

Original Article

Comparison of efficacy of 30% solution of trichloroacetic acid (TCA) with 0.025 % tretinoin in the treatment of flat warts at a tertiary care hospital

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Abstract

Objective To compare the efficacy of 30% solution of trichloroacetic acid (TCA) with 0.025% tretinoin in the treatment of flat warts.

Methods This randomized controlled trial was conducted in department of dermatology, Nishtar Hospital Multan for a period of 6 months. A total of sixty patients meeting the inclusion criteria were randomly allocated in to two groups by lottery method. Group A, having 30 patients received 30% TCA topical application once weekly by the physician. In group B, 30 patients were asked to apply 0.025% tretinoin lotion, twice daily. The patients were followed up every 2 weeks for 12 weeks. Efficacy was noted at the end of 12 weeks.

Results Our study comprised of a total of 60 patients meeting inclusion criteria. Of these 60 study cases, 37 (61.7%) were male patients while 23 (38.3%) were female patients. Mean age of our study cases was 26.00 ± 7.53 years. Mean no. of lesions was 7.23 ± 2.89 and 51 (85.0%) patients had up to 10 lesions. Of these 60 study cases, 39 (65%) had lesions on face and 21 (35%) had lesions on the back of hand. Efficacy was noted in 43 (71.7%). In group A efficacy was noted in 27 (90%) while in group B, efficacy was 16 (53.3%).

Conclusion Efficacy of 30 % TCA was significantly higher as compared with 0.025% tretinoin. So, we support the use of 30% TCA in the treatment of flat warts in comparison with 0.025% tretinoin.

Key words

Flat warts, trichloroacetic acid, tretinoin, efficacy.

Introduction

Warts are benign epidermal growths caused by the infection of keratinocytes by human papillomaviruses (HPVs).¹ They range in size from less than 1mm to over 1cm and can form large masses when confluent.² Different clinical

forms of warts include common warts, palmoplantar warts, flat warts, filiform warts and anogenital warts.³ There are over 100 strains of Human papilloma virus.⁴ The majority of the plane warts are caused by HPV 2, 3, 10, 27, 28, 38, 41 and 49.⁵

Flat warts also known as verruca plana are 2 to 4 mm, slightly elevated, flat-topped papules that have minimal scale. These are most frequent on the face, hands and lower legs. Widespread flat warts occurs in patients with epidermodysplasia

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verruciformis (EV) that are usually caused by the same human papilloma virus (HPV) types as those found in flat warts in the general population.^{6,7} Treatment of warts is necessary because each lesion could be a source or reservoir for HPV and therapy will reduce the risk of spreading infection to the other parts of the body of the same patient and to the others. Non-pharmacological techniques include surgical excision, electrocauterization or laser therapy. Cryotherapy may be performed with liquid nitrogen or solid carbon dioxide. Chemical destruction with acids (acetic acid, lactic acid, nitric acid, salicylic acid or trichloroacetic acid), silver nitrate, potassium hydroxide, formaldehyde or glutaral or podophyllum resin or its derivatives (podophyllotoxin) are possibly used more frequently than other forms of drug-therapy in anogenital warts. Intralesional injection of cytotoxic agents such as bleomycin or fluorouracil also destroys the wart and may be employed in severe or resistant cases. Fluorouracil may also be applied topically. Tretinoin has been tried topically for its effects on epidermal growth. Interferons have antiviral, antiproliferative and immunomodulatory actions and have been thus investigated in the management of warts; some studies, especially those involving intralesional administrations, have demonstrated benefit.⁸

TCA is a topical destructive agent and causes hydrolysis of cellular proteins leading to cell death. It is effective in treating common, cervical, genital, and anal warts in the concentrations of 70–80% and has response rates comparable to cryotherapy. Low concentrations (10–30%) are used for the treatment of common warts and superficial peeling. The advantage is the complete lack of systemic toxicity. However, a few local effects such as pain, burning, hyperpigmentation, and erythema may occur.⁹ Vali *et al.*⁸ documented

53.7% disappearance of flat warts with tretinoin while Jayaparsad *et al.*¹⁰ documented 89% disappearance of flat warts with 30 % TCA.

