



Analysis of HBsAg, Anti-HCV, Anti-HIV, VDRL, and TPHA test results in patients diagnosed with condyloma acuminata

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Abstract

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Aim: Anogenital warts (AGWs) are among the most common sexually transmitted viral infections characterized by verrucae located in the anogenital region due to human papillomavirus. Although tests for other sexually transmitted diseases are recommended for patients diagnosed with AGWs, there is not sufficient information concerning the frequency of coinfections. This study aimed to determine the frequency of coinfection with hepatitis B, hepatitis C, human immunodeficiency virus (HIV) and syphilis in patients diagnosed with AGWs.

Materials and Methods: For the 401 patients who presented to the Dermatology Clinic of Istanbul Medipol University Hospital between 2014 and 2020 and were diagnosed with AGWs by a dermatologist, the hepatitis B surface antigen (HBsAg), anti-hepatitis C virus antibody (anti-HCV), anti-HIV, venereal disease research laboratory and treponema pallidum hemagglutination test results, and demographic characteristics were recorded. As controls, 350 patients who presented to the same hospital for a check-up and who did not have AGWs according to systemic examinations were evaluated, and the HBsAg, anti-HCV and anti-HIV results and demographic characteristics of these patients were also recorded for comparisons.

Results: Hepatitis B was positive in 12 (3%) patients in the AGW group and seven (2%) patients in the control group. Hepatitis C was positive in two (0.5%) patients in the AGW group and negative in all the controls. While two (0.5%) patients in the AGW group were HIV-positive, all the controls were HIV-negative.

Conclusion: The frequencies of hepatitis B, hepatitis C and HIV were found to be significantly higher in the AGW group than in the control group.



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Introduction

Condyloma acuminata, also known as anogenital warts (AGWs), is a genital skin disease caused by human papillomavirus (HPV) and usually transmitted sexually. Anogenital warts constitute a public health problem since HPV has oncogenic properties and can cause neoplastic diseases [1]. It is known that if a patient has a sexually transmitted disease (STD), his/her risk of having another STD is high. Therefore, the Centers for Disease Control and Prevention guidelines recommend testing patients with AGWs for other STDs [2]. Similarly, the European/IUSTI guidelines recommend screening for other STDs in patients with AGWs at the time of first diagnosis [3]. In the literature, there are only limited studies conducted with a small number of patients to investigate the frequency of other STDs in patients with an AGW diagnosis [4-11]. Accordingly, to

the best of the author's knowledge, the frequency of coinfection with hepatitis B, hepatitis C, human immunodeficiency virus (HIV), and syphilis was evaluated in only five studies, of which none compared the patient group with a control group [7-11]. Therefore, the aim of the current study was to investigate the frequency of sexually transmitted hepatitis B, hepatitis C, HIV, and syphilis in patients diagnosed with AGWs in comparison with a control group without AGWs.

Materials and Methods

In this study, the laboratory tests of 1,688 patients who presented to the Dermatology Clinic of Istanbul Medipol University Medipol Mega Hospital between 2014 and 2020 and were diagnosed with AGWs by a dermatologist were retrospectively reviewed. The demographic characteristics (age and gender) of the patients were recorded. For the 401 patients aged over 18 years with available laboratory results, data on hepatitis B surface antigen (HBsAg), anti-

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hepatitis C virus antibody (anti-HCV), anti-HIV, venereal disease research laboratory (VDRL) and treponema pallidum hemagglutination (TPHA) test results were obtained. As the control group, 350 individuals aged 18 and over who presented to Istanbul Medipol University Medical Faculty for a check-up examination in 2020 were evaluated, and their demographic characteristics and HBsAg, anti-HCV and anti-HIV test results were obtained. During the check-up examination of the control group, the examination findings and diagnoses made by general surgery, gynecology, and/or dermatology were reviewed. None of the controls had an AGW diagnosis or related examination findings. Since a syphilis test was not included in the check-up program, these data were not available for the control group. The two groups were statistically compared in terms of the remaining variables. The Mann-Whitney U test and descriptive statistics were used in statistical analyses. Kolmogorov Smirnov normality test used to determine whether a variable met the parametric test assumption. Data analyses were conducted using the Statistical Package for the Social Sciences v. 26.0 (IBM SPSS Statistics) software package. A p value less than 0.05 was considered statistically significant.

Ethical approval was received from the Ethics Committee of Istanbul Medipol University on June 23, 2021, with decision number 720.

Results

The mean age was 34.59 years for the 401 patients with AGWs, and 95 (23.7%) of these patients were female and 306 (76.3%) were male. The mean age of the 350 controls was 32.39 years, and 133 (38%) were women and 217 (62%) were men. When the patient and control groups were compared in terms of age and gender, the mean age and male

Table 1. Cross-tabulation of investigated variables according to the study groups.

