

# Efficacy of 20% zinc oxide paste versus 15% salicylic acid - 15% lactic acid combination in treatment of common viral warts

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## Abstract

**Objective** To compare the efficacy of 20% zinc oxide paste versus 15% salicylic acid-15% lactic acid combination in treatment of common viral warts.

**Methods** In this randomized controlled trial, 210 patients suffering from common warts for more than three months duration were enrolled. These patients were randomly divided into two groups A and B; having 105 each. Group A patients were treated with topical 20% zinc oxide paste, whereas group B were treated with 15% salicylic-15% lactic acid combination. Patients were instructed to apply medication for 15 minutes, let it dry and then rub the wart with an emery stone before the next application. Patients were reviewed monthly for a period of three months to examine the change in number and size of warts. Efficacy of treatment was defined as more than 50% decrease in size of common warts at the end of 3 months of therapy.

**Results** Efficacy was achieved in 65 (61.9%) patients of group B (15% salicylic acid-15% lactic acid combination) as compared to 48 (45.7%) patients group A (20 % zinc oxide paste), which was statistically significant ( $p < 0.05$ ).

**Conclusion** Topically applied 15% salicylic acid-15% lactic acid combination is superior in efficacy to 20% zinc oxide paste in treatment of common viral warts.

## Key words

Warts, lactic acid, salicylic acid, zinc oxide.

## Introduction

Cutaneous warts are benign epidermal proliferations caused by human papilloma virus (HPV) infection. Verruca vulgaris or common warts are hyperkeratotic, exophytic, dome-shaped papules or nodules, present usually on fingers, hands, knees, elbows or any other trauma prone site.<sup>1</sup> There are approximately 180

known types of HPV; even more are presumed to exist.<sup>2</sup> The common warts on the hands and feet are mostly caused by HPV types 1, 2, 4, 27 and 57.<sup>3</sup> Amongst numerous topical and oral treatment options available, none has proven to be 100% effective. Strong evidence favors use of salicylic acid as first-line therapy either alone or in combination with other agents like lactic acid (from 4% to 17%)<sup>4</sup> to get better results. Salicylic acid acts as a keratolytic agent and chemically debrides warty hyperkeratosis and clears infection by boosting the host immune response.

Zinc is required for efficient functioning of

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immune system and has been used orally as well as topically for the treatment of warts in some clinical trials with favorable results.<sup>5</sup> Topical application of zinc has been implicated to be effective attributing to its immune modulating action, its direct antiviral effect or due to its direct cytotoxic effect.<sup>6</sup> Several non-randomized controlled trials have been conducted on the treatment of cutaneous warts, but their results should be interpreted cautiously due to a significant placebo effect.

In 2007, according to a clinical trial, the use of topical zinc oxide versus salicylic acid-lactic acid combination in treatment of viral warts showed comparable results.<sup>7</sup> The objective of this study was to compare the efficacy of 20% zinc oxide ointment versus 15% salicylic acid-15% lactic acid combination in treatment of common viral warts.

## **Methods**

This randomized controlled trial was conducted at the Department of Dermatology, Fauji Foundation Hospital, Rawalpindi. Common warts were diagnosed on clinical examination as firm, thick, rough, grey or brown keratotic papules or nodules, occurring singly or in groups that interrupted normal skin lines and having black dots which represent thrombosed capillaries. Patients with common viral warts for more than 3 months, aged between 10 years to 50 years were enrolled. Patients already on any form of therapy for warts; or who had warts on sites where topical therapy could not be delivered effectively, e.g. in the subungual region or having inflamed warts that were painful, red, warm and swollen were excluded from the study.

Approval for this study was obtained from the Hospital Ethical Committee. The purpose of the study was explained and informed consent was

taken. Data were collected according to a predesigned proforma. Phone numbers were obtained from the patients to ensure compliance. The site, size and number of common warts present in each patient were recorded. Then the patients were assigned randomly to two groups by lottery method. In group A, patients were given 20% zinc oxide ointment, whereas patients in group B were given 15% salicylic acid-15% lactic acid combination. Both drugs were dispensed by the pharmacy of Fauji Foundation Hospital and were provided free of cost. Patients were instructed to apply the medication twice daily (12 hours apart). After application patients had to wait for the medication to dry for 15 minutes and rub the wart/s with an emery stone before the next application. Patients were reviewed monthly to examine the number and size of warts, to reissue the medication and to ensure proper application. The patients were followed up for 3 months. Efficacy of treatment was defined as more than 50% decrease in size of common warts after 3 months of therapy.