This study was conducted to document the efficacy of 30% solution of trichloroacetic acid (TCA) with 0.025 % tretinoin in the treatment of flat warts as there is much scarcity of local as well as international data on this topic to compare both these modalities. The results of this study produce baseline database of our local population which will help us to offer our patients better treatment option with more confidence.

Material and Methods

This randomized controlled trial was conducted in department of dermatology, Nishtar Hospital Multan for a period of 6 months from 28-01-2019 to 28-07-2019. Patients were selected via the non-probability consecutive sampling. A total of sixty patients meeting the inclusion criteria were enrolled in the study. Patients of both genders, aged between 10-40 years, having flat warts more than 5 on face and back of hands for less than 3 months duration were included. Pregnant (confirmed on urine pregnancy test) females and lactating women (inquired on history), those who have taken any therapy for flat warts previously, patients with previous history of drug allergy as reported by patient and clinical records were excluded from the study. Patients were randomly allocated in to two groups by lottery method. Group A, having 30 patients received 30% TCA topical application once weekly by the physician. After covering the surrounding normal skin with plain Vaseline, a cotton-tipped toothpick dipped in the solution was applied once to the wart. The patient was observed for 15 min for any side effects. The therapy was continued until the completion of 12 weeks. In group B, 30 patients were asked to apply 0.025% tretinoin lotion, twice daily.

Table 1 Distribution of study cases by efficacy.

Efficacy (n=60)	Group A	Group B
Yes [n= 43 (71.7 %)]	27 (90.0%)	16 (53.3%)
No [n= 17 (28.3%)]	03 (10.0%)	14 (46.7%)
Total	30 (100%)	30 (100%)

Solution was applied on the lesions by the wood end of a cotton swab to minimize filtration of effective drug by cotton. The patients were followed up every 2 weeks for 12 weeks to determine the efficacy. Efficacy was defined as disappearance of more than 50 % of warts compared with its baseline value as follows.

$$\frac{\text{Post treatment no. of warts}}{\text{Baseline no. of warts}} \times 100$$

Chi-square test was applied to compare the efficacy in both groups and p value was considered significant if ≤ 0.05 .

Results

Our study comprised of a total of 60 patients meeting inclusion criteria. Of these 60 study cases, 37 (61.7%) were male patients while 23 (38.3%) were female patients. Mean age of our

study cases was 26.00 ± 7.53 years (with minimum age of our study cases was 16 years while maximum age was 40 years). Mean age of the male patients was noted to be 26.10 ± 6.98 years while that female patients was 25.98 ± 8.51 years ($p=0.989$). Our study results have indicated that majority of our study cases i.e. 41 (68.3%) were aged up to 25 years. Of these 60 study cases, 21 (35.0%) belonged to rural areas and 39 (65.0%) belonged to urban areas. Monthly family income upto Rs.30000 was noted in 25 (41.7%) and more than Rs.30000 was noted in 35 (58.3%). Mean body mass index of our study cases was $25.23 \pm 2.18 \text{ kg/m}^2$ and obesity was present in 10 (16.7%) of our study cases. Mean no. of lesions was 7.23 ± 2.89 and 51 (85.0%) patients had up to 10 lesions. Mean disease duration was 1.92 ± 0.85 months and 44 (73.3%) had duration of illness more than 1.5 months. Of these 60 study cases, 39 (65%) had lesions on face and 21 (35%) had lesions on the back of hand.

Efficacy was noted in 43 (71.7%), in group A efficacy was noted in 27 (90%) while in group B, efficacy was 16 (53.3%) (**Table 1**).

Table 2 Stratification of efficacy with regard to age, obesity, gender, number of lesions, family income, residential status, disease duration and site of lesions.

With respect to		Group A		Group B		P value
		Yes	No	Yes	No	
Age (years)	Up to 25 (n=41)	18	02	14	07	0.130
	More than 25 (n=19)	09	01	02	07	0.005
Obesity	Obese (n=10)	05	00	04	01	1.000
	Not obese (n=50)	22	03	12	13	0.005
Gender	Male (n=37)	16	02	10	09	0.029
	Female (n=23)	11	01	06	05	0.069
No. of lesions	Up to 10 (n=51)	24	02	14	11	0.04
	More than 10 (n=9)	03	01	02	03	0.524
Family Income	Up to 30000 (n=25)	13	00	07	05	0.015
	More than 30000 (n=35)	14	03	09	09	0.075
Residential status	Rural (n=21)	10	01	06	04	0.149
	Urban (n=39)	17	02	10	10	0.014
Disease duration	Up to 1.5 months (n=16)	07	01	05	03	0.569
	More than 1.5 months (n=44)	20	02	11	11	0.007
Site of lesion	Face (n=39)	18	02	08	11	0.002
	Back of hands (n=21)	09	01	08	03	0.586

