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ORIGINAL ARTICLE

Cutaneous Warts and Their Treatment Through Intralesional Vitamin D3

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ABSTRACT

Background: The Human Papilloma Virus (HPV) causes benign epidermal proliferation of the skin and mucosa. This proliferation of the skin is called warts. For the treatment of warts, a better method is being used widely over the last few years which is called intralesional immunotherapy. This method can be painful but it strengthens the cell-mediated immunity against HPV.

Objective: The purpose of our research was to study cutaneous warts and determine the efficiency and safety of intralesional vitamin D3 in them. Moreover, we also evaluated their effects by assessing the results of the treatment.

Study design: A cross-sectional study

Place and Duration: This multi centric study was conducted in multiple dermatology centers of Saudi Arabia from August 2021 to August 2022

Methodology: A total of 50 patients were a part of this research. Every patient was above 18 years of age. They were given a maximum of 5 injections that were injected with an interval of 2 weeks. The injection of vitamin D3 was used in this research. 600k IU of cholecalciferol is contained in the vials in 1 ml. Lignocaine (0.2 ml) was first injected into the selected warts. Later in a few minutes, into the base of each wart, vitamin D3 (0.2 ml) was injected. After the treatment, every individual was observed for the next 6 months to detect the reduction in the size of warts or whether there is any recurrence.

Results: Out of 50 individuals, the majority of them were having palmoplantar warts. There were 29 people who were having palmoplantar warts. Moreover, there were 10 individuals who were having common warts, 5 patients who had filiform warts, and the rest 6 individuals who were having periungual warts. There were 40 patients who showed a 100 percent response (complete response). A total of 5 participants showed a mild response and the rest 5 showed a moderate response. There were 4 patients in which the recurrence of warts was noted. Lastly, there were no serious effects reported.

Conclusion: The most safe and effective treatment for multiple cutaneous warts is Intralesional vitamin D3.

Keywords: Common warts, Intralesional vitamin D3, efficacy, adults, palmoplantar warts

INTRODUCTION

The Human Papilloma Virus (HPV) causes benign epidermal proliferation of the skin and mucosa. This proliferation of the skin is called warts [1, 2]. Some of the common warts are anogenital, plantar, filiform, and plane warts. After the initial contact, the warts are incubated for 2 to 3 months[3]. Warts are passed on to one another through vertical transmission, fomites, or even with direct contact of one skin to another[4]. Overall 65 percent to 78 percent of warts' spontaneous resolution occurs within two years and can be spread to other humans or other sites[5]. Warts are cosmetically disfiguring and painful on the soles for which people had to seek treatment for them. The most common issue with the warts is that even after completely removing them physically, they can reoccur[6]. Due to this, both, physicians and patients get frustrated a lot. A systemic or localized cell-mediated immune (CMI) deficiency is reflected in HPV and this deficiency is reflected by recalcitrant warts[7, 8]. There are a number of reasons that are hypothesized. They are the following; the inability of T-lymphocytes to traffic to sites of infection, memory T-cells not being produced much to target HPV infection, weak response or weak effect mechanism, and failure of clonal expansion of lymphocytes to adequate stimulation.

Electrocoagulation or cryotherapy is commonly used to perform the local destruction of warts which is an employed treatment modality. Laser therapy or topical keratolytic are also used for the local destruction of warts. The keratolytic includes trichloroacetic acid or salicylic acid[9, 10]. These treatment methods may be linked with frequent recurrences and scarring, and they can also be painful. Moreover, multiple warts cannot be treated properly with destructive modalities because they do not have any effect on distant lesions and they only clear the treated lesions. However, for the treatment of warts, a better method has been used widely over the last few years which is called intralesional immunotherapy[11]. This method provides better and improved results in the clearance of warts. It strengthens cell-mediated immunity against HPV. A number of agents such as the rubella vaccine, measles, bleomycin, mumps, Candida antigen, and tuberculin purified protein have been tried for intralesional immunotherapy[12].

The purpose of our research was to study cutaneous warts and determine efficiency and the safety of intralesional vitamin D3 in them. Moreover, we also evaluated their effects by assessing the results of the treatment.

METHODOLOGY

This study includes overall 50 patients who were diagnosed with cutaneous warts. All of the patients were more than 18 years old. All of the patients were admitted to the dermatology departments. Written consent from all the participants was obtained. Moreover, every participant's detailed history was also gathered which included the demographics (gender, age), what they work (occupation), time period of the wart, and past treatment information if they have treated warts before. All of this information was gathered through a questionnaire. Furthermore, in order to support the recorded data, photographs were clicked at each visit.

Exclusion Criteria: Those patients who were pregnant have been treated with any method in the last six months, on immunosuppressive drugs, and those who were lactating mothers were not a part of this research.

