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Research Article

A COMPARATIVE STUDY TO KNOW THE EFFICACY OF CRYOTHERAPY VERSUS 10% POTASSIUM HYDROXIDE SOLUTION IN THE MOLLUSCUM CONTAGIOSUM TREATMENT

Dr. Syed Bilal Ahmed^{*}, Dr. Sajida Jabeen^{*}, Dr. Zafarullah^{*}

* Department of Dermatology, Sandeman Provincial Hospital, Quetta

Abstract:

Molluscum contagiosum (MC) is contagious viral infection that affects commonly children. A number of physical and chemical techniques are accessible for treatment.

Objective: To estimate the safety and efficacy of 10% potassium hydroxide (KOH) solution versus cryotherapy in *MC* treatment.

Study Design: A case-control study.

Place and Duration: In the Dermatology department of Sandeman Provincial Hospital, Quetta for six months duration from February 2018 to July 2018.

Methods: Into 2 groups: 40 MC infected children were divided. In A group (n = 20); Cryotherapy (a freeze chain cycle) was done or in B group (n = 20); 10% potassium hydroxide (KOH) solution was applied twice by the parents or patient up to 3 months. At the beginning of the study, at 2 weeks, 1month, 2 months and 3 months, the subjects were followed up to determine side effects or efficacy (defined as lesions disappear).

Results: At the completion of the analysis, in A group, 14 patients (cryotherapy) and in B group 17 patients (KOH) were examined. In 14 patients (100%) of the cryotherapy group and in KOH group 16/17 (94.1%) had comprehensive lesions removal. Local side effects in group B (KOH) were 88.2% and in A group (cryotherapy) were hundred percent. Though, these were insignificant and did not justify treatment discontinuation.

Conclusion: In children with MC 10% KOH solution is same effective treatment as cryotherapy. However, KOH is safer relatively and more patient-friendly therapy.

Keywords: Potassium hydroxide, cryotherapy, molluscum contagiosum.

Corresponding author:

Dr. Syed Bilal Ahmed,

Department of Dermatology Sandeman Provincial Hospital, Quetta, Pakistan E-mail Address: bilal.dermatologist@gmail.com



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INTRODUCTION:

Molluscum contagiosum (MC) is a communal viral contamination that affects primarily the youth people especially children¹. A DNA virus named Molluscipox virus is the cause. It is categorised clinically as pearl-like and bright papules with umbilication of central region. Their number can vary from minimum to hundreds². Spontaneous reduction may transpire, but lasts six to eighteen months. Though they are generally asymptomatic lesions, they result in cosmetic deformation and awkwardness as well as being transferred as a potential source of autoinoculation into other individuals. Therefore, parentages are worried about the management of the ailment³. From a therapeutic point of view, there are no definite medicine for anti-Molluscipox virus till date and several methods of treatment are commonly used⁴. These comprise of topical modalities or destruction of the lesion. Disruptive treatment choices; cryotherapy, curettage, puncture with sterile needles or expression, laser ablation and photodynamic therapy. However, they are not tolerated well by kids because of pain⁵. Topical therapeutic management includes glycolic acid, salicylic acid, tazarotene, tretinoin, 5% sodium nitrite applied in mixture with 5% salicylic acid daily, liquefied phenol, podofilox, cantharidin and tretinoin. All of these treatments have their particular side effects contour⁶. With keratolytic properties, Potassium hydroxide (KOH) is a strong alkaline so it is widely used in the preparation of smears for bacterial vaginosis (Whiff test) and superficial fungal infections to make the diagnosis⁷. Also used in various care merchandises such as wart medication and solvent cuticle. For MC treatment: it is proven to treat successfully at a concentration of 5-10%. However, there are few local data on this literature⁷. In all departments of dermatology KOH is available and is a comparatively inexpensive option of treatment. The current case control analysis was conducted to compare the 10% KOH solution safety and efficacy in comparison with cryotherapy.

MATERIALS AND METHODS:

This case-control study was held in the Dermatology department of Sandeman Provincial Hospital, Quetta for six months duration from February 2019 to July 2019. Forty children aged 4 to 16 years who were identified as having molluscum contagiosum were selected for the analysis. From the children parents, written informed consent was taken. The criteria of inclusion used were the number of lesions between 5 and 100 and have not participate in the study during the last four weeks. Subjects with known immunodeficiency, patients with cold hypersensitivity and only facial lesions were also not included. The subsequent data was recorded: sex, age, previous treatments and lesion site. Into 2 groups with 20 patients in each were divided randomly. In A Group cryotherapy was done and in B group 10% potassium hydroxide solution (KOH) was used for treatment. With a single freeze-thaw cycle, the lesions in A Group were frozen containing liquid nitrogen for 15 seconds. In B group, 10% KOH solution two times a day was advised to apply by parents or patients until each lesion showed no signs of inflammation with cotton-tipped applicator. If inflammation occurs, treatment should be discontinued in any of the groups. The same viewer performed the evaluation of the response therapeutically at the beginning of the study and then at the 2nd, 4th, 8th and 12th weeks. The final study point was the widespread elimination of the lesions. The subjects were also consulted for any local side effects, eg; itching, erythema, pain, burning, scar and erosion.

