

INTERNATIONAL JOURNAL OF MEDICAL ARTS

Volume 4, Issue 7, July 2022

<https://ijma.journals.ekb.eg/>



Print ISSN: 2636-4174

Online ISSN: 2682-3780



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



Original Article

Clinical Efficacy of Potassium Hydroxide 10% for the Treatment of Common Warts

Mahmoud Abdelsabour Makki ^{1*}, Hazem Abdel-Aleem ¹, Mohammed Saddik ²

¹ Department of Dermatology and Andrology, Faculty of Medicine [Assiut], Al-Azhar University, Assiut, Egypt.

² Department of Pharmaceutics and Clinical Pharmacy, Faculty of Pharmacy, Sohag University, Sohag, Egypt.

ABSTRACT

Article information

Received: 29-06-2022

Accepted: 17-08-2022

DOI:
10.21608/IJMA.2022.147626.1478

*Corresponding author

Email: makkiderma@yahoo.com

Citation: Makki MA, Abdel-Aleem H, Saddik M. Clinical Efficacy of Potassium Hydroxide 10% for the Treatment of Common Warts. IJMA 2022 July; 4 [7]: 2503-2506. doi: 10.21608/IJMA.2022.147626.1478

Background and Aim: Common wart is considered one of the common diseases that are caused by the human papillomavirus; despite the high tendency for spontaneous recovery, it needs treatment. Topical application of keratolytic agent on virus-infected cells is one of the standards in the treatment, potassium hydroxide [KOH] is a strong, less irritating keratolytic agent, less painful, and can be safely used in all age groups. This study is aimed to evaluate topical 10% KOH in the treatment of common warts as regards safety and efficacy.

Patients and methods: This open therapeutic trial study was performed on 70 patients with a total of 168 common warts, who were treated with topical 10% KOH solution once at night for twelve weeks. The patients were evaluated at the end of the study to record the percentage of improvement and adverse effects and follow up for 3 months to detect any recurrence for those patients who showed complete cure.

Results: At the end of the study about 70 % of patients showed complete recovery of their warts. Moreover, we didn't observe any serious adverse effects, however, Hyperpigmentation was presented in 31.4% of patients, with no significant difference as regard location of warts.

Conclusion: Topical KOH 10 % solutions are promising, effective, safe, and well-tolerated treatments for common warts.

Keywords: Human papillomavirus, Keratolytic, KOH.



This is an open-access article registered under the Creative Commons, ShareAlike 4.0 International license [CC BY-SA 4.0] [<https://creativecommons.org/licenses/by-sa/4.0/legalcode>].

INTRODUCTION

Common warts are the commonest type of benign epidermal proliferation of the skin caused by human papillomavirus, transmitted mainly by direct skin-to-skin contact [1, 2]. Despite warts usually, having self-limiting and spontaneous resolution taking place within months to years, there are chances of spreading to other sites and other persons; so local destruction using, electrocoagulation, cryotherapy, laser therapy, or topical keratolytic is a commonly employed treatment modality performed [3, 4]. Potassium hydroxide [KOH] is an effective, well tolerated, and safe keratolytic agent in the treatment of different cutaneous dermatoviruses, including warts and molluscum contagiosum as it can penetrate deeply the skin by dissolving keratin due to its highly alkaline nature [5-7].

PATIENTS AND METHODS

An open prospective therapeutic study design was set and approved by the local ethics committee of the faculty of Medicine, Al-Azhar University; from October 2020 to January 2022. Formal consent was taken from seventy patients of both sexes; their age range was 5–45 years with multiple cutaneous common warts [total number 168] before their inclusion in this study; patients currently using any treatment for warts neither topical for 1 month nor systemic for 3 months before the study, pregnant and lactating women, patients with hypersensitivity to the alkaline agent [KOH], patient with immune-suppression, comorbid conditions or diabetes and those unable to return for follow-up were excluded from the study. The diagnosis of common warts was made clinically; the site and number of warts were recorded on inclusion. A solution of 10% w/v KOH was prepared by dissolving 100 g of KOH in one-liter distilled water. The patients were instructed to use 10% KOH solution topically once to the wart under Vaseline cover of surrounding skin using a cotton-tipped toothpick dipped in the solution, keeping it perpendicular to the skin surface. The therapy was continued until all the lesions cleared or till the completion of 12 weeks, whichever was earlier. Photographs were taken before therapy and then at the end of 12 weeks to evaluate the response to treatment and record any adverse effects. Patients were considered a

responder when there was complete disappearance of warts; however, if there was no change, the patients were considered nonresponse; if there is a decrease in the number of warts, the patients were considered partial responders; and the total number of warts was calculated before and at the end of the study.

