Comparative Study of 5 % Potassium Hydroxide Solution Versus 0.05% Tretinoin Cream for Molluscum Contagiosum in Children

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ABSTRACT

Background

Molluscum contagiosum is one of the commonest cutaneous viral infections in children. All treatment modalities are associated with substantial pain, tissue destruction, and frequent recurrence.

Objectives

To compare the efficacy and side effects of KOH 5% solution with tretinoin 0.05% cream for the treatment of molluscum contagiosum in children.

Methods

Fifty patients were randomly divided into 2 groups; 25 each for 5% KOH solution and 0.05% tretinoin cream. The given medication was applied at bed time over molluscum lesions. The assessment of response and side effects were performed weekly for 4 weeks.

Results

At the end of 4 weeks, the mean lesion count decreased from 9.48±3.00 SD to 1.67±0.58 SD and from 8.35±2.82 SD to 2.00±1.00 SD in patients treated with 5% KOH solution and 0.05% tretinoin cream respectively.

Conclusion

The result of both KOH and tretinoin showed good response, well tolerated by children but between the two, KOH showed fast recovery and most lesions were resolved before 4 week. The side effects could be minimized if applied as stated above. On the other hand, tretinoin showed delayed response and even some of lesion extended beyond 4 week but the side effect were less, and hence can be used in recurrent cases.

KEY WORDS

Molluscum, Potassium Hydroxide, tretinoin

INTRODUCTION

Molluscum contagiosum, a cutaneous and mucosal eruption caused by a Molluscipox virus, was first described and later assigned its name by Bateman in the beginning of the nineteenth century.[1] In 1841 Henderson and Paterson described the intra cytoplasmic inclusion bodies now known as molluscum or Henderson-Paterson bodies.[2] In the early twentieth century, Juliusberg, Wile, and Kingery were able to extract filterable virus from lesions and show transmissibility.[3]

Molluscum contagiosum is one of the commonest cutaneous viral infections in children. The infection poses vexing treatment problems though various treatment options are available, like curettage, cryosurgery, trichloroacetic acid, cantharidin, etc. All treatment modalities are associated with substantial pain, tissue destruction, and frequent recurrences, however these procedures are not well tolerated by children owing to pain and fear.[4,5]

Potassium hydroxide (KOH) is known to penetrate deeply and destroy the skin because it dissolves keratin.[6] Five percentage of KOH solution has been prescribed for molluscum, to be applied at home and has added advantage of being relatively painless.[7]

All-trans-retinoic acid (tretinoin) is easily available as cream base thought to involve the induction of local irritation which damages the viral protein-lipid membrane.[8] The aim of our study was to compare the efficacy and side effects of KOH 5% solution with tretinoin 0.05% cream for the treatment of molluscum contagiosum in children.

METHODS

This is an open non randomized study carried out in a tertiary care centre after obtaining permission from the institutional ethical committee.

Fifty patients, ranging from six months to 14 years of age, attending the dermatology clinic, who presented with clinical features suggestive of Molluscum Contagiosum, were included in the study after obtaining an informed consent from their parents or guardians.

A detailed history was obtained, and patients underwent through general, systemic and cutaneous examination. Information regarding age, sex, number of lesions, duration of illness, site of involvement, family history, history of atopy and previous treatment were collected. The inclusion criterion included patient with age group of six months to 14 years and patients who were willing to follow up every week for four weeks. Patients with more than 100 lesions, involvement of eyelid and genitalia, secondary infection and history of hypersensitivity to KOH or tretinoin were excluded. Patients were randomly divided into two groups; 25 each for 5% KOH solution and 0.05% tretinoin cream.

Parents or guardians were advised to apply petroleum jelly around the lesion at beginning and then with cotton swab apply above medication at centre of the lesion according to assigned groups at bed time only. If accidental spillage occurred, they were advised to wash the skin with water immediately. Parents were asked to report local (erythema, itching, burning, pain, erosion, crusting) and systemic (fever, flu like illness, diarrhoea, mylagia) side effects (fig. 1 and 2)

For statistical analysis, SPSS 16 was used.