Warts that would be larger in size would be considered for injection. At every session, a maximum of 2 warts were considered for treatment. After every 2 weeks interval, injections were repeated and this process continued till a maximum of 5 injections. However, if warts would be completely clear before 4 injections, we stopped the treatment. Later, that individual was followed up for recurrence. In the first 2 months, after every 2 weeks, the efficiency and the results were evaluated for each patient. After 2 months, the evaluation took place every month for the next 6 months to note if there is any recurrence.

The injection of vitamin D3 was used in this research. A total of 600k IU of cholecalciferol is contained in the vials in 1 ml. Lignocaine (0.2 ml) was first injected into the selected warts. Later in a few minutes, into the base of each wart, vitamin D3 (0.2 ml) was injected. Vitamin D3 was injected through a 27-gram insulin

syringe[13]. After the treatment, there would be a restriction on the patients for the use of any oral or topical medications.

There were 3 responses classified by depending on the decrease in the size of the wart. These responses were; mild response, moderate response, and complete response. If warts had completely disappeared, the response was considered 100 percent or complete. If the warts were 50% more regressed in size or some of the warts were unchanged, it would be called a moderate response. However, if there was an improvement which was less than 50 percent, it would be called no response or mild response. All of the results were analyzed using appropriate statistical tests. A p-value that was considered significant was less than 0.05.

RESULTS

There were a total of fifty patients enrolled in this research. Out of 50, there were 32 males, representing 64%, and 18 females, representing 36% of the total sample size. Most patients were from the age group 18 years to 28 years. There were 39 participants, representing 78% of the total sample size, falling under the category of 18-28 years. Among these 39 participants, there were 25 males and 14 females. The average age was 25.1 years. Table number 1 shows the distribution of all the participants according to their age groups. There were 29 (58%) people who were having palmoplantar warts. Moreover, there were 10 (20%) individuals who were having common warts, 5 (10%) patients who had filiform warts, and the rest 6 (12%) individuals who were having periungual warts. Table number 2 shows the distribution of different types of warts.

There were 40 patients, representing 80 percent of the total sample size, who showed a 100 percent response (complete response). Overall 5 participants (10%) showed a mild response and the rest 5 (10%) showed a moderate response. Table number 3 shows the treatment responses.

A majority of the patients (n=19) responded to 3 injections. They were representing 38% of the total sample size. The average number of injections was 3.02. None of the participants showed recurrence after the last injection of the treatment.

Table 1: distribution of all the participants according to their age groups

Age Group (Years)	Males	Females	Total
18-28	25	14	39
29-38	4	2	6
39-48	1	1	2
48-58	2	1	3
Total	32	18	50

Table 2: distribution of different types of warts.

Wart type	n	%
Palmoplantar	29	58
Filiform	5	10
Common	10	20
Periungual	6	12
Total	50	100

Table 3: treatment responses of the study participants

Response type	n	%
Complete	40	80
Mild	5	10
Moderate	5	10
Total	50	100

DISCUSSION

Immunotherapy is a safe and effective method for treating recalcitrant and resistant warts. Some of the key components of immunotherapy include modulating the production of cytokine, increasing cell-mediated immunity, inducing adenosine monophosphate through the upregulation of vitamin D receptors in the skin, and controlling epidermal cell differentiation and proliferation[14].

Our research shows that 80 percent of the participants showed 100% or complete responses which is similar to other researchers' studies[15]. The majority of them were having palmoplantar warts. There were 29 (58%) people who were having palmoplantar warts. Moreover, there were 10 (20%) individuals who were having verruca vulgaris, 5 (10%) patients who had filiform warts, and the rest 6 (12%) individuals who were having periungual warts. The most chance of recurrence is with periungual warts because they are a serious condition due to which it becomes difficult to treat them. This approach can be thought of as promising. In our research, we have observed that there is a resolution of distant warts alongside injected warts. Due to this, there is a chance of resolution of periungual warts that extend into the nail bed without going for nail avulsion.

In the research study of Raghukumar et al., the average number of injections was 3.66[16]. However, our research showed an average of 3.02. Moreover, some of the past research studies have shown that they have used a maximum of four sessions in their research. Those studies were conducted by Manjunath et al. and Singh et al[17, 18]. Warts with less duration were found to give better results than those with longer duration. Spearman's rank correlation test was used to analyze this which showed statistically significant results. This was similar to some of the past studies as well[19, 20]. Our research showed that there were only minimal side effects that include swelling, bruising, and pain. The swelling lasted for only 1 or 2 days.

CONCLUSION

The most safe and effective treatment for multiple cutaneous warts is Intralesional vitamin D3. However, there should be more research studies conducted to evaluate how many injections should be used maximum, how many sessions should be taken, and how much time should be taken for the intervals.

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