Data were entered and analyzed by software SPSS version 10. Descriptive statistics were calculated for both qualitative and quantitative variables. For quantitative variables like age and number of warts mean and standard deviation (SD) was calculated. Chi-square test was used to compare efficacy in both groups. *P* value of < 0.05 was considered as significant.

## **Results**

A total of 210 patients suffering from common warts were studied. These were randomly divided into two groups of 105 patients each on the basis of treatment given. The mean age of group A was  $26.89 \pm 12.461$  years and in group B was  $27.04 \pm 13.592$  years.

**Table 1** Chi-Square Tests showing significant difference

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig.(2-sided)	Exact Sig.(1-sided)
Pearson chi-square	5.537 <sup>a</sup>	1	.019		
Continuity correction <sup>b</sup>	4.905	1	.027		
Likelihood ratio	5.562	1	.018		
Fisher's exact test				.027	.013
N of valid cases	210				

a. 0 cells (.0%) had expected count less than 5. The minimum expected count was 48.50.

b. Computed only for a 2x2 table

According to gender distribution there were 185 (88.1%) females and 25 (11.9%) males. In group A (zinc oxide group), there were 10 (9.5%) males and 95 (90.5%) females. In group B (salicylic acid- lactic acid), there were 90 (85.7%) females and 15 (14.3%) males.

The mean number of warts in topical zinc oxide group was 2.14±1.424 with a range of 1 to 9 warts and in salicylic acid-lactic acid group it was 2.52±1.6 ranging from 1 to 8 warts. The mean number of warts in studied population of 210 patients was 2.33±1.523.

The efficacy of the treatment was 48 (45.7%) patients in group A and in group B 65 (61.9%) patients. The analysis through chi-square test showed that the efficacy was significantly ( $p < 0.05$ ) higher in patients applying 15% salicylic acid-15% lactic acid combination as compared to those using 20% zinc oxide topically shown in **Table 1**.

## Discussion

The present study clearly shows that the 15% salicylic acid-15% lactic acid combination is more effective than 20% zinc oxide ointment in treatment of common warts. It is in concordance with Cochrane review on local wart treatments.<sup>8</sup>

HPV infection, being nonlytic, causes very slow antigen presentation. HPV infection does not cause release of inflammatory cytokines; therefore, treatment options like zinc which can

modulate immune system to induce cytokine production have been proposed as early as 1994.<sup>9</sup>

In this study, the patients were mostly females due to the fact that Fauji Foundation Hospital offers entitlement to specified ex-servicemen and their families and young male above 18 years are not entitled for free treatment.

In 2007, Khattar *et al.*<sup>7</sup> conducted a similar study on a total of 44 patients with common warts, plane, filiform and mosaic warts. In this study, the patients applied the medication twice daily and rubbed the warts with an emery stone before the next application. 50% of the patients showed complete cure, in zinc oxide treated group, compared with 42% in salicylic acid+ lactic acid treated group. Using a Cox regression mode, in which the dependent variable was final cure and the independent variables were treatment and the age of the patient (as age was significantly associated with treatment), and taking into consideration the time that each patient was followed up, Khattar *et al.* found that the effect of treatment on time to cure was similar for both groups adjusting for age (odds ratio, 1.04; 95% confidence interval, 0.37-2.97).<sup>7</sup>

Differences from the above mentioned study may be due to larger number of patient population; end point considered was 50% improvement and only patients with common warts were enrolled in the present study.

Previously zinc has also been used in various formulations in the treatment of common warts as oral zinc sulphate (10 mg/kg to a maximum dose of 600 mg/day),<sup>10</sup> intralesional 2% zinc sulphate,<sup>11</sup> topical application of 10% and 5% zinc sulfate<sup>6</sup> with various success rates. Considering the minimal side effects and safety profile, zinc definitely needs to be explored further in terms of its use in treatment of viral warts.

### Conclusion

Topically applied 15% salicylic acid-15% lactic acid combination is superior in efficacy to 20% zinc oxide paste in treatment of common viral warts.

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