RESULTS

Out of 50 patients, four patients were non complaint and did not follow up. Forty six patients were available for efficacy analysis (twenty three in each group). The age of patients ranged from one month to 14 years, out of which most were between two to four years. In this study 21 cases were males and 25 were females (Table 1).

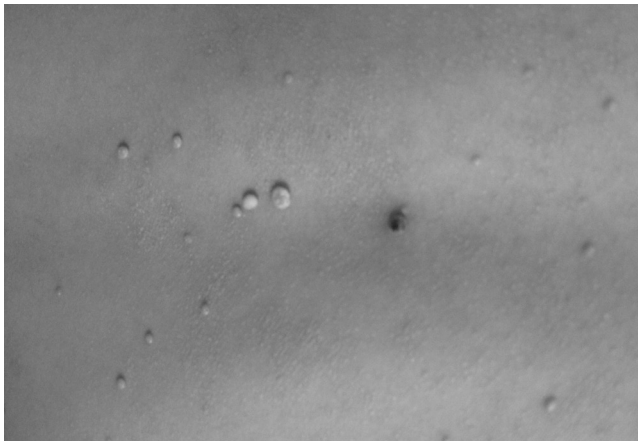

Figure 1. Dryness due to tretinion.

Table 1. Characteristics of the study group.

	AGE years(SD)	LESION (SD)
Mean	4.3(2.9)	8.9(2.9)
SEX	**Frequency**	**Percent**
Female	25	54.3
Male	21	45.7
Total	46	100
SITE	**Frequency**	**Percent**
Face	19	41.3
Extremities	11	23.9
Abdomen/trunk	16	34.8
Total	46	100

Maximum numbers of patients were having molluscum contagiosum since less than three months. The minimum duration of infection was 15 days and maximum duration was six months. History of similar complaints in the family was noted in 11(23.9%) cases and history of atopy in eight (17.4%) cases. The number of lesions varied from 4-35 (mean 8.9). Out of 46 patients, 19 (41.3%) had lesions on the face while 11(23.9%) and 16 (34.8%) had lesion over extremities and abdomen/trunks respectively. Response to treatment was seen irrespective of duration of disease and the site of involvement.

The mean lesion count (mean number of molluscum) decreased from 9.48±3.00 SD to 1.67±0.58 SD) at end of four weeks in patients treated with KOH (Table 2). The number of lesion at any two junctures during follow up was compared by paired t-test. The comparison between the number of lesions at baseline (week 0) and the number of lesions at week four was found to be statistically significant (P value 0.006) in KOH group (Table 2).

Table 2. Comparison of the number of lesions at two points of time in two study groups.

	KOH (mean±SD)	p-value	Tretinoin (mean±SD)	p-value
Week 0	9.48±3.00		8.35±2.82	
Week 1	4.65±1.07	<0.0001	1.72±0.57	<0.0001
Week 2	3.22±1.31	<0.0001	2.50±1.03	<0.0001
Week 3	2.31±1.14	<0.0001	2.25±0.68	<0.0001
Week 4	1.67±0.58	0.0068	2.00±1.00	<0.0001

The mean lesion count decreased from 8.35±2.82 SD to 2.00±1.00 SD at end of four week, with 0.05% tretinoin cream. This reduction in number of lesion at end of 4 weeks was not significant for tretinoin (Table 2). The number of lesion at various junctures was compared between two groups by paired t- test (Table 3). In both the groups there was a significant decrease in the number of lesions in initial two weeks, but in the latter two weeks, KOH showed greater decrease when compared with tretinion.

