

IJMA



INTERNATIONAL JOURNAL OF MEDICAL ARTS

VOLUME 6, ISSUE 8, AUGUST 2024

P- ISSN: 2636-4174
E- ISSN: 2682-3780



Available online at Journal Website
<https://ijma.journals.ekb.eg/>
 Main Subject [Dermatology]



Original Article

Effect of Hydrogen Peroxide [H₂O₂] versus Potassium Hydroxide [KOH] in the Treatment of Viral Wart

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ABSTRACT

Article information

Received: 15-08-2023

Accepted: 01-01-2024

DOI: 10.21608/ijma.2024.229631.1777.

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Citation: Hassan SMA, Tawfeek K, Makki M. Effect of Hydrogen Peroxide [H₂O₂] versus Potassium Hydroxide [KOH] in the Treatment of Viral Wart. IJMA 2024; August; 6 [8]: 4803-4807. doi: 10.21608/ijma.2024.229631.1777.

Background: Warts are considered as one of the most dermatological disease. Topical treatments such as hydrogen peroxide and potassium hydroxide could be a new agent with good safety and efficacy in treating viral warts, particularly those that do not respond to current treatments.

Aim of the work: This work aimed to compare between hydrogen peroxide and potassium hydroxide in treatment of viral wart.

Patients and Methods: The study was a comparative prospective analysis that was carried out on 100 patients complaining from viral wart, they divided into 2 groups, group [A]; include 50 patients treated with topical KOH 15% solution, and group [B]; include 50 patients treated with topical H₂O₂ 20% solution.

Results: Significant decrease in number of wart lesions after KOH 15 % solution application, and H₂O₂ 20 % solution application. Also, majority of patients [>80%] had moderate, marked, and excellent improvement. As well, most of patients were satisfied, with no significant difference between both groups. There was no any serious complications, however; few adverse effects as pain, Infection, Hyperpigmentation, and koebner phenomenon were presented in small number of patients, with no significant difference between both groups.

Conclusion: Topical KOH 15 % solution as well topical H₂O₂ 20 % solution are promising and efficient treatment for viral warts.

Keywords: Non-genital warts; Viral Wart; KOH; Hydrogen Peroxide.



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INTRODUCTION

Warts are unusual develop when the virus attacks the surface of the skin and mucous membranes, such as the mouth and genitals. The pathogen that causes warts is called human papillomavirus [HPV]^[1]. Warts are among the most frequently reported diseases in dermatological practices. Warts are common worldwide and affect approximately 10% of the population. In school-aged children, the prevalence is as high as 10% to 20%. Although in Egypt 10.3% among primary school and about 15% among adults^[2].

HPV can be transmitted by touching an infected person. Warts are usually skin-colored but can also be dark, rough, smooth, and flat^[1]. Depending on the site of infection, warts show different clinical symptoms. These include itching, rashes, cosmetic disfigurements, etc.^[3].

There is currently no treatment for the wart and treatment does not affect its transmission^[4]. Therefore, wart treatment aims to eliminate the signs and symptoms. In addition, regression of warts must be considered when searching for treatment efficacy^[5].

Various treatments are used for warts, however, these approaches raise concerns about success profile, costs, and side effects^[3]. Treatments historically used to treat warts include salicylic acid, imiquimod, tape, liquid nitrogen, cidofovir, cantharidin, tretinoin with dichloroacetic and trichloroacetic acid [TCA], and cautery^[6].

So, this work aimed to evaluate the efficacy and safety of both topical hydrogen peroxide and topical potassium hydroxide in treatment of common wart.

PATIENTS AND METHODS

Study Design

The study included 100 patients complaining from viral wart non-randomized classification was divided the included patients into 2 groups, group [A]; include 50 patients treated with topical KOH 15% solution, and group [B]; include 50 patients treated with topical H₂O₂ 20% solution. The patients were subjected to complete history taking include: Personal history as name, age, sex, residence, and occupation; Present history as onset, course, and duration of cutaneous warts; Family history of the same condition.

Ethical Considerations

An informed written consent was obtained from all the included patients were approved by the ethics committee from the faculty of medicine, Al-Azhar University [Assiut], Egypt.

General and dermatological examination

For all the included patients for the determination of skin type, site of warts. The treatment protocol include 50 patients treated with topical KOH solution, and 50 patients treated with topical H₂O₂. All patients constructed to receive one session daily for one month duration.

Follow-up: of the patients was done every week after last visit of treatment for 4 weeks by clinical examination and photography.

Statistical methods

All collected data was calculated and tabulated by using statistical analysis [SPSS] version 20, Data were presented using proper statistical tests that were used to determine whether there significant relation. Continuous variable presented as mean \pm standard deviation [SD], and had been compared using student's Test. SPSS tests were used to evaluate demographic data of studied patients, clinical presentation of vitiligo, improvement, and complications of treatment. Also P-value was used to determine significance of results as: following: [p-value] highly significant [H S] $P < 0.001$. Significant [S] $P < 0.05$. Not significant [N S] $P > 0.05$.

