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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 has been treated with a variety of therapeutic 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 vaccine vs an 85% formic acid puncture.

Methods: The 120 participants in the study were split into two groups of 60, each. Group I received the intralesional dose of the MMR vaccine, which is 0.3 ml per lesion, and Group II received an 85% formic acid puncture in each lesion, with a maximum of 10 warts managed in each case. Five visits were conducted every two weeks, with a three-month follow-up to evaluate for recurrence.

Results: In Group I, complete response, partial response, and no response were observed in 62.5% (n=), 8% (n=), and 4.1% (n=) of the subjects, respectively. In Group II, the corresponding numbers were 31.8% (n=), 63.6% (n=), and 4.5% (n=) of the subjects. These findings are supported by the study's findings. 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 therapy.

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

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 different 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 known 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.2,3

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 therapeutic 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.7,8 In order to cure common warts, the current study compared the safety and effectiveness of intralesional injection of the MMR vaccine 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 versus 85% formic acid puncture for the treatment of common warts, a prospective comparative clinical trial was conducted. The study was conducted between.. and.., with approval from the relevant institutional ethical committee. The study's participants came 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 subjects 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 treatment, 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 vaccine 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 data gathered were analyzed statistically using the SPSS software version 21.0 (IBM Corp., Armonk, NY, USA) and unpaired t-test with the chi-square test. The data were expressed as mean and standard deviation and frequency and percentage. Statistical significance was kept at a p-value of <0.05.

RESULTS

In order to evaluate the safety and effectiveness of intralesional injection of the measles, mumps, and rubella (MMR) vaccination versus 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 vaccine using an insulin syringe. For five maximum sessions of two, four, six, and eight weeks, this was done once every two weeks.

The study 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 study 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 therapy.

When the side effects of the two study 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 vaccine using an insulin syringe. For five maximum sessions of two, four, six, and eight weeks, this was done once every two weeks. The study 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, whereas Group II had 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 showed partial responses.

36.36% (n=16) of Group II individuals and 62.5% (n=30) of Group I subjects showed a full response to the therapy. 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 complete responses in a proportion that was similar to that of this study. Additionally, after evaluating the side effects in the two study 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.

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TABLES

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