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ORIGINAL ARTICLE

Comparison of MMR Vaccine V/S 5-Fluorouracil in Treatment of Palmo-plantar Warts

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ABSTRACT

Background: Human papilloma virus is a large group of DNA containing viruses that infect squamous epithelium of skin or uncornified mucous membrane.
Aim: To compare the outcomes of MMR vaccine V/S 5 fluorouracil in treatment of palmo-plantar warts in patients among male and female patients.
Study Design: Experimental study.
Methodology: In order to collect the data, simple random sampling technique was used. Enrolled patients (n=102) were divided into two groups. Group-A received intra-lesional MMR vaccine (0.1-0.5mal) while other group received intra-lesional 5-Fluorouracil (0.1-0.5mal) injection. Both groups received intra-lesional injections in warts at 2 weekly interval for 3 months. SPSS v 23 evaluated data. Chi-square test was used to compare the gender distribution, results, responder and recurrence between both groups with p-value less than 0.05 as significant.
Results: Mean age of the patients of group A was 30.5 ± 6.0 and the mean age of patients of group B was 28.2 ± 8.7 years. In Group A, 33 patients (58.9%) were responders, while in Group B, 43 patients (76.8%) were responders. P-value (0.043) suggested that the difference in response rate between the two groups was statistically significant.
Practical Implication: This study compared the efficacy of two different treatment options that were commonly used in palmo-planter warts management. Secondly, it added to local literature regarding their efficacy in comparison to each-other.
Conclusion: It was concluded that intra-lesional 5-FU was more safe and effective treatment in comparison to injection MMR for palmo-planter warts as it showed high response rate with low recurrence.
Keywords: Efficacy, MMR Vaccine, Response Rate, 5-Flourouracil and Intra-lesional Injection.

INTRODUCTION

Most common dermatological issue faced by most patients is a Wart. It is a non-malignant epithelial neoplasms that affects dermal epithelium and its mucous membranes mainly due to human papilloma-virus infection[1]. There are 150 types of HPV that has been recognized uptil now. According to many studies its incidence is variable and high thus ranging from 10-20% in children and adult population in developing countries[1,2]. One study showed that prevalence of viral warts in western Iran was 5.2%[3].

Literature has shown that warts have variable presentations on the basis of morphology due to different factors that include types of viruses, body sites, immunological status of patient and environmental factors[4]. According to different studies, they are commonly located at sites like oral cavity, peri-ungual, palmo-plantar and anogenital regions.[5,6] Some of them spontaneously disappear while other persist and can spread on other body sites. Most warts are asymptomatic, but some are painful depending on their location (e.g., sole and near nails) causing physical and psychological stress[7].

There are many destructive and immunotherapeutic treatments available for warts as per previous studies[4,6]. Treatment options include cryotherapy, electro-cauterization, surgical excision, laser ablation, intra-lesional injections of bleomycin, MMR vaccine, BCG vaccine, Tuberculin and Mycobacterium W vaccine[7-10]. Intra-lesional 5-Fluorouracil is destructive therapeutic option for treatment of warts[5]. It is a anti-tumor agent which inhibits synthesis of pyrimidine and thymidine indirectly by blocking DNA synthesis thus resulting in inhibition of cellular proliferation and replication[6,9].

Intra-lesional MMR vaccine is an immunotherapeutic treatment for cutaneous warts[3]. It stimulates cell mediated immune response via recruitment of immune cells and release of cytokines thus causing regression of warts by destroying virus. As warts is a common health issue in our clinical setups. Due to lack of data regarding safe, cost effective and better treatment option regarding palmo-planter warts we planned current study with aim to compare the outcomes of MMR vaccine V/S 5 fluorouracil in treatment of palmo-plantar warts in patients among male and female patients.