RESULTS

Lesions treated with KOH 15% were decreased in number from 77 to 45 and in size from 2.44 ± 1.25 to 0.9 ± 0.89 [mean difference was 1.54]; while lesions treated with hydrogen peroxide 20% was decreased from 85 to 58 in number, and in size from 2.86 ± 1.50 to 1.16 ± 1.23 [mean difference 1.7] [Table 1, figure 1].

In addition, there was no significant differences between KOH and hydrogen peroxides regarding the quartile grading scale or patient's satisfaction [Tables 2 and 3]. Minor complications were reported in both groups with no significant differences between groups [Figure 2].

Table [1]: Comparison of the mean reduction in the number of warts in the two study groups.

	KOH, 15%	H ₂ O ₂ , 20%	P value
Number of lesions	77	85	0.469
Mean \pm SD	2.44 ± 1.25	2.86 ± 1.50	
Number of lesions still remaining	45	58	0.229
Mean \pm SD	0.9 ± 0.89	1.16 ± 1.23	

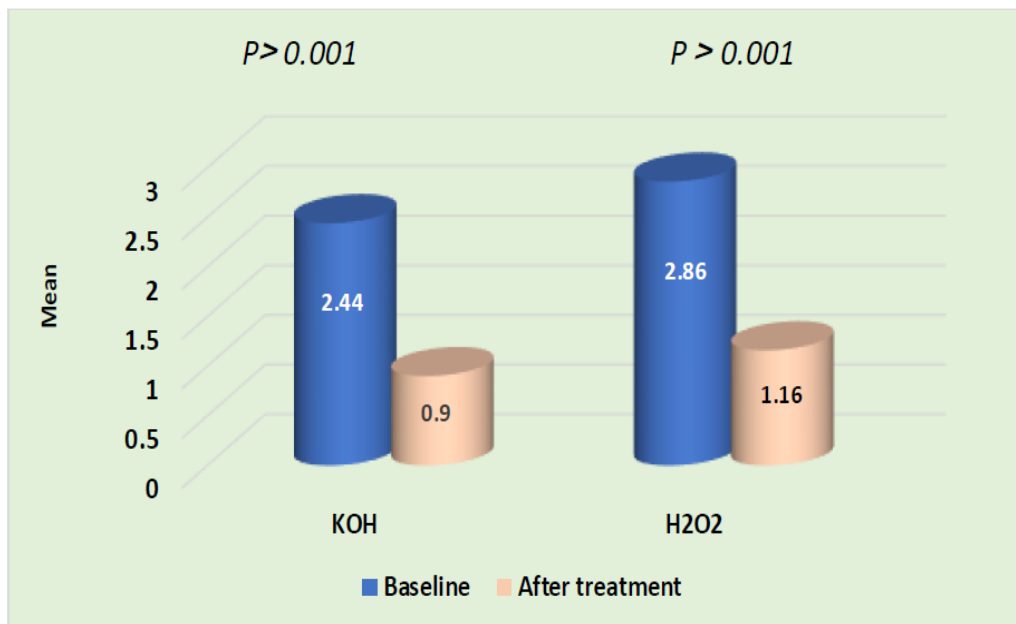


Figure [1]: Comparison between patients treated with KOH 15% and H2O2 20% at the baseline and after treatment. The number of treated lesion was 77 for KOH group and 85 for H2o2 group.

Table [2]: Quartile Grading Scale [QGS].

Quartile Grading Scale [QGS]	KOH 15%	H2O2 20%	p-value
	n [%]		
Excellent >75%	15 [30]	24 [48]	0.206
Marked 50-75%	20 [40]	18 [36]	
Moderate 25-49%	4 [8]	3 [6]	
Mild < 25	11 [22]	5 [10]	

Table [3]: Patients' satisfaction.

Patients' satisfaction	KOH 15%	H2O2 20%	p-value
	n [%]		
Very satisfied	18 [36]	20 [40]	0.918
Satisfied	17 [34]	16 [32]	
Poorly satisfied	15 [30]	14 [28]	

