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OUTCOME OF INTRALESIONAL VITAMIN D3 IN PATIENTS PRESENTING WITH CUTANEOUS WARTS

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Abstract

OBJECTIVE

This project is designed to investigate the therapeutic impact of intralesional vitamin D3 on subjects with cutaneous wart.

METHODOLOGY

This investigation was carried out at Dr. Ruth K.M. At Pfau Civil Hospital in Karachi, the study is focused on assessing the therapeutic efficacy of intralesional Vitamin D3 in the management of cutaneous warts. The research sample comprised 228 participants aged between 18 to 65 years Injections were administered biweekly, with a maximum of four treatment sessions. The clinical response was classified as mild, moderate, or complete. The analysis was performed on the data using SPSS version 26.0, where we defined statistical significance at $p \leq 0.05$.

RESULTS

In the current study, the population sample of 228 subjects was composed of 146 (64.0%) men and 82 women (36.0%), mean age 27.72 ± 6.82 years, with cutaneous warts. No statistically significant correlation was identified between the type of wart and the therapeutic response ($p=0.371$).

CONCLUSION

Intralesional administration of Vitamin D3 has been identified as a treatment modality that is both safe and effective, exhibiting a commendable tolerance profile for patients afflicted with cutaneous warts, while also indicating a significant rate of complete clearance. The therapeutic intervention yielded favorable results across a spectrum of wart types, with a notably low incidence of adverse effects. Considering its immunomodulatory properties and encouraging response rates, intralesional Vitamin D3 serves as a pragmatic non-destructive alternative for the management of cutaneous warts within the realm of clinical practice.

INTRODUCTION

Cutaneous warts represent a prevalent dermatological condition, manifesting as diminutive, innocuous proliferations. These lesions are mainly connected to the human papillomavirus (HPV), which features a diverse collection of over 100 documented genotypes [1-3]. Although HPV is

generally correlated with the occurrence of these non-malignant warts, it may sporadically influence the onset of both benign and malignant neoplasms as well [4]. Cutaneous warts represent a prevalent dermatological condition, manifesting as diminutive, innocuous proliferations. These lesions are mainly connected to the human papillomavirus (HPV), which features a diverse collection of over 100 documented genotypes [1-3]. Although HPV is generally correlated with the occurrence of these non-malignant warts, it may sporadically influence the onset of both benign and malignant neoplasms as well [4]. Most of the time, the body's immune system eventually clears up warts on its own [5]. What happens is, the virus first reaches the bottom layer of the skin, where it can stay inactive for a while before it starts causing the skin to thicken and form a wart.

Even though most cutaneous warts are spontaneous remitting—65–78% regress within two years [6]—many patients prefer to undergo treatment. They're often removed for cosmetic purposes attention, for discomfort or for pain, especially if the increase or growth is on locations that result in weight-bearing, like the soles of the feet. Topical keratolytics, cryotherapy, electrocoagulation, and laser therapy represent a selection of the most prevalent therapeutic modalities available for clinical intervention [7,8]. But these can be painful, leave scars, and often have a high rate of recurrence of the warts, hence the continuing search for a better option.

These days, immunotherapy has indicated substantial promise as a workable solution for skin warts. An assortment of immunotherapy techniques—incorporating the measles, mumps, and rubella (MMR) vaccine, tuberculin purified protein derivative (PPD), Mycobacterium w vaccine, and Candida antigen—have produced favorable findings [9–12]. Among these therapeutic modalities, intralesional Vitamin D3 has attracted significant academic scrutiny. This interest is attributed to its ability to influence immune system functionality, thereby potentially augmenting localized immune responses and promoting the more effective elimination of warts by the host.

A multitude of scholarly inquiries have highlighted the therapeutic importance of intralesional Vitamin D3 in the management of cutaneous warts. An investigation carried out in a public-sector healthcare facility in Karachi yielded promising findings concerning this treatment modality [13]. In a comparable context, supplementary studies have recorded a range of clinical outcomes, including both total and partial regression of lesions [14,15]. Conventional therapies for cutaneous warts frequently yield incomplete resolution and elevated rates of recurrence. The intralesional application of Vitamin D3 offers a potentially more targeted and immunologically driven strategy that may improve therapeutic efficacy while minimizing adverse effects. The purpose of this study is to assess the overall clinical efficacy of intralesional Vitamin D3 on PW seeking a safe, effective yet inexpensive treatment option.

