Original article

Comparison of efficacy of electrocautery *vs.* cryotherapy in the treatment viral warts

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ABSTRACT

Background: Warts are benign tumours caused by infection of keratinocytes with human papilloma virus (HPV). They can occur at any age, mainly affecting 2-30% of school age children and adolescents.[1] Self resolution is seen in most patients but there is risk of transmission to others. Physical therapies are considered to be effective in the management of viral warts. This study aims to compare the efficacy of electrocautery with cryotherapy in the treatment of viral warts.

Patients and methods: This randomized trial was conducted in Dermatology Department of GHAQ / DHQ Teaching Hospital/SLMC, Sahiwal from October 2020 to March 2021.A total of 50 patients with clinical diagnosis of warts either sex with age ranging from 5-60 years were enrolled in the study and were divided into two equal groups. Patients excluded were those with evidence of any superadded infection and number of warts >6, having documented hypersensitivity to lignocaine or taking any treatment for warts in last month. After obtaining an informed written consent group A was treated with electrocautery and group B with liquid nitrogen cryotherapy. The patients were treated until the complete clearance of warts or maximum of eight sessions on weekly basis. Demographic and clinical data as efficacy (cleared if not palpable or visible to naked eye) was recorded on predesigned proforma and was analyzed by using chi-square test through SPSS version 25.

Results: Out of total 50 patients, there were 27 (54%) male and 23 (46%) female patients, with an overall male to female ratio was 1:0.7. Most commonly observed clinical type of wart were plantar warts in 28 (56%) followed by palmar in 6 (12%). Electrocautery was found to be effective therapy in treatment of wart as indicated by complete clearance noticed in 19 (76%) patients as compared to cryotherapy in 11 (44%) participants.

Conclusion: Electrocautery is more effective as compared to cryotherapy in the treatment of warts especially plantar and deep seated. However, promising effects of cryotherapy is seen in common and multiple warts as compared to electrocautery.

Keywords:

Cryotherapy, Electrocautery, Viral warts

INTRODUCTION

Warts are benign tumours caused by infection of keratinocytes with human papilloma virus (HPV) clinically characterized by hyperkeratotic skin lessions that may occur on body commonly involving hand and feet.[1] Clinical types of warts are verruca vulgaris (common), palmoplantar, verrucae plana (plane), condylomata accuminata (genital), mosaic and filiform/digitate.[2]

Warts can occur at any age, mainly affecting 2-30% of school age children and adolescents.[1] There are more than 150 different types of HPV identified with the majority of verruca vulgaris lesions caused by HPV types 1, 2, 4, 27, or 57 and verruca plana lesions by HPV types 3 or 10.[3] The Plantar warts are caused by HPV1, 2, 4, 27 or 57.[4]

Spontaneous resolution is observed in half of primary school children but there is risk of spread to other person.[5] First line treatment options for viral warts are topical agents including salicylic acid, retinoic acid, podophyllin, 5-fluorouracil, interferon and imiquimod. Intralesional injections with immunotherapy (candida), bleomycin, vitamin D and interferon alfa are second line options.

Systemic treatments include cidofovir, cimetidine and retinoids. Non-pharmacological therapies include adhesiotherapy, hypnosis, hyperthermia and a number of plant extracts. Physical therapies comprises of cryotherapy, laser, electrocautery, and surgical excision.[1,3] Among destructive or physical therapies, electrocautery and cryotherapy are most commonly being used at most of the dermatological centers.

Electrosurgery transmits electrical current to cut and destroy tissue and cauterize vessels. Electrocautery is mostly used for warts treatment among various modalities of electrosurgery. In this procedure heat is

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transmitted from the filament to the target tissue resulting into protein denaturation and tissue coagulation. Cryotherapy is the technique in which necrosis of diseased or abnormal tissue is achieved by utilization of extreme freezing temperature of cryogens like liquid nitrogen through cryogun.[6]

Variation existed in the efficacy of both electrocautery and cryotherapy procedures in the treatment of viral warts in the previous studies. In the study carried out by Simmons et al, there was no significant difference in the success rates of cryotherapy and electrocautery. However, cryotherapy was more tolerable therapy for the patients than electrocautery.[7] Likewise, similar findings of overall clearance rate (75% in electrocautery versus 73.3% in cryotherapy) was reported by Singh et al. The procedural pain, late wound healing and scarring were noticed significantly more in patients treated with electrocautery than cryotherapy.[8]

The rationale of carrying out this study is that only a few studies have been conducted in this region of Punjab province, Pakistan on comparison of electrocautery versus cryotherapy in the treatment warts. So, the present study was carried out to compare the efficacy of electrocautery with liquid nitrogen cryotherapy in the treatment of warts.