Variable	Control group	AGW group	Total
Gender			
Female	133 (38%)	95 (23.7%)	228 (30.4%)
Male	217 (62%)	306 (76.3%)	523 (69.6%)
TPHA status			
Negative	–	181 (99.5%)	181 (99.5%)
Positive	–	1 (0.5%)	1 (0.5%)
Hepatitis B status			
Negative	343 (98.0%)	389 (97.0%)	732 (97.5%)
Positive	7 (2.0%)	12 (3.0%)	19 (2.5%)
Hepatitis C status			
Negative	350 (100%)	399 (99.5%)	749 (99.7%)
Positive	0 (0%)	2 (0.5%)	2 (0.3%)
HIV status			
Negative	350 (100%)	399 (99.5%)	749 (99.7%)
Positive	0 (0%)	2 (0.5%)	2 (0.3%)

AGW, anogenital wart; HIV, human immunodeficiency virus; TPHA, treponema pallidum hemagglutination.

Table 2. Descriptive statistics and analysis of variables according to the study groups (median-range).

	Control group	AGW group	Total	p
HBsAg	0.32-7,063.95	0.47-7,099.86	0.42-7,099.95	<0.001
HCV	0.03-0.61	0.04-92.95	0.04-92.95	<0.001
HIV	0.17-0.47	0.19-130,000	0.18-130,000	<0.001
VDRL	–	0.05-22.14	0.05-22.14	–

AGW, anogenital wart; HBsAg, hepatitis B surface antigen; HCV, hepatitis C virus; HIV, human immunodeficiency virus; SD, standard deviation; VDRL, venereal disease research laboratory.

^astatistically significant at 0.05 in the Mann-Whitney U test.

gender ratio was significantly higher in the patient group ($p < 0.001$). HBsAg positivity was detected in 12 (3%) of the patients in the AGW group and seven (2%) controls. Anti-HCV was positive in two (0.5%) patients with AGWs and negative in all the controls. Anti-HIV was positive in two (0.5%) patients in the AGW group and negative in all the controls. The VDRL and TPHA test results were available for 186 of the 401 patients with AGWs. VDRL and TPHA positivity was detected in only one (0.5%) of these patients. Table 1 presents the cross-tabulation of the investigated variables for the AGW and control groups.

When the patient and control groups were statistically compared, the frequencies of HBsAg positivity, anti-HCV positivity, and anti-HIV positivity were significantly higher in the AGW group compared to the control group ($p < 0.05$) (Table 2).

Discussion

AGWs are among the most common sexually transmitted viral infections. AGWs constitute an important public health problem across the world, including Turkey. Although some infectious agents are predominant in certain geographical regions and communities, more than one microorganism can often be observed together in STDs. Due to the potential of AGWs to be carriers of other STD, such as HIV, hepatitis B, hepatitis C, and syphilis, it is possible for patients with these warts to also transmit these diseases [1-3]. Similarly, AGWs damage epithelial tissue in the genital area, increasing the risk of transmission of other STDs. Although screening for other STDs is recommended in patients with AGWs, there are only a few studies investigating the frequency of coinfections [4-11]. No study was found that evaluated the frequency of STDs in patients with AGWs in comparison with a control group. In this study, the age distribution of the 401 patients with AGWs (mean age, 34.59 years) was similar to previous studies investigating the frequency of STDs in such patients [7-11]. In the current study, the mean age of the control group, comprising 350 individuals, was 32.39 years. The number of female patients in the AGW group was lower than that of male patients (23.6% versus 76.3%), which is consistent with the literature. In previous studies, the percentages of male and female patients were reported to be 56.8% and 43.1%, respectively, by Sturgiss et al. [8], 88.3 and 11.7%, respectively, by Ünal et al. [9], 67.8 and 32.2%, respectively, by Aktaş et al. [10], and 88.8 and 11.2%,

respectively, by Mueller et al. [11]. The reason for the difference between the studies in relation to the female/male ratio may be that female patients with AGWs often refer to gynecologists due to the sociocultural differences in the patient portfolio of the screened clinics. Another reason may be that while gynecologists often follow up and treat female patients diagnosed with AGWs, urologists tend to refer male patients with AGWs to dermatologists.

In this study, hepatitis B was determined to be the most common coinfection with AGWs. While 3% of the 401 patients were found to be positive for HBsAg, only 2% of the control group had HBsAg positivity, and when statistically compared, the frequency was significantly higher in the AGW group ($p < 0.05$).