Discussion

Flat warts are benign epidermal proliferations caused by Human Papilloma viruses (HPV). Viral warts are common afflictions, affecting mostly children and young adults. Humoral immunity provides sufficient protection against HPV infection. If the infection does develop, innate and adaptive cell mediated immunity is important for the eventual elimination of the infection. However, the reasons for apparent failure of the immune system in otherwise healthy individuals to clear warts for months or years remains incompletely understood. Viral warts among these individuals do not respond to conventional therapies or soon recur after destructive procedures and persist for months and years altogether till the time, the balance turns in favour of the immune system and the warts cease to exist. Although it is a benign condition, it causes disfigurement, has a tendency to koebnerize, and can be transmitted to others. Although the spontaneous resolution rate for warts is 65–78%, the cosmetic disfigurement, tendency to spread and associated poor quality of life warrants quick intervention.

Our study registered a total of 60 study cases meeting inclusion criteria of our study from OPD of department of Dermatology, Nishtar Hospital, Multan. Of these 60 study cases, 37 (61.7%) were male patients while 23 (38.3%) were female patients. Such male gender preponderance has also been reported by Raza *et al.*¹¹ who reported 69 % male gender predominance which is similar to our study results. While a study conducted Bruggink *et al.*¹² reported 56% female gender preponderance which is different from our study results. A study conducted by Iqbal *et al.*¹³ reported 60.3% male gender predominance which is close to our study results. Mean age of our study cases was 26.00 ± 7.53 years (with minimum age of our study cases was 16 years while maximum age

was 40 years). Mean age of the male patients was noted to be 26.10 ± 6.98 years while that female patients was 25.98 ± 8.51 years ($p=0.989$). Our study results have indicated that majority of our study cases i.e. 41 (68.3%) were aged up to 25 years. Raza *et al.*¹¹ also reported viral warts being predominating 20–30 years age group which is similar to our study results. A study conducted by Cockayne *et al.*¹⁴ reported 24.3 years mean age of the patients with warts which is similar to our study results. A study conducted by Iqbal *et al.*¹³ reported 34.42 ± 9.87 years mean age which is in compliance with our study results. Of these 60 study cases, 21 (35.0%) belonged to rural areas and 39 (65.0%) belonged to urban areas. Monthly family income upto Rs.30000 was noted in 25 (41.7%) and more than Rs.30000 was noted in 35 (58.3%). A study conducted by Iqbal *et al.*¹³ reported 35.3% patients from rural areas which are close to our study results. Mean body mass index of our study cases was 25.23 ± 2.18 kg/m² and obesity was present in 10 (16.7%) of our study cases. A study conducted by Iqbal *et al.*¹³ reported in 19.9% which is close to our study results. Mean no. of lesions was 7.23 ± 2.89 and 51 (85.0%) patients had up to 10 lesions. Mean disease duration was 1.92 ± 0.85 months and 44 (73.3%) had duration of illness more than 1.5 months. Raza *et al.*¹¹ and Cockayne *et al.*¹⁴ reported similar results. A study conducted by Iqbal *et al.*¹³ reported 5.30 ± 2.45 which is similar to our study results. Of these 60 study cases, 39 (65%) had lesions on face and 21 (35%) had lesions on the back of hand. Efficacy was noted in 43 (71.7%), in group A efficacy was noted in 27 (90%) while in group B, efficacy was 16 (53.3%). Vali *et al.*⁸ documented 53.7% disappearance of flat warts with tretinoin while Jayaparsad *et al.*¹⁰ documented 89% disappearance of flat warts with 30% TCA. These results are in compliance with our study results.

Conclusion

Efficacy of 30% TCA was significantly higher as compared with 0.025% tretinoin. So, we support the use of 30% TCA in the treatment of flat warts in comparison with 0.025% tretinoin. A treatment modality with better efficacy can help patients to maintain their routine daily lives and physical activities.

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