

Research Article**A Comparative Study of Efficacy of 10% KOH, Trichloroacetic Acid (TCA) and 0.05% Tretinoin for the Treatment of Molluscum Contagiosum**Vippan Goyal^{1*}, Ashwani Kumar Maheshwari², Shammi Goyal³, Manharan Gill⁴¹Associate Professor, Department of Dermatology, Adesh Institute for Medical Sciences & Research (AIMSR), Barnala Road, Bathinda, Punjab-151001, India²Associate Professor, Department of Paediatrics, Adesh Institute for Medical Sciences & Research (AIMSR), Barnala Road, Bathinda, Punjab-151001, India³Attending Consultant, Department of Anesthesia, Max Hospital, Bathinda, Punjab-151001, India⁴Junior Resident, Department of Dermatology, Adesh Institute for Medical Sciences & Research (AIMSR), Barnala Road, Bathinda, Punjab-151001, India***Corresponding author**

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Abstract: Molluscum contagiosum is a common cutaneous infection seen in children and young adults. It is caused by the Molluscum contagiosum virus which is a DNA virus. Its mode of transmission is by contact with an infected person or fomites or autoinoculation. Although it is a self limiting condition, a decision may be made in favour of active therapy to prevent further spread, relieve symptoms, to prevent scarring and for cosmetic and social reasons. The current treatment modalities include physical destruction of the lesion by curettage, cryosurgery or manual expression and topical application of caustic agents such as trichloroacetic acid, cantharidin, silver nitrate etc. These therapeutic approaches have to be undertaken in a hospital setup and are not well tolerated by children owing to substantial pain and fear. In addition, these can also result in scarring and abscess formation. Topical application of 10% KOH solution and 0.05% Tretinoin cream are two relatively painless modalities that have been used with success in the treatment of Molluscum contagiosum. The objectives were to compare the efficacy and side effects of 10% KOH, TCA and 0.05% tretinoin cream in the treatment of Molluscum contagiosum. Sixty patients were randomly divided into 3 groups. The Group I have given 10% KOH solution to be applied at bed time over molluscum lesions. The Group II has given 0.05% tretinoin cream to be applied at bed time over lesions. The Group III applied TCA in OPD. The assessment of response and side effects were performed weekly for 4 weeks. The results showed that the mean lesion count decreased from 22.39 to 10.75 with tretinoin, from 20.79 to 4.31 with KOH and from 20.49 to 4.1 with TCA at the end of 4 weeks. We found complete clearance of lesions in 8 (44.44%) patients with tretinoin, in 11 (50%) patients with 10% KOH and in 12(60%) with TCA. Minor side effects were seen in 17(85%) patients on TCA, 16 (72.72%) patients on KOH and 10 (55.56%) patients on tretinoin. The results of this study suggest that all three agents i.e. 0.05% tretinoin cream, 10% KOH solution and TCA are equally effective in Molluscum contagiosum though TCA has a faster onset of action. However, TCA solution is associated with a higher incidence of side effects.

Keywords: KOH, Trichloroacetic acid, Tretinoin, Molluscum contagiosum

INTRODUCTION

Molluscum contagiosum was first detected by Bateman in the year 1814 [1]. Its viral etiology was established only in the year 1905 by Julisberg [2]. Molluscum contagiosum is caused by MC virus, the largest human virus and sole member of genus molluscipox[3]. It occurs worldwide and primarily affects children and young adults. The skin lesions characteristically appear as raised, rounded bumps that are white, pink, or flesh-colored. Transmission of the virus occurs by direct person-to-person contact or via contact with infected objects. Rogers M *et al.* states that

infection typically occurs in the age group of 2-5 years and rare in children under 1 year of age [4].

Incubation period varies from 14 days to 6 months. The lesion usually presents as dome shaped, shiny, pearly white, umbilicated papules that may have a central pore. Size of lesion may vary from tiny 1mm papules to large nodules over 1 cm in diameter. After several months, inflammatory changes result in the production of white fluid, crusting, and eventual destruction of the lesion. New lesions tend to appear as old one resolves as a consequence of virus spreading to other areas of skin [4]. The diagnosis is done clinically.

A study by Vander Wouden JC *et al.* states reasons for intervention that includes alleviating discomfort, itching; social stigma associated with many visible lesions; cosmetic reasons; limiting its spread to other areas of the body and to other people; preventing scarring and secondary infection; and preventing trauma and bleeding of lesions [5].

