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COMPARISON OF FORMIC ACID PUNCTURE TO INTRALESIONAL MMR VACCINE FOR TREATING COMMON WARTS

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ABSTRACT

Background: Warts are a common, uncomfortable ailment that have been treated with a variety of treatment approaches. There are many different treatment options available, but no single approach has been shown to be totally successful.

Aim: The purpose of this study was to compare the safety and effectiveness of treating common warts with an intralesional injection of the MMR vaccination vs an 85% formic acid puncture.

Methods: The 120 participants in the study were split into two groups of 60, with Group I receiving the intralesional dose of the MMR vaccine (0.3% ml per lesion) and Group II receiving an 85% formic acid puncture in each lesion, with a maximum of 10 warts managed in each case. To check for recurrence, five visits were conducted every two weeks, followed by a three-month follow-up.

Results: The study's findings demonstrated that, in Group I, complete, partial, and no responses were observed in 62.5% (n=), 8% (n=), and 4.1% (n=) of the subjects, respectively. In Group II, on the other hand, complete, partial, and no responses were observed in 31.8% (n=), 63.6% (n=), and 4.5% (n=) of the subjects, respectively. With p=0.02, the treatment response rate difference between the two groups was statistically significant. During follow-up, no recurrence was observed in any group.

Conclusions: This study shows that intralesional MMR vaccination immunotherapy is a straightforward, safe, economical, and successful way to treat warts. It also shows statistically significant improvements in cure rates when compared to formic acid treatment.

Keywords: Common warts, intralesional MMR vaccination, formic acid puncture, measles, mumps, and rubella

INTRODUCTION

Verrucae, also known as common warts, are clinical entities that indicate benign proliferations in the skin and mucosa

resulting from HPV (Human Papilloma Virus) infection. There are more than 150 distinct strains of HPV, or human papillomaviruses. HPV-1 and HPV-2 often attack the body's plantar surfaces, whereas HPV-6 and HPV-11 are more commonly recognised to impact the anogenital area.1

The most frequent skin conditions that dermatologists receive reports of in their clinical settings are warts, which are also the most common lesions that they treat. In the Indian setting, between 2.5% and 9% of the patients visiting the dermatology department had warts.2

Numerous treatment strategies for warts have been mentioned in the literature that has already been published. Additionally, a number of studies have examined the efficacy of various treatment techniques for warts; the most popular therapy modalities are destructive and immunotherapeutic modalities.4.5 Although there are a number of therapeutic options for treating warts, no one therapy is thought to be the best; researchers are still looking for a single, workable solution.Six Intralesional injection of antigen as immunotherapy has demonstrated promising outcomes in the management of warts recently.7

In order to cure common warts, the current study compared the safety and effectiveness of intralesional injection of the MMR vaccination with an 85% formic acid puncture.

MATERIALS AND METHODS

In order to evaluate the safety and effectiveness of intralesional injection of the measles, mumps, and rubella (MMR) vaccination vs 85% formic acid puncture for the treatment of common warts, a prospective comparative clinical trial was conducted. The study was conducted with approval from the relevant institutional ethical committee. The study's participants were from the Institute's Department of Dermatology. Prior to their involvement in the study, all participants provided their written and verbal informed permission.

Based on their clinical characteristics and medical histories, 120 individuals with verified clinical diagnoses of common warts were included in the study. The patients visited the Institute's outpatient department of dermatology.

The study's inclusion requirements included being above the age of eighteen, having a verified clinical diagnosis of warts, having no history of topical or systemic therapy, and having one or more common or palmoplantar warts, with a maximum of ten lesions. Meningitis, a history of allergic skin disorders, warts on the face or anogenital area, immunocompromised individuals, nursing or pregnant women, fever, and symptoms of infection or inflammation were among the exclusion criteria for this research.

The subjects were split into two groups of sixty each. Group I received the intralesional dose of the freeze-dried measles, mumps, and rubella (MMR) vaccine in a single dosage of twelve units (0.3 ml) per lesion in sixty subjects. The vaccine was reconstituted using 0.5 ml of water as a diluent.

Each wart received an injection of the vaccination using an insulin syringe. For five maximum sessions of two, four, six, and eight weeks, this was done once every two weeks. Group II participants—60 in total—were given 85% formic acid puncture in each lesion, with a maximum of 10 warts treated in each instance. A hypodermic needle with a gauge of 26 was used to pierce formic acid. For a total of five times, the formic acid puncture was performed once every two weeks at two, four, six, and eight weeks. The outcomes of the two treatments—the formic acid puncture and the MMR vaccine—were noted and compared.

Based on a grading system, the comparison was conducted: Grade I indicated no cure with a reduction in wart size of 0–49%, Grade II indicated a partial cure of 50%–99%, and Grade III indicated a complete 100% clearance of the lesion. Following the end of therapy, participants were summoned back once a month for three months to undergo follow-up and clinical evaluation of the outcomes.