Statistical Analysis

Statistical Package for Social Sciences [SPSS] version 23.0 program for Windows was used for data processing. Continuous variables were presented as mean \pm standard deviation [SD] and had been compared using the student's Test. Categorical factors were presented as frequencies and percentages and had been compared using Person's Chi-square test. P-value < 0.05 was considered significant.

RESULTS

Of a total seventy patients with 168 common warts were enrolled in this study. 18 patients [25.7%] were males and 52 patients [74.3%] were females. The age of the patients ranged from 5 to 45 years with a mean age of 27.01 ± 10.1 years, with a mean number of warts [2.4 ± 1.04] and ranging from 1 to 6. The duration of the lesions ranged from 2 months to 10 months with a mean duration of 4.9 ± 1.9 months. As regards the degree of response it was complete clearance of the common wart in 38 patients [54.3 %] [Figure 1], Partial response occurred in 22 patients [31.4%]; there was no change in ten patients [14.3%]. With no statistically significant difference between these groups as regards characteristics values [p value $> .005$]. It was found that there is no significant difference in wart clearance as regards wart location [Table 1].

The number of lesions in our studied patients significantly decreased after KOH 10 % solution application from [168 to 46] with a mean [2.4 ± 1.04 to 0.66 ± 0.8] with a mean percentage of improvement [69.7 ± 39.05] p value < 0.05 [Table 2].

Regards adverse effects, post inflammatory hyperpigmentation was observed in 22 patients with significant differences as regard sites of warts [Table 3].

Table [1]: Patients characteristics values

		Response [n=38; 54.3%]	Partial response [n=22; 31.4%]	No response [n=10; 14.3%]	P value
Age*	Mean \pm SD Range [5-45]	28.68 \pm 8.9	22.8 \pm 9.9	29.8 \pm 12.8	0.06
Number*	Mean \pm SD	2.32 \pm 0.8	3.05 \pm 1	1.3 \pm 0.41	0.1
Duration wart*	Mean \pm SD	4.84 \pm 2	4.91 \pm 1.7	5.10 \pm 2.1	0.7
Sex**	Male	9 [23.7 %]	5 [22.7 %]	4 [40 %]	0.5
	Female	29 [76.3 %]	17 [77.3 %]	6 [60 %]	
Family history**	Positive [16]	8 [21.1 %]	5 [22.7 %]	3 [30 %]	0.8
	Negative [54]	30 [78.9 %]	17 [77.3 %]	7 [70 %]	
Post inflammatory hyperpigmentation**	Present [22]	14 [36.8%]	6 [27.3 %]	2 [20 %]	0.5
	Absence [48]	24 [63.2%]	16 [72.7%]	8 [80 %]	
Site of common wart**	Dorsum of hand [34]	20 [52.6 %]	11 [50 %]	3 [30 %]	0.6
	Sole [31]	16 [42.1 %]	9 [40.9 %]	6 [60 %]	
	Face [5]	2 [5.3 %]	2 [9.1 %]	1 [10 %]	

Table [2]: Therapeutic response in the studied group

Common wart	Before	After	P value
Number of warts	168	46	
Mean \pmSD	2.4 \pm 1.04	0.66 \pm 0.8	< 0.001*
Mean percentage of improvement	69.7 \pm 39.05		

Table [3]: Post Inflammatory Hyperpigmentation as regard site

Site	Present [n=22; 31.4%]	Absent [n=48; 68.6%]	P value
Dorsum of hand [34]	17	17	0.004*
Sole [31]	5	26	
Face [5]	0	5	