Patients who attained comprehensive clearance of lesion clinically before the study lasts were reexamined after one month of clearance and those who established pigmentary changes after inflammation were monitored up for another three months. When study ends, parents or patients were requested to remark on the treatment option which should be preferred between KOH and cryotherapy.

RESULTS:

In Group A (treated with cryotherapy), 14 out of 20 patients finished the study, while in B Group (10% KOH treated patients), seventeen accomplished the analysis. 4 to 16 years was the patient's age range; however, most were under twelve years. The significant clinical data and demographic data are given in Table 1. The disease duration differs from 3 weeks to 26 weeks. The MC was noted for 4 months in 83% of patients. Table 1 shows other characteristics of MC family history, atopy history, lesions count and their dissemination.

	Group A (Cryotherapy)	Group B (10% KOH)		
	N=14	N=17		
Age (years)				
Range	4-16	4-14		
Mean	6±3.4	6±4.1		
Male:female	8:6	9:8		
Duration of lesions (weeks)	3-26	3-24		
Sites of involvement				
Face	6	5		
Trunk	10	13		
Upper limbs, hands	8	12		
Lower limbs, feet	4	6		
No. of lesions				
Range	6-70	6-70		
Mean	22.3±12.4	25±10.5		
Family history of MC	5	3		
History of atopy	2	2		

Table 1 De	emographic	and	clinical	data	in	two	treatment	groups.

Eight cases had a family history. Four subjects had a history of atopy. 6 to 96 was the lesions range in patients. 11 (35.1%) of the 31 subjects had lesions on face (but were not treated), 20 (64.5%) upper extremity, 23 (74.2%) trunk and lower extremity in 10% patients.



Figure 1 Treatment response in two treatment groups.

The time required for the thorough disappearance of the lesions is given in Figure 1. In Group A, 14 (100%) patients with cryotherapy had complete elimination of lesions and in eight patients after 4 weeks MC treatment had complete removal; and for 8 weeks of treatment, the lesions in another 6 were resolved. In B group completely eliminated in 16 (94.1%) of 17 patients with KOH in 10% concentration. Among these, for four weeks these eight cases were treated and complete resolution of lesion were seen, 7 by eight weeks and one patient had given treatment for three months. The treatment response was independent of disease duration and involvement area (p > 0.05).

In A Group (100%) all subjects complained of pain. The blisters developed in 12 (85.7%). At the end of the study, hypopigmentation was observed in 3 patients (21.5%) with transient inflammation after 12 weeks. Seventeen (88.02%) of patients with KOH (group B) had pain sensation immediately after administration of KOH solution, but this annoyance decreased gradually after frequent administration. There was no significant variation in side effects in atopy patients (p > 0.05). Due to side effects; no patients stopped treatment.

Nearly all patients felt that if they had an option, they would choose to use KOH instead of cryotherapy.

DISCUSSION:

Most patients require MC treatment because of their undesirable effect on life quality. A better MC treatment should be easy, safe and effective, economical and easily accessible particularly in societies without resources like Pakistan⁹. All management techniques based on Cryotherapy, physical destruction, laser and curettage are painful and problematic to perform, especially for children. Likewise, other topical treatments include post inflammatory pigmentation and cutaneous irritation. So, better treatment urges continues¹⁰. KOH is a strong alkaline with keratolytic activity and is helpful for diagnostic purposes in practice of dermatology. It result in irritating reaction depending on the concentration in the skin, the area of application of the body and the individual sensitivity. It is easy to find in all skin departments¹¹. Various introductory analysis show auspicious outcomes with KOH in MC treatment in children. In this analysis, 14 children (100%) showed complete cleansing with cryotherapy, 16 of 17 patients (93.91%) were completely eliminated by lesions with KOH treatment (p > 0.05). Although there was no significant statistically variation between the 2 groups in efficacy, treatment with KOH is safer and patient-friendly than cryotherapy¹². After the procedure; all patients complained of pain. The hypopigmentation was noted in 21.5% and blisters in 85.7%, although they were temporary. 10% of KOH caused pain in 88.02% of cases when applied. Therefore, there were more side effects that could be less tolerant of cryotherapy. All parents reported that it was easy and preferable to treat their children at home rather than exposing the KOH solution to more aggressive physical therapy in the hospital setting. Romiti et al. He proposed a 10% KOH solution as economical, effective and safe and noninvasive MC treatment¹³. The KOH exact action is but speculation is as follows. unknown, Histopathological features of MC indicate endophytic endophytic keratinocyte hyperplasia, including a very large intracytoplasmic inclusion and a generally weak dermal leak¹⁴. Some viruses, e.g. HIV and Rubella have the ability to escape or suppress the host's immune response, which eases body spread or a permanent infection. It is supposed that mollusc virus have same capability to decrease the reaction. The immune system particular T cells, playing a major role in antiviral defense; Therefore, there is usually no dermal infiltrate around intact MC lesions¹⁵. Administration of topical KOH digests keratine and causes inflammation, such as

other physical or chemical treatments; this stimulates the natural cell-mediated immune response that prevents MC-mediated immune suppression and eliminates MC infection.

CONCLUSION:

As a result, a 10% KOH solution is as effective as cryotherapy for MC treatment. However, it is relatively less painful, less traumatic, less expensive and easier to use at home making it a better choice in the MC treatment.

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