The collected data were statistically analysed using the unpaired t-test and the chi-square test, using IBM Corp.'s SPSS software version 21.0 (Armonk, NY, USA). The statistics were presented as percentage, frequency, mean, and standard deviation. An acceptable p-value for statistical significance was <0.05.

RESULTS

In order to evaluate the safety and effectiveness of intralesional injection of the measles, mumps, and rubella (MMR) vaccination vs 85% formic acid puncture for the treatment of common warts, a prospective comparative clinical trial was conducted. The 120 participants were split into two groups of 60 each. Group I received the intralesional dose of the freeze-dried measles, mumps, and rubella (MMR) vaccine in a single dosage of 0.3 ml (12 units) per lesion in 60 participants. The vaccine was reconstituted using 0.5 ml water as a diluent. Each wart received an injection of the vaccination using an insulin syringe. This was done for a maximum of five sessions, ranging from two to eight weeks, once every two weeks.

The research respondents' mean age was found to be 29.75±2.82 years for Group I and 29.78±3.22 years for Group II. This difference was not statistically significant, with a p-value of 0.757. Group I consisted of 45.8% (n = 22) males and 54.16% (n = 26) females. Group II consisted of 45.5% (n=20) girls and 54.5% (n=24) males, as Table 1 illustrates.

120 participants were initially split into two groups of 60 participants each for the study. However, during follow-up, 12 participants from Group I and 16 participants from Group II did not show up, leaving 48 and 44 participants in Groups I and II, respectively, as the final sample sizes. With a p-value of 0.95, the mean number of lesions treated in Groups I and II was statistically not significant. The individuals' wart conditions improved in both groups. With p=0.02, the intralesional MMR vaccine response was statistically significant. Additionally, the formic acid group had an 85% response rate with a p-value of 0.02.

After receiving wart treatment, 33.33% (n=16) of the research subjects in Group I and 63.63% (n=28) of the study subjects in Group II showed a partial response to the therapy. As shown in Table 2, 62.5% (n=30) of the participants in Group I and 36.36% (n=16) of the subjects in Group II showed a full response to the treatment. When the side effects of the two research groups were compared, it was found that in Group I, where the MMR vaccination was injected intralesionally, 100% of the patients reported experiencing moderate to severe pain after the injection. This resulted in highly significant results, with a p-value of less than 0.001. 13.3% (n=8) of research participants experienced erythema at the injection site, indicating statistical significance with p=0.002. 26.7% (n=16) of research participants from Group I had post-inflammatory pigmentation, which was statistically significant (p=0.001). Following the application of formic acid, 26.7% (n=16) of the individuals in Group II reported feeling burned, a finding that was statistically significant (p=0.001). In no group did any of the adverse events require treatment intervention.

DISCUSSION

The 120 subjects in this study were split into two groups of 60 each. Group I received the intralesional dose of the freeze-dried measles, mumps, and rubella (MMR) vaccine in a single dosage of 0.3 ml (12 units) per lesion in 60 subjects. The vaccine was reconstituted using 0.5 ml water as a diluent. Each wart received an injection of the vaccination using an insulin syringe. For five maximum sessions of two, four, six, and eight weeks, this was done once every two weeks. The research respondents' mean age was found to be 29.75±2.82 years for Group I and 29.78±3.22 years for Group II. This difference was not statistically significant, with a p-value of 0.757.

Group I consisted of 45.8% (n = 22) men and 54.16% (n = 26) females, whereas Group II included 54.5% (n = 24) males and 45.5% (n = 20) females. These findings were in line with research conducted in 2020 by Rajegowda HM et al9 and in 2020 by Kolte SR et al10, whose authors evaluated participants using demographic information similar to that of the current study.

120 people total, split into two groups of 60 subjects each, were originally included in the current study. However, during follow-up, 12 subjects from Group I and 16 subjects from Group II did not show up, leaving 48 and 44 subjects in Groups I and II, respectively, as the final sample sizes.

With a p-value of 0.95, the mean number of lesions treated in Groups I and II was statistically not significant. The individuals' wart conditions improved in both groups. With p=0.02, the intralesional MMR vaccine response was statistically significant. Additionally, the formic acid group had an 85% response rate with a p-value of 0.02. The present study's outcomes aligned with the research conducted by Shah et al. (2016) and Nofal A et al. (2015), who also reported similar treatment responses.

The study's findings demonstrated that, when the two study groups' responses to the therapy were compared following wart treatment, 33.33% (n=16) of the individuals in Group I and 63.63% (n=28) of the subjects in Group II exhibited partial responses.

36.36% (n=16) of Group II individuals and 62.5% (n=30) of Group I subjects showed a full response to treatment. These results were consistent with those of studies conducted in 2016 by Saini P et al. and in 2014 by Zamanian A et al., where the authors reported full replies in a proportion that was similar to that of this study. Additionally, after evaluating the side effects in the two research groups, it was seen that, in Group I, where the MMR vaccination was injected intralesionally, 100% of the participants reported experiencing moderate to severe pain after the injection. These results were highly significant, with a p-value of less than 0.001. 13.3% (n=8) of research participants experienced erythema at the injection site, indicating statistical significance with p=0.002.

