

Research Article

Autoimplantation therapy for the management of extensive molluscum contagiosum: a novel treatment approach

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ABSTRACT

Background: Molluscum contagiosum (MC) is a common cutaneous viral infection which usually affects children. In spite of the multiple treatment options such as curettage, expression, electrodesiccation and different topical agents, in some cases lesions become extensive and persist for more than 3 to 4 years. The role of immunomodulatory therapy in management of MC has been well documented. Autoimplantation has emerged as a useful immunomodulatory therapy for warts. The objective of the study is to assess the efficacy and safety of autoimplantation in treatment of extensive MC.

Methods: Patients of either sex having more than six MC lesions were included. Molluscum body removed, crushed & implanted in a small dermal pocket as described in cases of warts. Patients were evaluated at four weeks, 12 weeks & subsequent 24 weeks.

Results: Twenty two patients completed the study. Complete clearance of the MC was seen in 17 (77.2%) patients, 2 (9.1%) had no response, 1 (4.5%) had partial remission & 2 patients (9.1%) showed recurrence.

Conclusions: Autoimplantation may be effective & alternative modalities for extensive MC. However, more randomized controlled trial for autoimplantation therapy in extensive MC need to be warranted.

Keywords: Molluscum contagiosum, Autoimplantation

INTRODUCTION

Molluscum contagiosum (MC) is a common cutaneous infection caused by Molluscum contagiosum virus (MCV) belonging to poxviridae family. It usually affects children and is transmitted through direct contact, or indirectly via fomites and swimming pools etc. The virus also spreads through autoinoculation and sexual contact.¹ Although the disease has a self-limiting course, in some cases the lesions become extensive and persist for more than 3 to 4 years.² Patients who have atopic dermatitis may develop widespread MC. Treatment options are either ablative or immunomodulatory in nature, and are chosen depending on the extent & severity of the MC. Destructive modalities may not always be practical in children &

most importantly recurrence occurs in as many as 35% of patients after initial clearing.³ Topical/oral immunomodulatory therapy can be cumbersome and does not ensure clearance. Immunological therapy in the form of auto implantation has shown good results in extensive warts. This study was conducted to assess the efficacy of auto implantation in treatment of extensive MC.

Aims and objectives

To assess the efficacy and safety of autoimplantation procedure in the management of extensive MC in children and adolescents.

METHODS

This study was carried out from January 2015 to December 2015 at a tertiary care hospital in southern Rajasthan. It was conducted after obtaining the ethical clearance from the institutional ethics committee. Written informed consent was obtained from parents of the patients recruited for the study. All consecutive patients of clinically diagnosed MC of either sex, with six or more than six lesions, attending the dermatology out-patient department were included. Children below 8 yrs, pregnant and lactating women, patients who had received any therapy for MC in the last 3 months and those with immunosuppression due to drugs or disease/advanced disease of vital organs/alcohol or other substance abuse were excluded from the study.

Calculation for sample size done using the prevalence in our outpatient department and assuming a sample error of 10% gave a value of 16 patients. We included 25 patients (sixteen boys and nine girls) aged eight to eighteen years in our study. The demographic characteristics of the patients, detailed history regarding duration and past treatment of molluscum lesions, and a thorough clinical examination regarding number of lesions was observed and recorded in the standard form of all patients (Table 1).

Table 1: Baseline characteristics of patients (n=25).

Characteristics	Numbers of patients
Age	
8-12	15
12-18	10
Sex	
Male	16
Female	9
Number of molluscum	
6-15	8
15-25	13
>25	4
Duration (in months)	
<6months	20
>6months	5
Past treatment	
Treatment naïve	17
Treatment failure/recurrence	8
Inflammation in one or more lesions	
Present	5
Absent	20

Lesions were mostly on the extremities and were not painful and itchy. We removed a molluscum body with an 18G needle and implanted as described below.

