ORIGINAL ARTICLE

COMPARISON OF EFFICACY OF 10% POTASSIUM HYDROXIDE SOLUTION VERSUS CRYOTHERAPY IN TREATMENT OF MOLLUSCUM CONTAGIOSUM

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Background: Different topical therapies are being used for treating molluscum contagiosum. Potassium hydroxide in varying solution strengths with irritant reaction on the skin can help in eliminating the infection. It is cheap, easily available, can be easily applied at home, with good safety profile and cost effectiveness. This study was conducted to compare the efficacy of 10% potassium hydroxide solution versus cryotherapy in treating molluscum contagiosum. **Methodology:** This study was a Randomized control trial conducted in the Department of dermatology, Military hospital Rawalpindi. Study included 120 randomly selected patients with molluscum contagiosum divided equally into two groups. Group A were treated with 10% potassium hydroxide aqueous solution applied daily to the lesions twice daily for 6 weeks while Group B received weekly cryotherapy with liquid nitrogen. The status of lesions was documented weekly for 6 weeks. **Results:** Of the 120 patients enrolled, 67 (55.8%) were male and 53 (44.2%) were female. Mean age of patients was 20.53(±8.17) years. At base line Molluscum contagiosum lesion ranged from minimum of 2 lesions to maximum of 26 lesions with a mean of 8.95 (SD ±4.45) lesions. Of 120 patients, complete clearance was observed in 98(81.6%) of patients, 48(80%) patients had lesion clearance in Group A and 50 (83.3%) patients had lesion clearance was observed in Group B. No statistical significance was observed in the lesion clearance between the two groups (*p*-0.63). **Conclusion:** The efficacy of 10% potassium hydroxide solution and cryotherapy is statistically same over 6 weeks of treatment. Thus less expensive, easily available and cosmetically more acceptable potassium hydroxide solution can be used instead of cryotherapy in treating molluscum contagiosum.

Keywords: Molluscum contagiosum, cryotherapy, potassium hydroxide, efficacy

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INTRODUCTION

Molluscum contagiosum (MC) is a viral dermatosis caused by a poxvirus of the genus Molluscipox. The infection caused by molluscum is chronic & localized which contrasts this from the other viral infections. There are 4 different genotypes of molluscum, genotype 1 predominates and is responsible for majority of the infections.[1]

Replication of Molluscum contagiosum virus occurs in cytoplasm of the host cells and has many of the genes that encode proteins responsible for the protection of this virus from the different host defence mechanisms.[2–4]

It is a disease that mostly affects children, but it may occur in adults, as a sexually transmitted disease and in immunodeficiency states. In atopic dermatitis the helper T cell responses are low, and this relative deficiency of helper T cell response predisposes the patient to molluscum contagiosum.

The spread of the disease is by direct skin to skin contact, autoinoculation that could occur due to touching, examination or scratching the lesion.[5] It can also occur due to contact with the infected fomites or through sexual contact which is the most common reason for molluscum on the anogenital parts of the children.[6] Clinically it is characterized by a 2–5 mm diameter, firm, dome shaped papule which has a central umblication on the skin of the infected person. The lesions are majority of the times sessile & skin coloured. Molluscum contagiosum can affect any part of the body; upper trunk, cubital and popliteal fossae, face and internal inguinal areas are the most frequently affected parts. Hands and feet are spared and the oral mucosa of the patient is affected very seldomely. The clinical presentation of the lesions and its characteristic appearance makes the diagnosis of molluscum contagiosum very easy and the role of investigations is only limited for only either confirming or differentiating it from other similar lesions on the skin.