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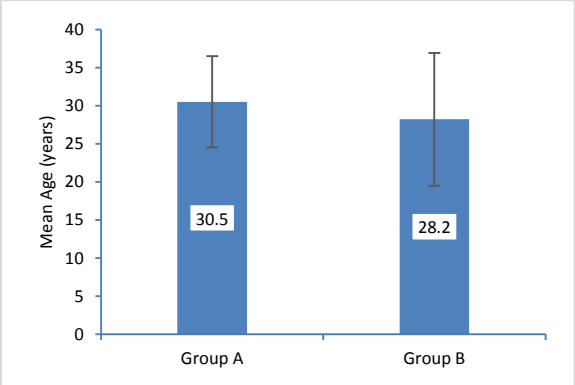
METHODOLOGY

The present study was an experimental trail. This research was held in Department of Dermatology, Sheikh Zayed Hospital Rahim Yar Khan-Pakistan following ethical review approval from hospital. In order to collect the data, simple random sampling technique was used. Enrolled patients having palmo-plantar warts (n=102) were divided into two groups. Group-A received intra-lesional MMR vaccine (0.1-0.5mal) while other group received intra-lesional 5-Fluorouracil (0.1-0.5mal) injection. Group-A patients were injected at the base of each wart with 0.1-0.5ml of freeze-dried MMR vaccine after reconstitution with 0.5mL of the provided diluent. In the 5-FU group, the patients were injected with a solution containing 4mL of 250mg/mL of 5-FU and 1mL of a mixture of 20mg/mL (2%) lidocaine and 0.0125 mg/mL of epinephrine, 0.1ml .5ml to the base of each wart[11,12]. Both groups received intra-lesional injections in warts at 2 weekly interval for 3 months. Follow up was done at the end of 3 months treatment. Patients (15-65years) with either gender having palmo-planter warts were enrolled. Warts were upto 5 in numbers regardless of their size. Patients having disorders like hypersensitivity to MMR, 5-FU, COPD, HIV or skin allergy were excluded. Pregnant and lactating mothers were also excluded.
Statistical analysis: SPSS 23 version analyzed the data. Mean±SD were given for numeric data i.e., age and number of warts. The frequency and percent were calculated for categorical data like gender, recurrence and treatment response. Chi-square test was used to compare the gender distribution, results, responder and recurrence between both groups. Independent sample t test was used to compare the mean age and number of warts between the two groups. A p-value ≤ 0.05 was considered significant.

RESULTS

Group-A received intra-lesional MMR vaccine and Group B received intra-lesional 5-Fluorouracil injection. Mean age of the patients of group A was 30.5±6.0 years while mean age of patients in group-B was 28.2±8.7 years. Independent sample t test revealed that there was no significant difference in mean age of patients between both groups (p = 0.110).

Figure-1: Comparison of mean age between both groups



Chi-square test was used to compare the distribution of gender and type of warts between two groups. In Group-A, there were 21 male patients (37.5%) and 35 female patients (62.5%), while in Group-B, there were 30 male patients (53.6%) and 26 female patients (46.4%). In Group-A, 23 patients (41.1%) had warts on their palms, 20 patients (35.7%) had warts on their soles, and 13 patients (23.2%) had warts on both palms and soles. In Group-B, 16 patients (28.6%) had warts on their palms, 36 patients (64.3%) had warts on their soles, and 4 patients (7.1%) had warts on both palms and soles as shown in table-1.

Table-1: Comparison of gender distribution and types of warts between both groups

Variables	Categories	Group-A (MMR)	Group-B (5-FU)
Gender	Male	21 (37.5%)	30 (53.6%)
	Female	35 (62.5%)	26 (46.4%)
Type of wart	Palms	23 (41.1%)	16 (28.6%)
	Soles	20 (35.7%)	36 (64.3%)
	Palms and Soles	13 (23.2%)	4 (7.1%)

Table-2 showed mean number of warts and mean number of sessions in both groups. For Group-A (MMR), the mean number of warts was 12.66 ±1.12. The mean number of sessions was 3.38±0.49 while for Group-B (5-FU), the mean number of warts was 3.09 ±0.86 and the mean number of treatment sessions was 3.27±0.53.

Table-2: Comparison of the number of lesions and sessions between both groups

Variables	Group A(MMR)	Group B (5-FU)
Number of warts	2.66 ± 1.12	3.09 ± 0.86
Number of sessions (hrs)	3.38 ± 0.49	3.27 ± 0.53

The study compared the efficacy and recurrence rate between MMR and 5-FU groups. The efficacy is measured by the proportion of responders in each group. Responders are defined as patients who showed a positive response to the treatment, while non-responders are those who did not. In Group-A, 33 patients (58.9%) were responders, while in Group-B, 43 patients (76.8%) were responders. The p-value for this comparison is 0.043, which suggests that the difference in response rate between the two groups is statistically significant. The recurrence rate is also compared between the two groups. Recurrence is defined as the reappearance of warts after a period of remission. In Group-A, 23 patients (41.1%) experienced recurrence, while in Group-B, 16 patients (28.6%) experienced recurrence. The p-value for this comparison is 0.165, which suggests that the difference in recurrence rate between the two groups is not statistically significant as shown in table-3.