Autoimplantation procedure

The procedure was performed under aseptic conditions in dermatology theatre. The technique followed was that of Shivakumaret al⁴ with some modification as conducted in autoinoculation of wart. A molluscum lesion of substantial volume was chosen as the donor & carefully molluscum body (Henderson–Paterson body) was curetted, placed in a petri dish and crushed. Volar aspect of the left forearm, 5 cm below the antecubital crease was taken as recipient site and anaesthetized by 2% lignocaine infiltration. Using a 20 gauge needle, a dermal pocket extending up to the deep dermis was created (Figure 1).



Figure 1: Image showing dermal pocket on left side of forearm.

The crushed molluscum body was introduced into this pocket using the tip of the same needle. Donor and recipient sites were dressed with sterile betadine gauze and adhesive plaster. Topical antibiotic (fusidic acid) was advised for five days. Patients were advised not to wet or remove the plaster for 5 days after the procedure.

Three follow-up visits were scheduled at 4 weeks, 12 weeks & 24 weeks. Clinical photography was done at baseline (Figure 2) & at 24 weeks (Figure 3). At each follow-up visit, efficacy of treatment was evaluated as follows:

- Patients who did not have any decrease in lesions were considered nonresponders.
- Those who had decrease in lesions but with persistence of one or more lesions considered partial remission.
- Complete absence of MC lesion was considered complete clearance.
- Development of new lesions after complete clearance was considered recurrence.

Descriptive statistics was analyzed on the parameters of range, mean±S.D., frequencies (number of cases), relative frequencies, ratio or percentages, whichever was appropriate. For analytical statistics, the numeric data (continuous variables) were analyzed by using unpaired t-test and the categorical data were analyzed by using Fisher's exact test or Chi-square test (as applicable).

Statistical software Medcalc® version 10.2.0.0 for Windows vista (<http://www.medcalc.be>) was used for statistical analysis and P value ≤ 0.05 was considered statistically significant.

RESULTS

Out of twenty five, only twenty two patients completed the follow up. At the first follow up, no recurrence of the primary donor sites was seen in any of the twenty two cases. Complete clearance of remote MC was seen in 8 patients (36.4%), partial remission in 7 patients (31.8%) & the remaining 7 patients (31.8%) were non responders. At 12 weeks of follow up, 15 patients (68.2%) had complete clearance, 2 patients had partial remission (9.1%), 3 patients (13.6%) were still non responders & 2 patients (9.1%) had recurrence. At 24 weeks of follow up, 17 patients (77.3%) had complete clearance, one (4.5%) had partial remission, 2 patients (9.1%) were non responders and two patients (9.1%) still showed recurrence. Majority of the responders (15/17) showed resolution of MC within the first three months (Table 2).

Table 2: Clearance of MC lesions noted at successive follow up visits.

	4 weeks	12 weeks	24 weeks
Non responders	7	3	2
Partial remission	7	2	1
Complete clearance	8	15	17
Recurrence	-	2	2



Figure 2: Pre and post treatment photographs showing complete clearance of MC lesions after autoimplantation.

No serious side effects were reported, however 50% patients (11/22) had mild skin irritation, redness & pain at the site of autoimplantation which resolved in three to five days. No systemic symptoms were noted in all the twentytwo cases.

No statistical significance in the efficacy of autoimplantation in MC in terms of differences in number, duration, past treatment and inflammation of MC lesions was observed.