The investigations that could help in diagnosing molluscum are hematoxylin & eosin staining of the molluscum contagiosum lesion which shows molluscum bodies (Henderson-Paterson bodies) in the keratinocyte cytoplasm.[6]

Molluscum contagiosum is a self-limiting disease in patient with uncompromised immune status

& the resolution of the lesions usually occurs in 2 months with a few persisting for months and years.[7]

Treatment of molluscum contagiosum is intended to limit spread of infection to other areas of the body and to other people, for prevention of secondary bacterial infection, scarring, bleeding and for cosmetic reasons. Therapeutically, no specific anti Molluscipox virus drug has been developed so far and a number of treatment modalities have been used. These include destruction or topical modalities.[8] Destructive treatment options are curettage, cryotherapy, expression or pricking with sterile needle and electrodessication. Topical medical therapy includes salicylic acid, glycolic acid, tretinoin, tazarotene, podofliox, and liquefied phenol.[5]

Lasers have also been used with 585 nm pulse dye laser being the most commonly used with good results.[5] Oral cimetidine a H2 antagonist drug in a dose of 40 mg/kg/day for 2 months has also been tried because of the immunomodulatory effects of this drug but the results and the cost effectiveness of the drug are conflicting and variable.[9] All these therapies have their own side effect profiles including pain, hyperpigmentation, cost and availability.[8]

Potassium hydroxide (KOH) is a strong alkali which has keratolytic properties. It has been used in different concentrations for the treatment of Molluscum contagiosum with varying degree of response (23–100%).[8,10,11] It causes an irritant reaction in the skin, varying with the concentration, body region to which it is applied, and individual susceptibility, which helps in eliminating the infection. It is cheap, easily available, can be easily applied at home, and has no significant side effects profile.

This study was conducted to compare efficacy 10% potassium hydroxide solution and cryotherapy in treating molluscum contagiosum.

MATERIAL AND METHODS

This study was a randomized control trial conducted in Dermatology Department of Military Hospital, Rawalpindi. Sample size was calculated by using WHO sample size calculation, taking Level of significance 5% and power of test at 90%. Sample size was calculated to be 'n' =120 (60 patients in each group). After taking permission from hospital ethical committee 120 clinically diagnosed patients of Molluscum contagiosum were selected through non-probability sampling fulfilling the following inclusion and exclusion criteria.

Inclusion criteria:

1. Clinically diagnosed Molluscum contagiosum
2. Not used any other therapy for Molluscum contagiosum
3. Age 1 year or more
4. Both genders

Exclusion criteria:

1. Patients who have already received therapy for Molluscum contagiosum
2. History of hypersensitivity to KOH.
3. Local infection at the site of Molluscum contagiosum.
4. Involvement of eyelid and genitalia

At the time of enrolment, all the patients were subjected to physical examination, the number of Molluscum contagiosum lesions were charted, along with their location. Patients were then randomly allocated into two groups using random numbers table. Group-A were given 10% potassium hydroxide aqueous solution to be applied topically to molluscum contagiosum lesions twice a day with the help of a cotton stick for 6 weeks at home. Group-B were given weekly cryotherapy with a cotton stick dipped in liquid nitrogen to molluscum contagiosum lesions for 6 weeks as an outpatient.

The status of each lesion was documented weekly for 6 weeks. Data was analysed using SPSS-16 and validated through dual entry.

RESULTS

Of the 120 patients enrolled, 67 (55.8%) were male and 53 (44.2%) were female. In group A 29 (48%) were male and 31(52%) were female while in group B 38 (63%) males and 22 (37%) females were enrolled included for the trial of efficacy. Age of the patients ranged from 6 years to 51 years, with a mean age of 20.53 (SD ±8.17) years. At base line Molluscum contagiosum lesion ranged from minimum of 2 lesions to maximum of 26 lesions with a mean of 9 (SD±4.45) lesions. Most of the patients 76% had 5-10 lesions followed by 10-15 lesions in 23% of patients. Out of 120 patients 69 (57.5%) had lesions on the face 35 (29.2%) had lesions on trunk and 16 (13.3%) patients had lesions on limbs.

