n	%
HbSag	Negative	1,084	97.6
	Positive	27	2.4
Anti-HBs	Negative	546	49.1
	Positive	565	50.9
Anti-HCV	Negative	1,099	98.9
	Positive	12	1.1
Anti-HIV	Negative	1,079	97.1
	Positive	32	2.9
VDRL-RPR	Negative	1,104	99.4
	Positive	7	0.6

HbSag: Hepatitis B surface antigen, Anti-Hbs: Hepatitis B surface antibody, Anti-HCV: Hepatitis C virus antibody, Anti-HIV: Human immunodeficiency virus antibody, VDRL: Venereal Disease Research Laboratory, RPR: Rapid plasma reagin

Table 2. Evaluations according to age

		<25	26-35	36-45	46-55	>55	
		n (%)	n (%)	n (%)	n (%)	n (%)	p-value
HbSag	Negative	296 (99.7%)	445 (99.6%)	227 (95.4%)	82 (89.1%)	34 (91.9%)	[1]0.000*
	Positive	1 (0.3%)	2 (0.4%)	11 (4.6%)	10 (10.9%)	3 (8.1%)	
Anti-Hbs	Negative	12 (4%)	219 (49%)	211 (88.7%)	78 (84.8%)	26 (70.3%)	[2]0.017*
	Positive	285 (96%)	228 (51%)	27 (11.3%)	14 (15.2%)	11 (29.7%)	
Anti-HCV	Negative	297 (100%)	446 (99.8%)	236 (99.2%)	84 (91.3%)	36 (97.3%)	[1]0.000*
	Positive	0 (0%)	1 (0.2%)	2 (0.8%)	8 (8.7%)	1 (2.7%)	
Anti-HIV	Negative	292 (98.3%)	435 (97.3%)	223 (93.7%)	92 (100%)	37 (100%)	[1]0.010*
	Positive	5 (1.7%)	12 (2.7%)	15 (6.3%)	0 (0%)	0 (0%)	

[1]Fisher-Freeman-Halton Exact test, [2]Chi-square test, *p<0.05, HbSag: Hepatitis B surface antigen, Anti-Hbs: Hepatitis B surface antibody, Anti-HCV: Hepatitis C virus antibody, Anti-HIV: Human immunodeficiency virus antibody

the study of Mueller et al. [2], 33.7 years in the study of Aktaş et al. [4] and 34.9 years in the study of Ünal et al [6]. When evaluated from this point of view, it was observed that the mean age of our patients was close to the mean age of the patients in the literature. It was observed that most of the cases (77.3%) were under the age of 40. While the incidence of anogenital warts is highest in women under the age of 25, it was observed that anogenital warts in men are concentrated in the age range of 26-35 years. In total, it was observed that the most cases were between the ages of 26-35. In the study of Mueller et al. [2], similar to our study, the majority of the cases were found to be between the ages of 26-35.

As a result of different samples in our country, the frequency of HbsAg was found to be between 0.8-5.7% [7]. In our study, HBsAg positivity was observed at a rate of 2.4%. The frequency of HBsAg was found to be 2.6% in the study of Mueller et al. [2] and 3.2% in the study of Ünal et al. [6]. The low incidence of HBsAg in our study, particularly among patients under the age of 25 (0.3%), may be related to the vaccination program initiated in children in our country since 2001 [7]. It has been observed that the frequency of HBsAg is similar both in the general population and in other studies conducted. In our study, the frequency of anti-HBs was found to be 50.9%. In a country-wide viral hepatitis prevalence study conducted between the years 2008 and 2011, anti-HBs positivity was found to be 32% [8]. The higher incidence of anti-HBs in our study may be related to increase in the general immunity of the population against hepatitis B through vaccination studies in the last 10 years [7,8]. The prevalence of hepatitis C in our country varies between 1-1.9% [9]. In our study, anti HCV positivity was found to be 1.1% and it was found at a frequency similar to the studies conducted with the general population in our country. When we examined the literature, the HCV seroprevalence was found to be 1% in the study conducted with sex workers [3]. While anti HCV positivity was found in 1 (0.9%) case in the study of Aktaş et al. [4], no anti HCV positive case was found in the study of Ünal et al. [6]. In the study of Sturgiss et al. [5], the frequency of HCV was found to be 5.6%. This case was explained by the fact that only the patient group with risk factors were tested for hepatitis C in the study of Sturgiss et al. [5]. In our study, it is both surprising and satisfying that hepatitis B and C did not increase in people with anogenital warts when we consider all patients without division according to age groups, which is a risky population in terms of sexually transmitted diseases.

Studies on the frequency of VDRL-RPR and anti-HIV in our country are few. In a broad-series study conducted with blood donors, RPR positivity was found to be 0.2% and anti-HIV seropositivity was approximately 0.001% in 2002 [10]. In our study, anti-HIV and VDRL-RPR positivity were found to be higher than the normal population. Considering the studies on anogenital warts; Aktaş et al. [4], Sturgiss et al. [5] and Ünal et al. [6] did not find any HIV positive cases in their studies. In our study, the rate of HIV positive cases was 2.9%, which was detected to be significantly higher compared to both the general population and other studies. While 3 of 32 HIV-positive cases were newly diagnosed cases, 29 were already under treatment. We think that this situation may be related to the fact that our hospital is a tertiary referral hospital in Ankara (the capital city of Turkey) and it is a hospital where HIV-positive patients apply for HIV treatment frequently. In our study, VDRL-RPR positivity was found in 7 cases. It was observed that TPHA was also requested from these cases and TPHA was positive in all of them. Physical examination of these cases revealed no signs of syphilis. While VDRL-TPHA positivity was observed at a rate of 3.1% in the study of Ünal et al. [6], no VDRL positivity was found in the study of Aktaş et al. [4] and the study of Sturgiss et al. [5]. Interestingly, in the study of Mueller et al. [2], syphilis was reported as the most common sexually transmitted infection with a rate of 11.9% in asymptomatic AGV patients, however, no explanation has been given for this situation [2]. Our cases were also asymptomatic, and the required test for AGV have allowed these cases to receive treatment for syphilis.

Study Limitations

One of the aims of our study is to evaluate the necessity of screening for other sexually transmitted diseases of anogenital warts cases. Our study had limitations such as the cases were not evaluated in terms of herpes virus infection, other sexually transmitted diseases such as *Neisseria gonorrhoea* and *Chlamydia*. In our study, no case with more than one sexually transmitted coinfection was detected. The total number of cases with sexually transmitted co-infection was 78, which was 7% of all cases. Even though the prevalence of hepatitis did not increase compared to the general population in our study, when we analyzed it according to age groups, it was found that the incidence of hepatitis B and C was significantly higher in the 46-55 age group compared to other age groups, and it was also higher in this age group than in the general population. Other tests routinely requested from patients with anogenital warts in our clinic enabled the diagnosis of 3 HIV-positive cases and the treatment of 7 asymptomatic syphilis cases.

Conclusion

We recommend that all cases with anogenital warts should be evaluated in terms of other sexually transmitted diseases.

Ethics

Ethics Committee Approval: Our study was approved by the Ankara City Hospital Non-interventional Clinical Research Ethics Committee (decision number: E1-21-2214, date: 15.12.2021).

Informed Consent: Retrospective cross-sectional study.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Concept: F.E., Design: F.E., Data Collection or Processing: F.E., A.Y.İ., Analysis or Interpretation: F.E., A.Y.İ., Literature Search: F.E., A.Y.İ., Writing: F.E.

Conflict of Interest: No conflict of interest was declared by the authors.

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