DISCUSSION

MC is a contagious viral infection & may resolve spontaneously.⁵ However, a fairly large number of patients require active treatment. Destructive treatment modalities include curettage, cryotherapy, expression or pricking with a sterile needle, electrodesiccation, photodynamic therapy & laser ablation.^{6,7} But destructive therapy is poorly tolerated in children, so in case of extensive MC lesions topical medical therapy like salicylic acid, glycolic acid, tretinoin, tazarotene, 5% sodium nitrite, podofilox,⁸ liquefied phenol, cantharidin,⁹ potassium hydroxide^{10,11} & imiquimod¹² is used. Oral therapy like cimetidine has also been given. The most appropriate therapeutic approach largely depends on the clinical situation. But no therapy is universally effective. Most of the procedures are inconvenient, may leave behind scars or postinflammatory pigmentary changes and cannot prevent recurrence. In a study of the treatment of MC in children, Hanna et al¹³ determined that curettage was found to be the most efficacious treatment and had the lowest rate of adverse effects. However, it must be performed with adequate anaesthesia & is a time consuming procedure. At the same time curettage & cryotherapy for multiple MC in a single session in case of children is very difficult. An ideal therapy should be able to remove the MC infection in majority of patients without any aggressive procedure, while enhancing the immune status of the individual to prevent recurrences.

Evidence suggests that patient's cell mediated immunity plays an important role in the treatment of warts. There are number of studies of autoimplantation for warts¹⁴⁻¹⁶ which suggest that autoimplantation may work by activating a delayed hypersensitivity response to the wart tissue antigen, aiding clearance of both local and distant warts. Also, different immunotherapeutic agents for intralesional injection (including autogenous vaccine, Candida antigen, mumps antigen, trichophyton skin test antigen, tuberculin, BCG vaccine, MMR vaccine, Mycobacterium w vaccine and interferon alpha and gamma injection) have proven useful in warts.¹⁷

As in warts, multiple studies^{18,19} explain that in MC, cell mediated immunity is most important in modulation and controlling the infection. A study by Vermi²⁰ & colleagues presented evidence of brisk immunological response as a mechanism of self-destruction of the inflammatory MC lesions. Clinical inflammation has been observed as a preliminary step for spontaneous regression of some MC lesions.⁵

On keen observation of the clinical and immunological spectrum of MCV and HPV infection, many similarities, including the vital role of immunological response in both, can be appreciated. Role of immunological modulation in treatment of both warts and MC has also been provided by Maronnet al²¹. They reported their one year experience with intralesional candida antigen therapy for both warts and molluscum contagiosum. In the

molluscum patients 14/25 (56%) had complete resolution, 7/25 (25%) had partial 74/25 (16%) had no improvement. However, in spite of evidences of the role of immunomodulation by autoinoculation in treatment of warts, no study for autoimplantation in MC has been conducted to the best of our knowledge. This the first study of autoinoculation in MCV infection. In our study, resolution was noted in 77.3% patients while 9.1% patients had recurrence at 24 weeks of follow up. The clearance rate noted in our study is similar to the clearance rates of warts by autoimplantation reported by Srivastava et al (66.03%), Lal et al (62.5%) and Nischal et al (74.1%). Local adverse events were noted like edema, redness, but did not necessitate withdrawal from therapy.

Limitations of our study are that we could not determine the MCV type to account for type specific difference in therapeutic outcome. We also did not ascertain the level of chemokines to ascertain their role. Larger, randomized controlled trials with longer follow up are needed to accurately determine the effectiveness of treatment.

CONCLUSION

Extensive and refractory molluscum contagiosum virus infection not only causes physical problem but also psychological trauma to the patient and caregivers. Our study indicates that autoimplantation therapy holds promise in the management of extensive MC infection an easy day care and cost effective alternative option in developing countries like ours.