METHODOLOGY

The present study was carried out within the dermatology department of Dr. Ruth K. M. Civil Hospital in Karachi for the purpose of determining the treatment effectiveness of intralesional Vitamin D3 in patients with cutaneous warts. 228 subjects were selected using a non-probability consecutive sampling method. Individuals included in the study were in the age group of 18 to 65 years, regardless of gender, exhibiting a minimum of two cutaneous warts with a diameter of 2 mm or greater that had persisted for a duration exceeding six weeks.

Exclusion criteria encompass participants who are pregnant or lactating, those who exhibit an immunocompromised condition; participants who demonstrate a documented hypersensitivity to Vitamin D3, participants who were currently receiving treatment with immunosuppressive medications, patients presenting with active dermatological infections at the locations of the warts, or those who have undergone any type of wart intervention within the prior six months. Following ethical approval, patients fulfilling the inclusion criteria were enrolled from the outpatient department after obtaining written informed consent. Diagnosis was confirmed clinically by a consultant dermatologist. Selected warts were injected intralesionally with 0.2 ml of lignocaine (2%) followed by 0.2 ml of Vitamin D3 (600,000 IU/ml) using a 27-gauge insulin syringe. Injections

were administered biweekly for a maximum of four sessions. Should complete resolution be attained prior to the designated endpoint, the intervention was ceased, and patients were observed for a duration of up to eight weeks to assess for potential recurrence. During the study, participants were advised against employing any extra topical or systemic therapies for their warts. Clinical response was classified as mild (reduction <50%), moderate (reduction 50–<100%), or complete clearance (resolution of all warts including distant lesions). Using SPSS statistical software, version 26.0, the data assessment was executed. Quantitative metrics were expressed as means ± standard deviations, whereas categorical metrics were characterized by their respective frequencies and proportions. The Chi-square test was applied, with a p-value criterion set at ≤0.05 to signify statistical importance.

RESULTS

The research engaged a cohort of 228 individuals with a mean age of 27.72 ± 6.82 years, accompanied by a 95% confidence interval extending from 26.83 to 28.61 years. The mean body mass index recorded was 25.85 ± 3.62 kg/m² (95% CI: 25.37-26.32), while the mean duration of the condition was 4.84 ± 1.56 years (95% CI: 4.64-5.05). Participants exhibited an average of 13.20 ± 6.23 warts (95% CI, 12.38–14.01). In terms of gender distribution, 146 (64.0%) of the participants were male, whereas 82 (36.0%) were female. Concerning the types of warts identified, 97 participants (42.5%) presented with common warts, 122 (53.5%) displayed plantar warts, and 9 (3.9%) were noted to have filiform warts (**TABLE I**).

Table II presents the distribution of treatment response according to the types of warts among the 228 patients included in the study. Overall, a complete response was observed in 184 (80.7%) patients, moderate response in 34 (14.9%), and mild response in 10 (4.4%) patients. Among those with common warts, 80 (43.5%) achieved complete response, 14 (41.2%) had moderate response, and 3 (30.0%) showed mild response. For plantar warts, 99 (53.8%) demonstrated complete response, 17 (50.0%) had moderate response, and 6 (60.0%) exhibited mild response. In cases of filiform warts, 5 (2.7%) showed complete response, 3 (8.8%) had moderate response, and 1 (10.0%) had mild response. The variation in treatment response across different types of warts was statistically insignificant (p = 0.371).