Different approaches to treating this infection are described in the literature, including waiting for it to disappear on its own [6,7]. Curettage is considered in several studies to be the gold standard in the treatment of MC; it is cited as the most effective and as having the lowest recurrence rate [7-10]. When choosing a treatment, several aspects are considered, such as effectiveness and recurrence condition [9-10]. Secondary aspects, such as the physical and psychological tolerance of the therapy, the patient's or parent's preference, the family's economic situation, and the availability and ease of access to the medical practice, should also be taken into account [11-12]. The most cited treatment techniques are cryotherapy; laser therapy; curettage; and several topical substances – tretinoin, potassium hydroxide (KOH), cantharidin, imiquimod, trichloroacetic acid and the combination of salicylic and lactic acids are the most common [13-14]. There are also descriptions of the use of immunomodulators and antivirals [11,15,16].

Treatment is usually only recommended for adults and older children those have spots. Potassium hydroxide works by breaking down the skin cells around the virus that allows the immune system to respond to it. The lesions should eventually become inflamed, before healing and disappearing within 1-5 weeks. Side effects include hardening and flakiness of the skin swelling of the skin and a burning or itching sensation after application. Side effects are usually mild and often related to the inflammation process necessary to begin the healing process [21].

Tretinoin is available as a gel or cream. It is and is applied once or twice a day to individual lesions. It can make your skin sensitive to sunlight and UV light. It is not suitable for use during pregnancy as it can cause birth defects. Most common side effects of tretinoin are mild irritation and stinging of the skin [21].

MATERIALS AND METHODS

A randomized comparative study was carried out in the Department of Dermatology, Adesh Institute of Medical Sciences and Research, Bathinda to compare three types of treatment for MC. The study sample included patients from 3 to 20 years old, clinically diagnosed with MC. Patients were accompanied by their parent or guardian, to whom the term of informed consent was presented. Patients were allocated randomly into three study groups: Group I – topical use

of 10% KOH in aqueous solution, applied once a day at home; Group II – application of 0.05% tretinoin cream once a day at home; and Group III – application of trichloroacetic acid (TCA) on the lesions in the OPD. Groups were evaluated every 7 days for 30 days. The incidence of side effects, such as erythema, edema, pruritus, hyperpigmentation, scarring and secondary infection in the place of the lesions was analyzed at each visit. The resolution of the lesions was also evaluated.

RESULTS

Of the 60 patients, 26 were females with average age 8.56. 66% presented less than 20 lesions, 28% presented from 20 to 40 lesions, and 6% presented more than 40 lesions at the initial examination. The location of the lesions on the body was as follows: trunk (54%), upper limbs (26%), lower limbs (26%), face (38%) and cervical region (28%). 48% suffered from atopic dermatitis. Some patients (10%) had previously been infected with MC, and had undergone treatment more than six months before. Patients were randomly distributed among groups: 22 in Group I, 18 in Group II and 20 in Group III. Side effects were reported in the first evaluation and at the end of the follow-up. The results showed that the mean lesion count decreased from 22.39 to 10.75 with tretinoin, from 20.79 to 4.31 with KOH and from 20.49 to 4.1 with TCA at the end of 4 weeks. We found complete clearance of lesions in 8 (44.44%) patients with tretinoin, in 11 (50%) patients with 10% KOH and in 12 (60%) with TCA. Minor side effects were seen in 17 (85%) patients on TCA, 16 (72.72%) patients on KOH and 10 (55.56%) patients on tretinoin. At the end of the follow-up period after the procedure, 10 patients still presented clinically detectable MC lesions: 3, 4 and 2 in Group I, II and III respectively, with no statistical significance among the groups.

DISCUSSION

There is no consensus regarding the most effective treatment for this dermatosis. Although waiting for the condition to resolve on its own is an option, many parents and patients prefer the removal of the lesions. Good reviews comparing available treatments have been published [17-19]. The treatments are classified into destructive, immunomodulators and antiviral. Destructive treatments are the most common and include curettage, cryotherapy, chemical cauterization and the application of keratolytic substances (salicylic and lactic acids, tretinoin) or vesicants (cantharidin). A review by Brown and colleagues compared several treatment options for MC, describing their advantages and disadvantages. There has been a preference for destructive treatments (cantharidin, cryosurgery and curettage) because they showed fast results with few adverse effects [20].

The present study did not present a statistical difference in any of the analyses conducted, in spite of the tendencies verified in some of them. For instance, in the pain evaluation, more than half of the patients who received TCA treatment reported moderate pain, while minor pain was most reported in the other two groups. No important complication was reported, and the differences among adverse effects were not statistically significant among the groups, despite the fact that the TCA group presented more erythema, pain, hyperpigmentation and scarring, KOH group presented more erythema and pruritus at the end of the follow-up.

CONCLUSION

We concluded from the study that the treatment of this condition must be individualized, taking the patients' preference, tolerance and availability of time into consideration. It shows that the KOH therapy has advantage of easy to use in children & was also effective treatment. No scarring & pigmentation where KOH was applied. TCA has better results but has disadvantages of being not used at home and children. Procedure is also painful. Tretinoin has very low efficacy and other disadvantage is prolonged treatment.

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