**Figure [1]:** Single wart before and after application of KOH 10%

DISCUSSION

Destruction of the infected cells is the most common approach for the treatment of common warts. However, studies done on caustic agents for common warts are scarce. There are insufficient informative data to show the safety and efficacy of a safer, easy to use, and inexpensive alkaline agent for topical destructive [8]. Potassium hydroxide in varying concentrations is routinely used by dermatologists to identify fungal elements; also it is known to penetrate deeply and destroy the skin because it breaks down keratin [9]. This study has evaluated the efficacy and safety of well-known alkaline agents at a concentration of 10 %. It was seen that the mean rate decrease in the wart number at the end of the study was 69.7 ± 39.05 demonstrating that 10% KOH has a propensity of clearing warts. These outcomes are coordinated with **Jayaprasad** [8] in his single-center, open comparative randomized uncontrolled therapeutic trial on 30 patients with plane warts treated with 10 % KOH showed early clearance of warts compared to 30% TCA. We postulated that the mechanisms of warts clearance after KOH solution application are shown to be related to its keratolytic effect that leads to the destruction of virus-infected cells and also probably attributed to informatory reactions [10]. We reported tolerable adverse effects of 10% KOH application such as burning sensation, erythema, severe stinging, and erosion which are transient and disappear spontaneously except for post-inflammatory hyperpigmentation in 31.4% of the patient more observed in the dorsum of the hand compared with other sites [Table 3] as its keratolytic effect within the skin varying according to the body region and individual susceptibility [9]. Pigmentary disturbance could be attributed to the concentration of KOH [10%] but in a study conducted by **Romiti et al.** pigmentary disturbances were not seen with 5% KOH applications. They concluded that 5% KOH proved to be as effective and less irritating when compared to 10% KOH [5]. However, in his study, the selected group was children treated for 6 months also, the differences in the duration of both studies as common warts need more time [12 weeks in our study] to dissolve keratin due to the hyperkeratotic nature of common warts. We concluded from this study that the application of 10% KOH solution once daily is effective for common wart clearance with tolerable adverse effects.

Conflict of interest and financial disclosure: None

REFERENCES

1. Sterling JC, Handfield-Jones S, Hudson PM; British Association of Dermatologists. Guidelines for the management of cutaneous warts. *Br J Dermatol.* 2001 Jan;144[1]:4-11. doi: 10.1046/j.1365-2133.2001.04066.x.
2. Potlapati A, Gangaiah N, George NM. A study on safety and efficacy of intralesional vitamin D3 in cutaneous warts. *Int J Res.* 2020 Sep;6[5]:648. doi: 10.18203/issn.2455-4529.IntJResDermatol-20203749
3. Aktaş H, Ergin C, Demir B, Ekiz Ö. Intralesional Vitamin D Injection May Be an Effective Treatment Option for Warts. *Journal of Cutaneous Medicine and Surgery.* 2016;20[2]: 118-122. doi: 10.1177/1203475415602841
4. Kavya M, Shashikumar BM, Harish MR, Shweta BP. Safety and Efficacy of Intralesional Vitamin D3 in Cutaneous Warts: An Open Uncontrolled Trial. *J Cutan Aesthet Surg.* 2017 Apr-Jun;10[2]: 90-94. doi: 10.4103/JCAS.JCAS_82_16.
5. Romiti R, Ribeiro AP, Romiti N. Evaluation of the effectiveness of 5% potassium hydroxide for the treatment of molluscum contagiosum. *Pediatric Dermatology.* 2000 Nov-Dec;17[6]:495. doi: 10.1046/j.1525-1470.2000.01837-7.x.
6. Loureiro WR, Cação FM, Belda Jr W, Fagundes LJ, Romiti R. Treatment of genital warts in men with potassium hydroxide. *Br J Dermatol.* 2008 Jan;158[1]:180-1. doi: 10.1111/j.1365-2133.2007.08242.x
7. Romiti R, Ribeiro AP, Grinblat BM, Rivitti EA, Romiti N. Treatment of molluscum contagiosum with potassium hydroxide: a clinical approach in 35 children. *Pediatric dermatology.* 1999 May; 16[3]:228-31. doi: 10.1046/j.1525-1470.1999.00066.x
8. Jayaprasad S, Subramaniyan R, Devgan S. Comparative Evaluation of Topical 10% Potassium Hydroxide and 30% Trichloroacetic Acid in the Treatment of Plane Warts. *Indian J Dermatol.* 2016 Nov-Dec;61[6]:634-639. doi: 10.4103/0019-5154.193670.
9. Rycroft RJ, Menné T, Frosch PJ, Lepoittevin JP, editors. *Textbook of contact dermatitis.* Springer Science & Business Media; 2013 Jun 29.
10. Al-Hamdi KI, Al-Rahmani MA. Evaluation of topical potassium hydroxide solution for treatment of plane warts. *Indian J Dermatol.* 2012 Jan;57[1]:38-41. doi: 10.4103/0019-5154.92675.



International Journal

<https://ijma.journals.ekb.eg/>

Print ISSN: 2636-4174

Online ISSN: 2682-3780

of Medical Arts