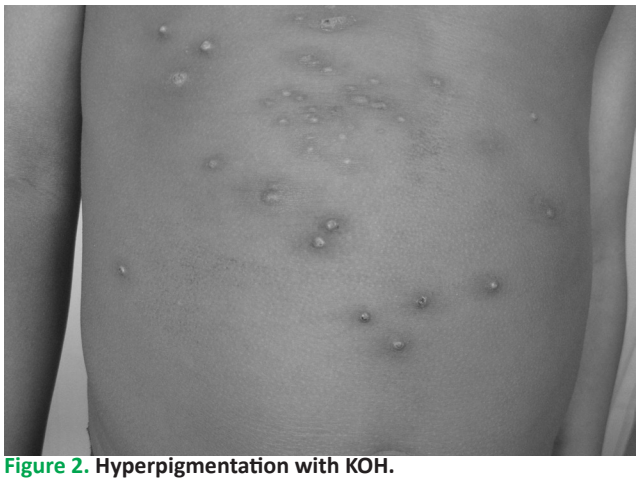

Figure 2. Hyperpigmentation with KOH.

Table 3. Comparison between the efficacies.

Duration of treatment	Mean ±SD (KOH)	Mean ±SD (Tretinoin)	p-value
Week 0	9.48±3.00	8.35±2.82	0.1948
One week	1.72 ±0.57	4.65±1.07	<0.0001
Two week	3.22±1.31	2.50±1.03	0.0760
Three week	2.31±1.14	2.25±0.68	0.8519
Four week	1.67±0.58	2.00±1.00	0.5972

We observed that patients with KOH developed 36 side effects when compared with tretinoin group that is 29. In the KOH group, patients showed different side effects than the tretinoin group (Table 4). The commonest side effects observed were erythema and itching in both the groups. Most patients (KOH group) complained of crusting, edema, burning, erosion and one developed secondary bacterial infection, which was confirmed on gram stain at second week of therapy. Two patients withdrew from study after single application of KOH due to severe burning sensation. Most patients on tretinoin had dryness (Fig 1), crusting, scaling and erythema.

Table 4. Commonest side effect.

Side effects	Group	
	KOH (n=23)N (%)	Tretinoin (n=23) N(%)
Erythema	14 (73.7)	10 (62.5)
Erosion	6 (31.6)	3 (18.8)
Ulcer	1 (5.3)	0 (0.0)
Dryness	1 (5.3)	2 (12.5)
Scaling	0 (0.0)	4 (25.0)
Burning	4 (21.1)	3 (18.8)
Itching	3 (15.8)	5 (31.3)
Edema	5 (26.3)	0 (0.0)
Crusting	2 (10.5)	0 (0.0)

DISCUSSION

In our study molluscum contagiosum was common in age group of two-four years; similar result was noted in Fiji as two to three year and one to four year in Congo (Zaire).[9,10]

History of atopy was found in eight (17.3%) patients in our study. Solomon et al gave clinical impression that molluscum contagiosum is commoner with atopic eczema.[11]

Our study showed both treatment regimens to be equally effective in the treatment of molluscum contagiosum with no significant difference in their efficacies. As tretinoin has anti-keratinization and anti-proliferation action, it take longer time; even can extend the period of study, with less side effects.[12]

We found that side effects were more frequent with 5% KOH solution. Romiti et al also reported a study in which patients were instructed to apply 5% KOH solution, which was done in an attempt to reduce the side effects observed with higher concentration.[7] They found 5% KOH as effective and less irritating when compared to KOH 10%. [7]

Both of the study treatment regimens have advantage over other treatment options as they are locally applicable, less traumatic and painful. Because of these characteristics, they can be easily applicable for the treatment of Mollascum Contagiosum. In addition to the above mentions points, 5% KOH has other advantage of low cost and faster clearance of Molluscum Contagiosum. But higher irritancy characteristics of the KOH solution and need to be freshly prepare from fresh crystals are the lacking features in comparison to tretinoin which is readily available in medical shops.

Identification of early sign of irritation and proper education about correct method of application can minimise the side effect and early treatment of irritation.

CONCLUSION

The result of both KOH and tretinoin showed good response, well tolerated by children but between the two, KOH showed faster recovery and most lesions were resolved before four weeks. The side effect could be minimized if applied according as stated above. On the other hand, tretinoin showed delayed response and even some of lesion extended beyond four weeks but the side effects were less, and can be used in recurrent cases.

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