PATIENTS AND METHODS

This randomized controlled trial was conducted in the Department of Dermatology, GHAQ/ DHQ Teaching Hospital/Sahiwal Medical College, Sahiwal from October 2020 to March 2021. A non-probability consecutive sampling method was used to include total of 50 patients (open epi calculator having risk prevalence ratio 13.32, C.I 99% and power of study as 90) having clinical diagnosis of viral warts of either sex with age ranging from 5 to 60 years, having Fitzpatrick's skin type III-IV after taking written informed consent. Patients with known hypersensitivity to lignocaine or taking any treatment for warts in recent 4 weeks, warts with evidence of any superadded infection and widespread warts i,e. number of warts >6 were excluded from study. Pretreatment evaluation was done with detailed history, clinical examination and photographs.

Patients were randomly allocated by **balloting method** into two groups. Group A was treated with electrocautery (neofrecator bipolar) and group B was with cryotherapy (liquid nitrogen with cryogun) with two freeze thaw cycle manner. Patients in both groups were treated weekly until clearance of warts or maximum of 8 sessions. The efficacy of both treatment groups were calculated in terms of complete or incomplete clearance by using clinical examination and photographs. Complete clearance of warts was defined if warts were not palpable by hand and not visible to the naked eye. Efficacy was assessed after 8 sessions (2 months) of treatment in both groups. All demographic variables like age, sex, type of wart was recorded on predesigned proforma. Chi square test was used to assess the efficacy by using p-value of <0.05 using SPSS version 25.

RESULTS

This study consisted of 50 patients with viral warts which were divided equally into two groups (cryotherapy and electrocautery) each having 25 patients. There were 27 (54%) male and 23 (46%) female patients, with an overall male to female ratio was 1:17. Mean age of study patient with standard deviation recorded was 23.22±11.9. Majority of patients n=36 (76%) were below the age of 30 years. Most commonly observed clinical type of wart were plantar warts n=28 (56%) followed by palmar n=6 (12%) in both study groups as shown in Table .I. Complete clearance was recorded in more than half n=30 (60%) of study subjects in both groups. Electrocautery was found to be effective therapy in treatment of wart as indicated by complete clearance observed in n=19 (76%) of patients as compared to cryotherapy n=11 (44%) of study subjects. Incomplete clearance was seen more in cryotherapy n=14 (56%) patients than electrocautery n=6 (24%) patients (Figure 1).

Table 1. Demographic and clinical data of study groups

	Group I Electrocautery (%)	Group II Cryotherapy (%)	Both groups (%)
Age			
Range in years	5 - 48	7 - 51	5 - 51
Mean + SD	22.72 ±10.18	23.44±13.45	23.22±11.9
Age groups			
<20 years	8	11	19
20-30 years	13	6	19
30-40 years	3	5	8
>40 years	1	3	4
Sex			
Male	15	12	27
Female	10	13	23
Types of warts			
Plantar	15	13	28
Palmar	3	5	8
Genital	1	3	4
Common	0	3	3
Facial	3	0	3
Filliform	3	0	3
Mosaic	0	1	1

Electrocautery was found to be effective in complete clearance of different types of warts in most patients of plantar and palmar warts. However Cryotherapy was found equally effective to electrocautery in treatment of genital warts (Table 2).

Complete clearance (100%) was noticed with electrocautery in all facial (n=3) and filiform warts (n=3). Cryotherapy was found to be effective in common warts as complete clearance was seen in two third of treated patients (66.7%).However, it was not effective in mosaic warts treatment.

The common side effects of electrocautery observed were post procedural pain in 72% of patients, erythema 78% and scarring 18%. Cryotherapy treated patients reported erythema in 20%, burning in 70%, blister formation in 66% patients after the procedure.

DISCUSSION

Treatment of viral wart is quite often become difficult task for dermatologist due to its transmission by direct or indirect contact.[9] Both electrocautery and cryotherapy were reported to be successful in previous studies in wart clearance. The treatment with fewer sessions is convenient for both patient and the doctor.

Present study result showed male predominance (1.7:1) among study patients which was in concordance with the studies (2.0:0.9 and 1.9:1) carried out by Ghadgepatil et al and Liu et al respectively.[2,9] Age of patients ranged within 9–67 years in the study conducted by Ghadgepatil et al.[2] However, in our study age range was between 5 - 51 years. Majority of patients (82%) were below forty years of age in the study of Ghadgepatil et al, whereas majority (76%) of patients in our study was below the age of 30 years. In contrast, more than half of patients (54%) belonged to the age group of 11–25 years, in the study carried out by Berth et al.[10]

The most frequent types of warts were common warts (66.66%) followed by plantar (20.22%), plane (7.77%) and filiform (3.33%) as reported by Rao et al.[11] Similar pattern showing common and plantar warts as the commonest form of warts (42% and 20%) respectively in the study carried out by Ghadgepatil et al.[2] However, higher frequency of plantar warts (56%) were observed in our study subjects.