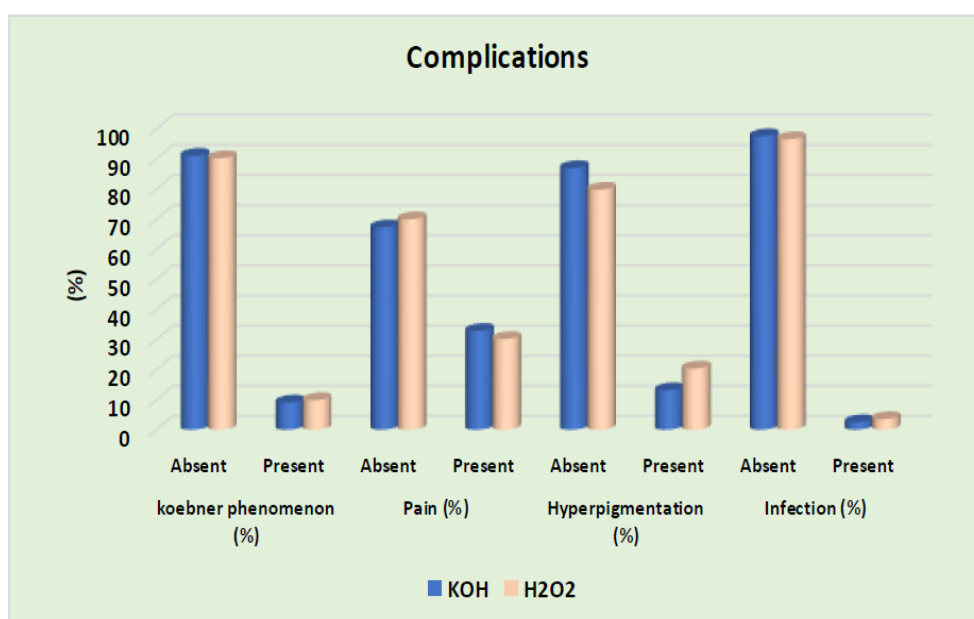


Figure [2]: Comparison between patients treated with KOH, 15% and H2O2, 20% as regard adverse effects

DISCUSSION

In our study, significantly decrease in wart lesions after KOH 15% solution application, and H₂O₂ 20% solution application. Most of patients >80% had moderate, marked, and excellent improvement, with no significant difference between both groups, however, the number of patients with excellent improvement was greater in the H₂O₂ group. Two third of patients were satisfied from results, moreover, no significant difference between both groups.

Based on our results on the clinical efficacy of a 15% KOH solution, Khan *et al.*^[7] described a case series totaling 100 cases of palmoplantar warts and reported that 10% KOH is very effective in palmoplantar warts and that the results are better with a single lesion than with multiple warts. Similar results were observed in the study by Al-Hamdi and al-Rahmani^[8] who found an overall success rate of about 96.8%. They also analyzed their results and found that a complete response was observed in 82.1% of the cases, which was comparable to the 80% result. In another study, Seo *et al.*^[9] studied imiquimod and 10% KOH in palmoplantar warts and found that efficacy was observed in 77% with 10% KOH compared to 57% with imiquimod. Similarly, Lawrence *et al.*^[10] found that a 5% KOH solution was safe and effective in a study of 35 patients with viral warts.

With these findings, Jayaprasad *et al.*^[11] found that 10% KOH compared to 30% TCA is effective and safe in treating warts, with the benefit that it tends to remove warts and has a faster effect.

According to our results by Smith *et al.*^[12] there was a significant reduction in the number of warts from baseline at week 8 with vehicle compared to HP45, which persisted at week 12. The number of patients whose warts had completely disappeared at week 8 was significantly higher with HP45 [25.3%] than with vehicle [2.6%] and remained significant at the previous week 12 [37.3% vs. 11.8%]. These results confirm that HP45 is effective and safe for treating common warts.

Similarly, Mahran *et al.*^[13] reported a significant reduction in the number and size of lesions before and after treatment in groups 1 and 2. They also found that clinical improvement was significantly greater by 6% in patients who failed treatment. These results suggest that hydrogen peroxide at a concentration of 6% can be considered as a new topical treatment for viral warts.

In our studies, a minority of patients experienced few side effects such as pain, infection, hyperpigmentation, and Koebner phenomenon, with no significant difference between the two groups.

As regard KOH safety, Kose *et al.*^[14] showed 33% side effects such as pain, burning sensation, infection and crusting in patients treated with topical KOH 10%. However these side

effects were transient. Side effects such as hypopigmentation, stinging, and infection were showed in 30% of patients treated with topical KOH 20% in a study done by Mahajan *et al.*^[15]. They also reported that, KOH concentration was correlated with side effects. In Isik *et al.*^[16], study no serious side effects were observed with 5% KOH solution treatment, however, adverse events as [burning, pruritus, edema, erythema, ulcerations, and erosions] were observed throughout the study period at each visit. Also, Asadi *et al.*^[17], reported that, side effects of KOH treatment included erosion 9 [14.28%], burn 7 [11.11%], erythema 4 patients [6.34%], and hyperpigmentation 2 [3.17%], but serious adverse events were not observed. In Camargo *et al.*^[18], showed residual hypopigmentation in patients treated with topical KOH. Also, the patients presented with superficial erosions that may results from the digestive properties of KOH. Schianchi *et al.*^[19], in a recent study used 1.8% of HP gel twice per day for 21 days under occlusion for the treatment of MC in children. Reported that the complications observant among children was; burning sensation in 1 childe, mild erythema in 1 child which did not necessitate treatment stoppage.

Conclusion: Topical KOH 15 % solution and topical H₂O₂ 20 % solution are promising alternative treatment for non-genital warts because they are effective, causes minimal side effects, and are available at a low cost. However; H₂O₂ 20% solution represents best results in warts elimination

Financial and non-financial disclosure: None.

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P- ISSN: 2636-4174
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