Table-3: Comparison of efficacy and recurrence rate between both groups

Variable	Categories	Group A (MMR)	Group B (5-FU)	p-value
Efficacy	Responder	33 (58.9%)	43 (76.8%)	0.043*
	Non-Responder	23 (41.1%)	13 (23.2%)	
Recurrence	Yes	23 (41.1%)	16 (28.6%)	0.165
	No	33 (58.9%)	40 (71.4%)	

*Statistically significant

DISCUSSION

Multiple medical treatment options for different warts have been approved by Food and Drug Administration (FDA that include MMR vaccine, Bleomycin and 5-Flourouracil injection but unfortunately, most of them are less effective or have many adverse effects as shown by literature[3]. Other treatment options included electro-cautary and surgical excision but any surgical treatment is an invasive procedure thus expensive and dangerous. Hence there is a need for some alternative treatment options. Literature review revealed that community mediated immunity (CMI) plays pivotal role in wart treatment thus emphasized on immune protection against human papilloma virus (HPV) infection.[4] Focus on patient's immunity gained importance in-order to fight against viruses so immunotherapeutic modalities were being increasingly used to treat warts[13]. 5-FU is an antimetabolite drug that inhibits DNA and RNA synthesis and may also function as an immunomodulatory drug[5].

In present study, 112 participants were enrolled that included both genders. In present study males (n=51) and females (n=61) were enrolled. However, in many previous studies, more males were enrolled with palmo-plantar warts in comparison to females thus our enrollment method was different with other studies[10,14].

In present study, almost 41.1% palmar warts were in group-A and 64.1% plantar warts were seen in group-B as shown in table-1. However, one previous study showed that 61.11% palmar warts were in group-B receiving 5-FU while 55.6% plantar warts were seen in group-A who received MMR.[15] Hence, our results were different from results of above mentioned study.

In present study, among Group-A, 33 patients (58.9%) were responders, while in Group-B, 43 patients (76.8%) were responders (Table 3). Hence it was seen that higher response rate was present in group receiving 5-FU intra-lesional injection. Similarly, one previous study showed that majority of the enrolled patients (80%) showed complete response to MMR injection in comparison to other treatment given[16]. Thus our results were paradoxical to above mentioned study.

In present study, recurrence of warts was low (28.6%) in 5-FU group while more recurrence (41.1%) was seen in other group (Table-3). Similarly, low recurrence rate was seen in patients if treated with 5-FU injection thus our results were in line with previous study[16]. In present study, two treatment modalities were compared in terms of response and clinical outcomes. Similarly, many different studies, used two or more treatment options for longer period of time to see late effects as well[15]. However, there is limited data available regarding this treatment locally hence it is recommended to have more studies for longer duration of time in-order to see late adverse effects of treatment.

Limitations of study: Financial constrains and limited resources with no genetic workup and long follow-ups added to limitations. Duration of warts was not mentioned in present study.

CONCLUSION

It was concluded that intra-lesional 5-FU was more safe and effective treatment in comparison to injection MMR for palmo-

planter warts as it showed high response rate with low recurrence. Thus 5-FU treatment for warts should be employed more commonly in our setups in order to get better response and safety.

Author's contribution: SR, TH & MKS: Overall supervision and Write up and literature review, **NH, SR & SR:** Literature review help in write-up.

Running head: 5-FU vs MMR as treatment for palmo-planter Warts among genders.