Treatment failure was considered as the lesion not completely cleared by the end of 6th week. Of 120 patients enrolled in the trial, complete clearance was observed in 98(81.6%) of patients, 48 (80%) patients had lesion clearance in Group A and in 50 (83.3%) patients, clearance was observed in Group-B. Comparing the clearance of Molluscum contagiosum lesion in Group-A and B, it was observed that there was no statistically significant difference in the clearance of lesions in both groups (p-0.63), indicating that the efficacy of cryotherapy and 10% potassium hydroxide is statistically same over 6 weeks of treatment (Table-1)

No statistical significance (p-0.278) was found in clearance of lesion in both genders and same non significance (p-0.221) was observed in the various age groups related to the clearance of lesions. No statistical significance was observed between the clearances of lesion on various sites (Table-2), however a statistically significant difference was observed between the number

of lesion and clearance of lesion in Group-A (KOH) and Group-B (Cryotherapy). 10% KOH showed better response in patient with 20 or more lesion (Table-3)

Table-1: Lesion clearance

Groups	Efficacy		Total	*p*-value
	Yes	No		
Group A	48 (80%)	12 (20%)	60 (100%)	
Group B	50 (83%)	10 (17%)	60 (100%)	.637
Total	98 (81.6%)	22 (18.4%)	120 (100%)	

Table-2: Group efficacy and site cross tabulation

Site	Group	Efficacy		Total	*p*-value
		Yes	No		
Face	**Group A**	26	6	32	0.84
	Group B	35	2	37	
	Total	61	8	69	
Trunk	**Group A**	14	6	20	0.53
	Group B	9	6	15	
	Total	23	12	35	
Limbs	**Group A**	8	0	8	0.13
	Group B	6	2	8	
	Total	14	2	16	

Table-3: Cross tabulation of number of lesions and efficacy

	Efficacy		Total	*p*-value
Number of Lesions	Yes	No		
Equal or less than 10	74	16	90	
More than 10	24	6	30	0.785
Total	98	22	120	

DISCUSSION

Classically molluscum contagiosum presents either as painless single or multiple white papules having a central dimple (central umblication). These lesions over 12 weeks gradually increase in size and reaches to 0.5–1.0 cm in diameter. Inflammatory processes in the lesion, which may either results from trauma or occurs spontaneously, leads to puss formation and ultimately destruction of MC lesions. Most of the MC lesions are self-limiting and gradually resolves within 9 months.[12]

The usual clinical approach towards MC is to wait and see (benign neglect) as the lesion usually disappears after 6-9 months. Although the lesion is self-limiting and benign in nature yet, most of these lesions are treated owing to fact that there is risk of contagious spread and patients demand for treatment. Social problems arising from the lesions appearance, its apprehension and its tendency to spread leads patients seeking and demanding treatment.

In this study 10% KOH solution and cryotherapy were used to compare the efficacy for clearance of MC lesion at the end of 6 weeks. The results suggests that both KOH and cryotherapy are effective options in treating molluscum contagiosum patients at the end of 6 week treatment period. No significant difference was observed in the cure rates in both KOH and cryotherapy group. Patients undergoing KOH therapy showed clearance of 80%, whereas, patients undergoing cryotherapy showed 83.3% clearance at 6 weeks. The efficacy and clearance shown by the two treatment options are comparable with multiple studies.[5,13]

CONCLUSION

Considering the low cost, easy availability, patience acceptance, and clearance rate of lesions with KOH solution, it appears to be a better option in the treatment of molluscum contagiosum. On the basis of our results, we find that KOH 10% is as effective as cryotherapy and with its comparative ease in use and convenience for patients. KOH therapy has what it takes to be the first choice treatment in children because of the facts that children prefer and tolerate only non-invasive treatment options and have the patience to wait and complete the treatment for complete cure. Our study results suggest that invasive and painful treatment option of cryotherapy can be easily replaced by less painful and equally effective 10%KOH solution in treatment of molluscum contagiosum lesions.

AUTHOR'S CONTRIBUTION

AQ**:** Write up, Study design. MZ: analysis of the data. MJUD, MAA: Review. ZIS: Supervision and proof reading

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