In one of the most comprehensive retrospective studies investigating the frequency of STDs in 196 patients, Mueller et al. [11] evaluated the HbsAg results of 78 patients and reported positivity in 2.6%. In another study, Sturgiss et al. [8] did not detect HBsAg positivity in any of the 460 patients diagnosed with AGWs. When studies conducted in Turkey are examined, similar to the current study, Ünal et al. [9] found HbsAg positivity in 3.2% of 94 patients, while Aktaş et al. [10] reported the rate of HbsAg positivity as 0.9% in 109 patients, and Kaymak et al. [7] observed no HbsAg positivity in 50 patients. This difference in the positivity rates can be attributed to the variability of hepatitis B frequency in different populations and the number of patients included in each study. Another aspect of the current study is that it allowed for the comparison of the prevalence of hepatitis B, hepatitis C, HIV, and syphilis between the patients with AGWs and the general population. In a field study conducted to determine the prevalence of hepatitis B in Turkey, the rate of HBsAg positivity was found to be 4%. In the same study, the authors showed that the frequency of HbsAg positivity increased with age and was higher in some regions [12]. The lower frequency detected in the current study can be attributed to the lower mean age of the screened patients, considering that the child vaccination program started after 2001 in Turkey.

In this study, the frequency of anti-HCV positivity was found to be 0.5% in the AGW group. Anti-HCV positivity was not detected in the control group, and anti-HCV positivity was statistically significantly higher in the AGW group. In previous studies, the rate of anti-HCV positivity was determined as 2.9% by Mueller et al. [11], 5.6% by Sturgiss et al. [8], and 0.9% by Aktaş et al. [10], while Kaymak et al. [7] and Ünal et al. [9] did not detect anti-HCV positivity. When the differences between the reported values are examined, it is observed that the findings of this study are consistent with those obtained from other studies conducted in Turkey. Tozun et al. [12] found the prevalence of hepatitis C to be 1% in Turkey. The lower value obtained from the current sample can be attributed to the limited number of patients and their lower mean age compared to the previous study.

There is a complex relationship between HIV and other STDs. Ulcerative and non-ulcerative STDs accelerate the progression of the infection by facilitating the transmission and viremia of HIV [13]. In a study conducted with 1,209 female sex workers, the frequencies of gonorrhea, Tri-

chomonas vaginalis, syphilis, and AGWs were found to be statistically significantly higher in the HIV-positive cases compared to the HIV-negative cases [14]. While condyloma acuminata poses a risk for HIV transmission, immunosuppression caused by HIV increases the incidence, prevalence, and malignancy potential of HPV infection [15]. Similarly, in the current study of 401 cases diagnosed with condyloma acuminata, anti-HIV positivity was found at a rate of 0.5%, but anti-HIV positivity was not detected in the control group, and the frequency of HIV positivity was to be statistically significantly higher in the AGW group compared to the controls. In the literature, Ünal et al. [9] did not find HIV positivity in 94 cases. Aktaş et al. [10] evaluated the anti-HIV results of 101 patients and reported all to be negative. Kaymak et al. [7] evaluated 50 patients and detected no HIV positivity. Similarly, Sturgiss et al. [8] investigated the frequency of other STDs in patients diagnosed with AGWs and evaluated the anti-HIV results of 548 patients, but did not detect positivity in any of the patients. In contrast, Mueller et al. [11], who evaluated the anti-HIV results of 136 patients, observed positivity in 10 patients (7.3%).

In this study, the VDRL and TPHA results of 182 patients diagnosed with AGWs were obtained. Syphilis positivity was found in one (0.5%) of these patients. In one of the studies conducted to evaluate the frequency of syphilis in Turkey, Menziletoglu Yildiz et al. [16] reported that among the 62,461 blood donors, the positivity rate was 0.10%. The frequency of syphilis in the AGW group in the current study was higher than this value. In the same study, the frequencies of hepatitis B, hepatitis C and HIV among the blood donors were found to be 1.66%, 0.05%, and 0.003%, respectively. All of these values are lower than observed in the current sample.

Limitations

The main limitation of this study is that it was conducted only in the dermatology clinic. The evaluation of patients presenting to gynecology and obstetrics, urology, and general surgery clinics can produce different gender ratios and lower gender-related differences between the patient and control groups. The other limitation of this study is that, the mean age and male gender ratio was significantly higher in the patient group.

Conclusion

In conclusion, different results are reported in studies conducted to evaluate whether the frequency of STDs, such as hepatitis, HIV, and syphilis, is higher in patients with a diagnosis of AGWs. Although many guidelines recommend screening for other STDs in individuals with one STD, the frequency of such diseases was not found at a high rate in most existing studies. Therefore, not performing screening tests in patients with AGWs unless an interventional treatment is required may provide the benefit of reducing medical costs. However, in the current study, the frequencies of hepatitis B, hepatitis C, and HIV were found to be significantly higher in the AGW group compared to the control group. Early diagnosis, treatment, and follow-up of these infections, which are frequently observed together and increase the risk of transmission, are only possible with

an interdisciplinary approach. It is clear that further comprehensive epidemiological studies covering all segments of society should be undertaken and statistical data should be created.

Ethical approval

Ethical approval was received from the Ethics Committee of Istanbul Medipol University on June 23, 2021, with decision number 720.

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