The effect of COVID-19 (SARS-CoV-2) vaccines on vulvar condylomata

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Abstract

Objective: Current evidence concerning the possible clinical effects of coronavirus disease-2019 (COVID-19) vaccines on vulvar lesions is limited. The aim was to describe the effect of vaccines against COVID-19 on the progression of vulvar condylomas.

Material and Methods: The data of patients diagnosed with condylomata acuminate and treated with trichloroacetic acid (TCA) between January 2021 and January 2023 in the gynecological oncology surgery clinic were evaluated. The patients were divided into groups based on their vaccination status; vaccinated or unvaccinated. The number/area of condylomas and symptom degrees of the patients before and after TCA treatment were compared.

Results: A total of 202 patients, 102 vaccinated and 100 unvaccinated, were included. There was no significant difference between the groups in terms of age, parity, smoking, oral contraceptive use, amount of condyloma and symptom degree (all $p>0.05$). There was no significant difference in the amount of condyloma between the groups after six months [$p=0.589$, 95% confidence interval (CI)=0.238-1.566]. Moreover, there was no difference in the degree of symptoms after six months between the groups ($p=0.467$, 95% CI=1.113-1.799).

Conclusion: The systemic effects caused by COVID-19 vaccines are still not fully understood. Considering that this vaccine, like many vaccines, elicits a strong immunogenic reaction, the possible clinical impact of this non-specific systemic inflammatory response on vulvar condyloma is a matter of curiosity. This study showed there was no difference in the amount of condyloma and the degree of symptoms six months after TCA treatment in the unvaccinated and vaccinated group. The low number of patients is the biggest limitation of this study. Larger studies may provide more robust information. [J Turk Ger Gynecol Assoc. 2025; 26(2): 116-20]

Keywords: COVID-19 vaccines, vulvar condyloma, skin diseases

Received: 29 April, 2025 **Accepted:** 09 May, 2025 **Publication Date:** 10 June, 2025

Introduction

Coronavirus disease-2019 (COVID-19) is an infectious respiratory disease caused by severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2), which emerged in late 2019 and became a global pandemic. Lymphocytopenia observed during infection often involved CD4+ and some CD8+ T-cells, disrupting both innate and adaptive immune responses. This disruption may delay viral clearance and lead to an exaggerated neutrophilic and macrophagic response (1). In Türkiye, three vaccines were approved for use against COVID-19. The Pfizer/BioNTech vaccine, an mRNA-based vaccine, stimulated an immune response by injecting a genetic code encapsulated in lipid nanoparticles that encodes the viral spike protein. The CoronaVac (Sinovac) vaccine was an inactivated vaccine developed by culturing and then inactivating the live SARS-CoV-2 virus under laboratory conditions. The domestically developed, inactivated vaccine, Turkovac, was approved for routine use following a scientific review by the Turkish Ministry of Health.

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DOI: *10.4274/jtgga.galenos.2025.2025-4-8*

Cite this article as: *Şahin M, Arslanca ŞB. The effect of COVID-19 (SARS-CoV-2) vaccines on vulvar condylomata. J Turk Ger Gynecol Assoc. 2025; 26(2): 116-20*

Genital warts and condyloma acuminatum (CA) are superficial benign lesions of the skin. Most commonly associated with human papilloma virus (HPV) types 6 and 11. The prevalence of CA peaks during the early years of sexual activity. Identified risk factors include smoking, hormonal contraceptive use, multiple sexual partners, and early onset of sexual activity. These lesions are typically multicentric and multifocal, involving the perianal, vaginal, and cervical regions, but may also affect the oral and laryngeal mucosa. Most patients are asymptomatic, presenting primarily with painless swellings, and less frequently with itching, discharge, or bleeding. Common treatment options include provider-administered therapies (cryotherapy, electrocautery, laser, and/or surgical excision) and patient-applied treatments (chemotherapeutic agents or immunomodulatory therapies) (2).

The immunological response triggered by COVID-19 vaccines and the resulting clinical implications have yet to be fully elucidated. Despite the growing body of knowledge and clinical experience acquired during the pandemic, the immunological impact of anti-SARS-CoV-2 vaccines remains incompletely understood, highlighting the need for further research. The aim of the present study was to investigate the potential effect of SARS-CoV-2 vaccination of vulvar condylomas.

Material and Methods

The data of women diagnosed with CA and treated with trichloroacetic acid (TCA) at the Gynecologic Oncology Surgery Clinic between January 2021 and January 2023 were evaluated. The data were obtained retrospectively by talking to the patient face to face or from the electronic database system. All participants gave their informed written consent to take part in the study. This study was approved by the Non-Interventional Clinical Research Ethics Committee of Konya City Hospital (approval number: 2025/30, date: 10.03.2025).