26.7% (n=16) of research participants from Group I had post-inflammatory pigmentation, which was statistically significant (p=0.001). Following the application of formic acid, 26.7% (n=16) of the individuals in Group II reported feeling burned, a finding that was statistically significant (p=0.001). In no group did any of the adverse events require treatment intervention. These findings were consistent with earlier research conducted by Chauhan PS et al. in 2019 and Faghigi G et al. in 2010, where the authors found side effects that were comparable to those of the current study in their individual investigations.

CONCLUSIONS

Within its limitations, the present study concludes that immunotherapy using the intralesional MMR vaccine is a cost-effective, efficacious, well-tolerated, and simple modality for treating warts and depicts statistically significantly better curing rates compared to formic acid therapy. However, further longitudinal studies are needed in the future to better assess the efficacy of these two treatment modalities in treating warts.

REFERENCES

1. Chandrashekar L. Intralesional immunotherapy for the management of warts. Indian J Dermatol Venereol Leprol 2011;77:261-3.
2. Mohamad NS, Badran F, Yakout E. Evaluation of the efficacy of a combination – measles, mumps and rubella vaccine in the treatment of plantar warts. Our Dermatol Online 2013;4:463-7.
3. Bhat RM, Vidya K, Kamath G. Topical formic acid puncture technique for the treatment of common warts. Int J Dermatol 2001;40:415-9.
4. Kim KH, Horn TD, Pharis J, Kincannon J, Jones R, O'Bryan K, et al. Phase 1 clinical trial of intralesional injection of Candida antigen for the treatment of warts. Arch Dermatol 2010;146:1431-3.
5. Muse ME, Stiff KM, Glines KR, Cline A, Feldman SR. A review of intralesional wart therapy. Dermatol Online J 2020;26:13030/ qt3md9z8gj.
6. Androphy EJ, Kirnbauer R. Human papillomavirus infections. In: Goldsmith LA, editor. Fitzpatrick's Dermatology in general medicine, 8th ed. New York: McGraw-Hill; 2012. p.2421.
7. ofal A, Nofal E. Intralesional immunotherapy of common warts: Successful treatment with mumps, measles, and rubella vaccine. J Eur Acad Dermatol Venereol 2010;24:1166-70.
8. Horn TD, Johnson SM, Helm RM, Roberson PK. Intralesional immunotherapy of warts with mumps, *Candida*, and *Trichophyton* skin test antigens: A single-blinded, randomized, and controlled trial. Arch Dermatol 2005;141:589-94.
9. Rajegowda HM, Kalegowda D, Madegowda SK, Palanayak JK. Intralesional measles, mumps, and rubella vaccine versus cryotherapy in treatment of warts: A prospective study. J Dermatol Dermatol Surg 2020;24:110-5.
10. Kolte SR Jr, Sardesai VR. Comparison of intralesional measles, mumps, rubella vaccine, and needles in the treatment of recurrent warts. J Cutan Aesthet Surg 2020;13:217-21.

11. Shah AN, Patel D, Ravishankar V. Measles, mumps, and rubella vaccine as intralesional immunotherapy in the treatment of warts. Int J Res Med Sci 2016;4:472-6.

12. . Nofal A, Nofal E, Yosef A, Nofal H. Treatment of recalcitrant warts with intralesional measles, mumps, and rubella vaccine: A promising approach. Int J Dermatol 2015;54:667-71.

13. Saini P, Mittal A, Gupta LK, Khare AK, Mehta S. Intralesional mumps, measles, and rubella vaccine in the treatment of cutaneous warts. Indian J Dermatol Venereol Leprol 2016;82:343-5.

14. Zamanian A, Mobasher P, Jazi GA. Efficacy of intralesional injection of mumps-measles-rubella vaccine in patients with wart. Adv Biomed Res 2014;3:107.

15. Chauhan PS, Mahajan VK, Mehta KS, Rawat R, Sharma V. The efficacy and safety of intralesional immunotherapy with measles, mumps, rubella virus vaccine for the treatment of common warts in adults. Indian Dermatol Online J 2019;10:19-26.

16. Faghihi G, Vali A, Radan M, Eslamieh G, Tajammoli S. A double-blind, randomized trial of local formic acid puncture technique in the treatment of common warts. Skinmed 2010;8:70-1.

S. No	Characteristics	Group I		Group II		p-value
		n	%	n	%	
1.	**Mean age (years)**	29.75±2.82		29.78±3.22		0.757
2.	**Gender**					
a)	Males	22	45.8	24	54.5	0.604
b)	Females	26	54.16	20	45.5	

Table 1: Demographic data of study participants

S. No	Treatment response	Group I (n=48)		Group II (n=44)		p-value
		n	%	n	%	
1.	**Partial response**	16	33.33	28	63.63	**0.02**
2.	**Complete response**	30	62.5	16	36.36	

Table 2: Comparison of response to the therapy in two groups of study subjects after wart treatment