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REFERENCES

1. C. Griffiths, J. Barker, T.O. Bleiker, R. Chalmers and D. Creamer, "Rook's Textbook of Dermatology", Ninth Ed., Chichester, West Sussex, UK: Wiley Blackwell, 2016, pp. 4696
2. E.M. Abd El-Magiud, G.M. Abd El-Samea and H.D.Gaber, "Intralesional injection of measles, mumps, and rubella vaccine versus cryotherapy in treatment of warts: A randomized controlled trial", Dermatol Ther, vol.33, no. 2. Feb 2020.DOI: 10.1111/dth.13257
3. D. R. Shaldoum, G. F.R. Hassan, E.H. El Maadawy, and G.M. El-Maghraby, "Comparative clinical study of the efficacy of intralesional MMR vaccine vs intralesional vitamin D injection in treatment of warts", J. Cosmet. Dermatol, vol.19, no.8, pp. 2033-2040. January,2020. https://doi.org/10.1111/jocd.13272
4. CH Na, H Choi, SH Song, MS Kim and BS Shin, "Two-year experience of using the measles, mumps and rubella vaccine as intralesional immunotherapy for warts", Clin Exp Dermatol, vol.39, no.5, pp. 583-9. July 2014. doi: 10.1111/ced.12369.
5. S. Ghonemy, M.I. Ali and H.M. Ebrahim, "The efficacy of microneedling alone vs its combination with 5-fluorouracil solution vs 5-fluorouracil intralesional injection in the treatment of plantar warts", Dermatol Ther, vol.33, no.6, Nov 2020. doi: 10.1111/dth.14179.
6. M.A. Shaheen, S.A. Salem, D.A. Fouad and A.A. El-Fatah, "Intralesional tuberculin (PPD) versus measles, mumps, rubella (MMR) vaccine in treatment of multiple warts: a comparative clinical and immunological study", Dermatol Ther, vol.28, no.4, pp. 194-200, Jul-Aug 2015. doi: 10.1111/dth.12230.
7. Sunny AS, Doshi BR. A Comparative Analysis of Efficacy of Intralesional Mumps-Measles-Rubella Vaccine Versus 5-Fluorouracil in the Treatment of Palmoplantar Warts. Indian Dermatology Online Journal. 2022 Sep 1;13(5):611-6. doi: 10.4103/idoj.idoj_39_22
8. 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.
9. Jartarkar SR, Kadnur M, Mamatha P, Mishra SS, Spoorthy B. A comparative study of therapeutic efficacy of intralesional measles, mumps, and rubella vaccine and intralesional Vitamin D3 in the treatment of recurrent warts. J Dermatol Dermatol Surg 2021;25:14-7.
10. Kannambal K, Kaviarasan PK, Prasad PVS, Poorana B, Balajiganesh J. Efficacy of intralesional 5-fluorouracil in recalcitrant warts a study at tertiary care centre. J Med Sci Clin Res 2019;7:556-60.
11. Kamal T, Ahmad F, Iftikhar U. Efficacy and safety of intralesional 5-fluorouracil in treatment of warts. J Pak Assoc Dermatol 2018;28:337-9.
12. Sunny AS, Doshi BR. A Comparative Analysis of Efficacy of Intralesional Mumps-Measles-Rubella Vaccine Versus 5-Fluorouracil in the Treatment of Palmoplantar Warts. Indian Dermatology Online Journal. 2022 Sep 1;13(5):611-6.
13. Jain J, Maheshwari K, Saluja A, Vyas K, Gupta K. A randomised double blind active controlled study for comparison of intralesional MMR versus intralesional Vitamin D3 in the management of cutaneous warts. Journal of Association for Medical Updates| Volume. 2021 Jan;1(1):24.
14. Kavya M, Shashikumar BM, Harish MR, Shweta BP. Safety and Efficacy of Intralesional Vitamin D3 in Cutaneous Warts: An Open Uncontrolled Trial. J CutanAesthet Surg. 2017;10(2):90-4.
15. Shaldoum DR, Hassan GFR, El Maadawy EH, El- Maghraby GM. Comparative clinical study of the efficacy of intralesional MMR vaccine vs intralesional vitamin D injection in treatment of warts. J Cosmet Dermatol. 2020;19(8):2033-40.
16. Mohta A, Kushwaha RK, Gautam U, Sharma P, Nyati A, Jain SK. A comparative study of the efficacy and safety of intralesional measles, mumps, and rubella vaccine versus intralesional vitamin D3 for the treatment of warts in children. PediatrDermatol. 2020;37:853–9.