Women aged 16-65 years who were diagnosed with vulvar condylomas by clinical examination or biopsy, treated exclusively with TCA, had documented treatment and follow-up processes, and had no underlying medical conditions or medication use that could impair immune response were included in the study. Patients who received any other medical or surgical treatment for condylomas besides TCA, or those with comorbidities or medications that could suppress immune response, were excluded.

Participating patients were divided into COVID-19 vaccinated and unvaccinated groups. In both the vaccinated and unvaccinated groups, patient age, parity, smoking status, oral contraceptive use, number of condylomas, and severity of symptoms were analyzed.

The amount of condyloma was assessed by evaluating both the number, and the total surface area, of the lesions. Patients with 1-5 lesions or a total surface area of less than 1 cm^2 were categorized as having a limited amount of condylomas; those with 6-10 lesions or a surface area between 1-3 cm^2 were considered to have a moderate amount; and those with more than 10 lesions or a surface area greater than 3 cm^2 were classified as having widespread condylomas. Symptoms were also classified into mild, moderate, and severe based on patient complaints.

Vulvar lesion progression after COVID-19 vaccination was assessed as follows: (a) complete response: complete resolution of lesions and no new lesions; (b) partial response (PR): at least 30% reduction in lesion size, number, or symptoms; (c) stable disease: PR or no evidence of progressive disease (PD) in symptoms and lesions during the study; (d) PD: at least 20% increase in symptoms and lesion size or number, no new lesions.

Statistical analysis

SPSS, version 22, was used to evaluate the data (IBM Corporation, Armonk, NY, USA). Analysis results are shown as mean, standard deviation, n (number) and % (percentage). Frequency distributions were analyzed according to groups with chi-square test and Fisher's exact test. A value of $p<0.05$ was considered statistically significant.

Results

A total of 266 women were assessed for eligibility. Forty-six individuals were excluded either for not meeting the inclusion criteria or for declining to participate. The remaining 220 (82.7%) women with high-risk HPV infection were enrolled and divided equally into vaccinated (n=110) and unvaccinated (n=110) groups. During follow-up, eight women in the vaccinated group and 10 in the unvaccinated group were excluded from the final analysis due to lost to follow-up or discontinuation of treatment. The flow diagram of patient selection is presented in Figure 1.

There were no significant differences between the vaccinated and unvaccinated groups in terms of age, parity, smoking status, oral contraceptive use, condyloma amount, or symptom severity. Table 1 shows the clinicopathological and demographic characteristics of the patients.

Six months after treatment, the rates of clinical response in terms of condyloma quantity in the unvaccinated and vaccinated groups were statistically similar. A summary of post-treatment amount of condyloma and symptom severity at six months after TCA treatment is presented in Table 2.

Discussion

According to the GLOBOCAN 2018 report, HPV ranks as the second most common infectious agent associated with cancer

Table 1. Demographic and clinico-pathological characteristics of patients vaccinated/not vaccinated against COVID-19				
		COVID-19 vaccine		
		No (n=100)	**Yes (n=102)**	
Features		**Mean ± SD**	**Mean ± SD**	**p**
Age (years)		32.88±11.99	34.30±11.98	0.679
Parity		1.32±1.20	1.21±1.14	0.524
		n (%)	n (%)	
Smoking		44 (44)	47 (46.1)	0.738
Oral contraceptive		29 (28.4)	34 (33.3)	0.315
Amount of condyloma	Limited	39 (39)	32 (31.3)	0.228
	Moderate	53 (53)	60 (58.8)	
	Widespread	10 (10)	6 (5.8)	
Symptom degree	None	9 (9)	12 (11.7)	0.398
	Mild	30 (30)	23 (22.5)	
	Moderate	44 (44)	54 (52.9)	
	Severe	17 (17)	13 (12.7)	
p: Chi-square test, SD: Standard deviation, COVID-19: Coronavirus disease-2019				

Table 2. The number of condylomas and degree of symptoms in the vaccinated and unvaccinated patients after six months

Features		**COVID-19 vaccine**			
		No (n, %)	**Yes (n, %)**	**95% CI**	**p**
Amount of condyloma	CR	64 (62.7)	72 (70.5)	0.238-1.566	0.589
	PR	28 (27.4)	20 (19.6)		
	SD	6 (5.9)	7 (6.8)		
	PD	2 (2)	3 (2.9)		
Symptom degree	CR	78 (76.5)	70 (68.6)	1.113-1.799	0.467
	PR	16 (15.7)	22 (21.5)		
	SD	4 (3.9)	6 (5.9)		
	PD	2 (2)	4 (3.9)		
Chi-square test, p: Significance value, p: 0.05, CI: Confidence interval, CR: Complete response, PR: Partial response, SD: Stable disease, PD: Progressive disease					

development worldwide, in both sexes. Furthermore, HPV is the leading infectious cause of cancer in women. Inflammatory processes play an active role in the persistence of HPV infections.

Patients infected with COVID-19 have shown elevated leukocyte counts and abnormally increased levels of cytokines and chemokines (3). The systemic consequences of the enhanced inflammatory response remain incompletely understood.