Singh et al from India reported 75% clearance rate in electrosurgery in comparison to 73.3% in cryotherapy patients.[7] Electrocautery was found to be effective therapy in treatment of wart as indicated by complete clearance noticed in n=19 (76%) patients of our study which was in concordance with the study by singh et al. However, cryotherapy proved to be less effective n=11 (44%) in all study subjects. In current study, patients of plantar warts when treated with cryotherapy complete clearance were noticed in merely 30.8%.

In present study, cryotherapy was found to be equally effective in comparison to electrocautery in treatment of genital warts. Simmons et al reported no significant difference in the success rate of electrocautery and cryotherapy for treatment of genital warts, which was in concordance with our study results.[6]

Compelete clearance was noticed with electrocautery in all the patients of facial and filiform warts. However, previous studies revealed clearance rates ranging from 65% to 85%.[12]

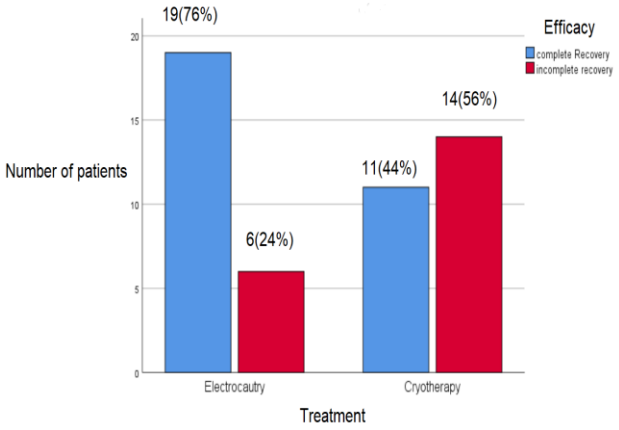

Figure 1. Comparison of efficacy of Electrocautery vs Cryotherapy in the treatment of warts in both study groups (n=50).

Table 2. Comparison of efficacy of Electrocautery vs Cryotherapy in the treatment of different types of warts

Types	Treatment	Efficacy		Total	P value chi square
		Complete	Incomplete		
Plantar warts	Electrocautery	9(60%)	6(40%)	15	0.122
	Cryotherapy	4(30.8%)	9(69.2%)	13	
Palmar warts	Electrocautery	3(100%)	0	3	0.090
	Cryotherapy	2(40%)	3(60%)	5	
Genital warts	Electrocautery	1(100%)	-	1	Œ
	Cryotherapy	3(100%)	-	3	

Œ= not calculated

Higher success rate was noticed (70.7% clearance) with cryotherapy in study conducted by Walczuk et al.[13] In our study complete clearance was noticed in (44%) with cryotherapy in different types of warts. However, higher rate (66.7%) of clearance was observed in common warts.

In the present study, pain and post procedural scarring were seen in patients treated with electrocautery which was concordance with side effects reported in previous studies.[11,14] Current study results revealed blister formation, erythema, scarring and exudation as the most common side effect of cryotherapy. Similar side effects were observed during cryotherapy when used for the treatment of warts in the previous studies.[15] Patient satisfaction and side effect profile showed better results with cryotherapy in the study carried out by Finley et al.[16] Likewise patients especially children were more satisfied and comfortable during cryotherapy in our study.

Major limitation of our study was small sample size mainly due to restriction of minor dermatological procedures during covid pandemic. Selection bias was also observed in our study as patients with different types of warts were enrolled leading to variation in efficacy of both therapies.

This article emphasized that electrocautery is feasible for treatment of large deep seated and solitary plantar warts due to better clearance results. Moreover, very few or single session is required in majority of cases and most patients have direct access to this therapy due to availability of electrocautery machine in our health care facilities. Cryotherapy is quick and painless procedure with fewer complications. It is more suitable to patients with multiple scattered warts who are able to attend hospitals for regular treatment sessions and is also feasible for pediatric patients. Better results with both therapies are seen in patients with fewer warts and small duration of warts. Further studies with large sample size can elaborate effectiveness of both therapies.

CONCLUSION

Electrocautery is more effective as compared to cryotherapy in the treatment of warts especially plantar and deep seated. However, promising effects of cryotherapy is seen in common and small scattered warts as compared to electrocautery.

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