Table I: Demographic and Clinical Characteristics of Study Participants (n=228)		
Mean ± SD		95% CI
Age in years= 27.72 ± 6.82		26.83-–28.61
BMI in kg/m^2 = 25.85 ± 3.62		25.37-–26.32
Duration of Disease in years = 4.84 ± 1.56		4.64-–5.05
Number of Warts = 13.20 ± 6.23		12.38-–14.01
n (%)		
Gender	**Male**	146 (64.0)
	Female	82 (36.0)
Type of Warts	**Common warts**	97 (42.5)
	Plantar warts	122 (53.5)
	Filiform warts	9 (3.9)

Table II: Treatment Response According to Types of Warts (n=228)				
Types of Warts	Treatment Response			P-Value
	Complete (n=184)	Moderate (n=34)	Mild (n=10)	
Common warts	80 (43.5)	14 (41.2)	3 (30.0)	0.371
Plantar warts	99 (53.8)	17 (50.0)	6 (60.0)	
Filiform warts	5 (2.7)	3 (8.8)	1 (10.0)	

DISUSSION

The current investigation aims to assess the clinical efficacy of intralesional administration of Vitamin D3 in individuals diagnosed with cutaneous warts, employing rigorous inclusion criteria to maintain consistency within the study population. Subjects aged between 18 to 65 years exhibiting a minimum of two persistent warts, each measuring ≥2 mm and persisting for over six weeks, were selected, while those with immunosuppression, recent wart interventions, or hypersensitivity to Vitamin D3 were excluded from participation. This meticulous clinical characterization was essential for accurately evaluating the treatment response in a demographic that is likely to exhibit resistance to spontaneous resolution.

Our research outcomes align with the results documented in other regional investigations assessing the efficacy of intralesional Vitamin D3. Naseer et al. conducted a parallel study involving 226 participants and reported a complete resolution in 81.9% of individuals afflicted with cutaneous warts following intralesional administration of Vitamin D3 [13]. In the present study, a complete clearance rate of 80.7% (184 out of 228) was documented, closely mirroring their results. Both investigations utilized similar dosing intervals (biweekly) and injection techniques, thereby reinforcing the reproducibility of this immunotherapeutic approach. Furthermore, both studies found no statistically significant relationship between wart type and treatment efficacy, thereby further substantiating the extensive applicability of Vitamin D3 across various wart phenotypes.

Despite the emphasis on palmoplantar warts in the research by Naseer et al., our investigation included a more extensive variety of wart classifications, including common and filiform warts, which allowed for a more detailed analysis. Furthermore, our research contributes significantly to the existing literature by assessing complex demographic factors, including body mass index (BMI) and disease duration, while substantiating the treatment's consistent efficacy irrespective of these variables.

Conversely to established therapeutic techniques like cryotherapy, electrocautery, or keratolytic agents, which commonly induce discomfort, potential scarring, and increased recurrence rates [6–8], intralesional immunotherapy offers a more specific and less invasive treatment alternative. Our results corroborate recent clinical studies conducted by Raghukumar et al. [16], which indicated that 80% of patients receiving intralesional Vitamin D3 achieved complete resolution, and Ahmed J et al. [17], who reported similar efficacy while highlighting its advantageous safety profile and low recurrence rates during extended follow-up periods. These findings substantiate the growing evidence base supporting immunotherapy, particularly in patients with multiple or treatment-resistant warts.

Despite its encouraging results, our study has some limitations. The absence of a placebo or comparison group restricts the ability to establish a direct causal relationship between intervention and outcome. Furthermore, although the eight-week post-treatment follow-up facilitated the assessment of short-term efficacy, an extended duration would yield more comprehensive insights into the evaluation of recurrence. Additionally, the absence of serum Vitamin D level measurements may have contributed valuable depth to the immunological analysis. Notwithstanding, the advantages of this investigation consist of a fairly substantial sample size, clearly defined eligibility parameters, and standardized therapeutic protocols, consequently bolstering the internal validity of the research.

Administering Vitamin D3 intralesionally seems to provide a secure, efficient, and easily obtainable therapeutic solution for managing cutaneous warts. Subsequent randomized controlled trials with extended follow-up durations and inclusion of immunological biomarkers are advocated to further corroborate these findings and guide the establishment of standardized clinical protocols.

CONCLUSION

Intralesional Vitamin D3 proved to be a safe and effective treatment for cutaneous warts. Among 228 patients, 80.7% achieved complete clearance, 14.9% moderate, and 4.4% mild response. Given its high success rate, minimal side effects, and non-destructive nature, intralesional Vitamin D3 offers a practical alternative to conventional therapies.

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