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REFERENCES

- Nandhini G, Rajkumar K, Kanth SK, Nataraj P, Ananthkrishnan P, Arunachalam M. Molluscum contagiosum in a 12 year old child-report of a case and review of literature. J Int Oral Health. 2015;7(1):63-6.
- Bhatia AC. Molluscum contagiosum: background, etiology, epidemiology. Northwestern University department of dermatology, Feinberg School of medicine; 2011. Available at: <http://emedicine.medscape.com/article/910570-overview>. Accessed on 1 April 2016.
- Van der Wooden JC, Van der Sande R, Van Suijlekom-Smit LW, Berger M, Butler CC, Koning S. Intervention for cutaneous molluscum contagiosum. Cochrane Database Sys Rev. 2009;(4):CD004767.
- Shivakumar V, Okade R, Rajkumar V. Autoimplantation therapy for multiple warts. Indian J Dermatol Venereol Leprol. 2009;75:593-5.
- Sharquie KE, Hameed AF, Abdulwahhab WS. Pathogenesis of molluscum contagiosum: a new concept for the spontaneous involution of the disease. Our Dermatol Online. 2015;6(3):265-9.
- Nguyen HP, Franz E, Stiegel KR, Hsu S, Tyring SK. Treatment of molluscum contagiosum in adult, pediatric, and immune deficient populations. J Cutan Med Surg. 2014;18(5):299-306.
- Hammes S, Greve B, Raulin C. Molluscum contagiosum: Treatment with pulsed dye laser. Hautarzt. 2001;52(1):38-42.
- Syed TA, Lundin S, Ahmad M. Topical 0.3% and 0.5% podophylotoxin cream for self-treatment of molluscum contagiosum in males. A placebo-controlled, double-blind study. Dermatology. 1994;189(1):65-8.
- Ross GL, Orchard DC. Combination topical treatment of molluscum contagiosum with cantharidin and imiquimod 5% in children: a case series of 16 patients. Australas J Dermatol. 2004;45(2):100-2.
- Potassium hydroxide 5% for the treatment of molluscum contagiosum. Drug Ther Bull. 2014;52(10):118-20.
- Romiti R, Ribeiro AP, Grinblat BM, Rivitti EA, Romiti N. Treatment of molluscum contagiosum with potassium hydroxide: a clinical approach in 35 children. Pediatr Dermatol. 1999;16(3):228-31.
- Theos AU, Cummins R, Silverberg NB, Paller AS. Effectiveness of imiquimod cream 5% for treating childhood molluscum contagiosum in a double-blind randomized pilot trial. Cutis. 2004;74(2):134-8, 141-2.
- Hanna D, Hatami A, Powell J, Marcoux D, Maari C, Savard P et al. A prospective randomized trial comparing the efficacy and adverse effects of four recognized treatments of molluscum contagiosum in children. Pediatr Dermatol. 2006;23(6):574-9.
- Srivastava PK, Bajaj AK. Auto wart injection therapy for recalcitrant warts. Indian J Dermatol. 2010;55:367-9.
- Nischal KC, Sowmya CS, Swaroop MR, Agrawal DP, Basavaraj HB, Sathyanarayana BD. A novel modification of the auto implantation therapy for the treatment of multiple, recurrent and palmoplantar warts. J Cutan Aesthet Surg. 2012;5:26-9.
- Lal NR, Sil A, Gayen T, Bandyopadhyay D, Das NK. Safety and effectiveness of autoinoculation therapy in cutaneous wart: a double-blind, randomized, placebo-controlled study. Indian J Dermatol Venereol Leprol. 2014;80:515-20.
- Chandrashekar L. Intralesional immunotherapy for the management of warts. Indian J Dermatol Venereol Leprol. 2011;77:261-3.
- Berger EM, Orlow SJ, Patel RR, Schaffer JV. Experience with molluscum contagiosum and associated inflammatory reactions in a pediatric

- dermatology practice: The bump that rashes. *Arch Dermatol.* 2012;148:1257-64.
19. Vermi W, Fisogni S, Salogni L, Scharer L, Kutzner H, Sozzani S, et al. Spontaneous regression of highly immunogenic molluscum contagiosum virus induced skin lesion is associated with plasma cytoid dendritic cells and IFN-DC infiltration. *J Invest Dermatol.* 2011;131:426-34.
 20. Takematsu H, Tagami H. Pro inflammatory properties of molluscum bodies. *Arch Dermatol Res.* 1994;287(1):102-6.
 21. Maronn M, Salim C, Lyon C, Galbraith S. One year experience with Candida antigen immunotherapy for wart and molluscum. *Pediatr Dermatol.* 2008;25(2):189-92.

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