The World Health Organization reported that anti-vaccination sentiment existed, even during the peak of the COVID-19 pandemic. Although vaccine manufacturers reported low rates of adverse effects, the systemic effects of COVID-19 vaccines have yet to be fully elucidated. While COVID-19 infection is primarily known to cause interstitial pneumonia and potentially severe respiratory failure, it has also been associated with various cutaneous manifestations. The long term effects of infection with the virus, regardless of vaccination status, are also unknown and yet to be elucidated.

Dermatological adverse reactions and various cutaneous diseases have been reported after COVID-19 vaccination. Type I and type IV hypersensitivity reactions were among the main cutaneous side effects (4). In a study by Sartor et al. (2), cases of vulvar aphthous ulcers characterized by vulvar pain and dysuria following Pfizer-BioNTech vaccination were reported (5). Since the COVID-19 vaccine can trigger a strong immunogenic reaction, the possible impact of this non-specific systemic inflammatory response on the clinical course of vulvar condyloma is of interest.

To the best of our knowledge, this is the first published study investigating the potential impact of COVID-19 vaccination

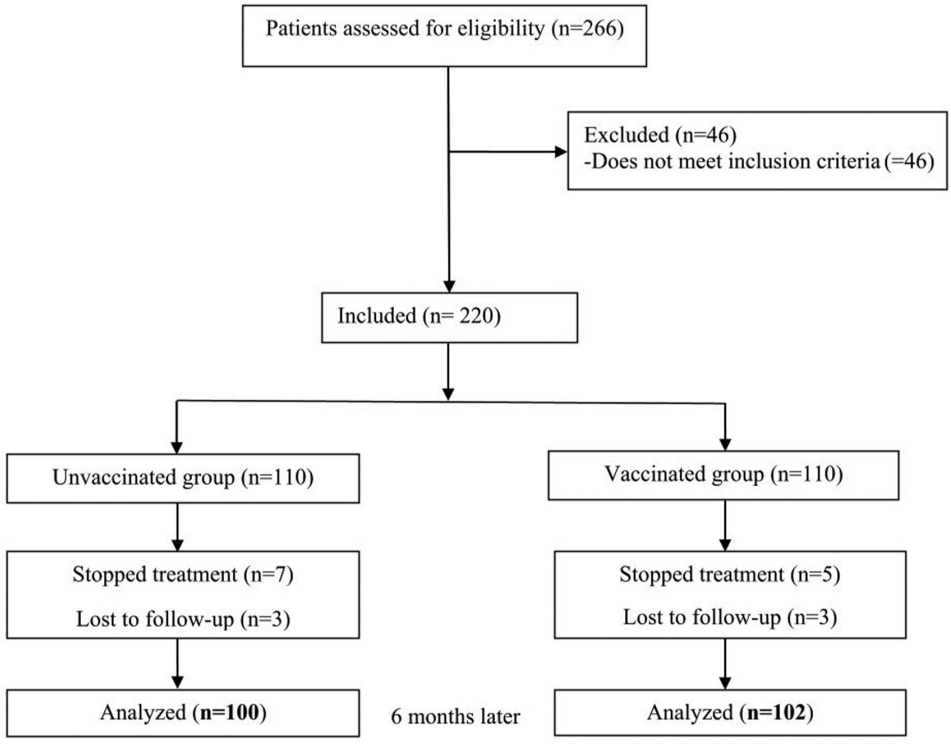

Figure 1. Process flow chart for patient

on the clinical course of vulvar condyloma. Reassuringly, Our findings revealed no significant difference between the vaccinated and unvaccinated groups in terms of condyloma quantity and symptom severity at six-month follow-up after treatment with TCA [95% confidence interval (CI): 0.238-1.566, p=0.589 and 95% (CI): 1.113-1.799, p=0.467, respectively].

Study limitations

The small number of patients is the biggest limitation of the study. Its retrospective design may also be considered a limitation.

Conclusion

There was no significant effect of COVID-19 vaccination on the progression of vulvar condylomas. The effects of COVID-19 vaccines on vulvar lesions have not been elucidated in the current literature and this appears to be the only study in this field. Therefore, further comprehensive, long-term studies are warranted.

Ethic

Ethics Committee Approval: *This study was approved by the Non-Interventional Clinical Research Ethics Committee of Konya City Hospital (approval number: 2025/30, date: 10.03.2025).*

Informed Consent: *All participants gave their informed written consent to take part in the study.*

Footnotes

Author Contributions: *Surgical and Medical Practices: M.Ş., Concept: M.Ş., Design: S.K., F.K., Data Collection or Processing: M.Ş., Ş.B.A., Analysis or Interpretation: M.Ş., Ş.B.A., Literature Search: M.Ş., Ş.B.A., Writing: M.Ş., Ş.B.A.*

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

Financial Disclosure: *The authors declared that this study received no financial support.*

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