Original Article

Comparing the Two Treatment Regimes for Scabies, Topical Permethrin 5% with Oral Ivermectin

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ABSTRACT

Objective: Comparing the efficacy of oral ivermectin with topical permethrin in treating scabies.
Study Design: Randomized control trial study.
Place and Duration of Study: This study was conducted at the Department of Dermatology, Nishtar Hospital Multan from May 2016 to January 2017.
Materials and Methods: One hundred and forty (140) patients were selected for the study. SPSS version 20 was used to analyze the data. Categorical variables presented as frequencies and percentages and numerical variables presented as mean ± standard deviation.
Results: A total of One hundred and forty 140 (100%) patients of scabies disease were included in this study in which 101 (72.1%) were male and 39 (27.9%) were female. Mean of patients in group A (permethrin) was 30.65 ± 6.47 and in group B was 29.85 ± 6.59. It was observed that in Group A49 (70%) patients were cured and in Group B 47 (67.1%) patients were cured. When we applied chi-square test to check the association, it was observed that cure was associated with severity of itching for both the groups and not associated with Nocturnal pruritus.
Conclusion: It was concluded that for 7 days treatment (Permethrin) had better outcomes and for 14 days treatment, Group B (Ivermectin) had better outcomes.

Key Words: Ivermectin per oral, Permethrin, Skin disease, Scabies

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INTRODUCTION

Scabies usually proceed by contagious ectoparasite infecting on skin, affecting all ages, gender and social classes, with higher rate of prevalence in developing countries.[1] usualy associated with overpopulation and unsatisfactory unhygienic living which facilitate its cross spread.[2,3,4,5] but due to high incidence of Human Immune Virus infection, also involving developed societies.[5]

Clinical diagnosis is made on history of Itching all over the body with worsening of condition at night and having same pattern of symptoms in persons living together. Lesions having characteristics of tortuous burrows which are slightly raised especially in web spaces.

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Lesions of having excoriation with features of urticarial papules, eruptions with itching properties alongwith crusts. Diagnosis was confirmed either having burrow in web spaces, presence of microscopically detected eggs and feces. Available regimes of treatment are topical like permethrin, Landin, chrotamotone, Benzyle benzoate etc. which having usual drawback off burden to apply its messy characteristic, having smell and[6,7,8] time taking which lead to non compliance of patient. [9,10] 5% Permethrin is most commonly and efficiently used topical scabicidal agent.[11]

Only available scabicidal agent having its limitation due to cost and high drug resistance. Ivermectin is only oral agent having scabicidal properties available in market. Ivermectin is synthetic macrolid and vermicidal usually used in multiple disorders for example filariasis and onchocerciasis. FDA not yet approved this agent for the treatment of scabies but still it widely used as a treatment option for scabies patients, scabies with crusts, patients having scabies in pemphigus disease, HIV disease and connective tissue disorder. In for mention situation it's quite difficult to use topical therapy.[9] its use is quite convincing for the treatment of institutional based scabies epidemics. It is easy to administer with cost effectiveness, minimum drug interactions and side effects like rashes, joint pains, fever, headache muscle pain, palpitations, hypotension, vomiting, nausea, pain in abdomen, lymphedinopathy and itching. It's advisable not to use in pregnant ladies,

lactating mothers and children weight less than 15 k and age less than five years. Hyper sensitivity to drug and nervous disorders are contra-indications.[6]

In a study conducted by Usha and Nair[5] reported that efficacy comparable to topical permethrin when a dose of 200 microgram/ kg used.

MATERIALS AND METHODS

In our clinical trial study, one hundred and forty patients with age range from 14–53 years, having mean age of 42 ± 14 with confirmed diagnosis of scabies were enrolled from January 2016 to December 2016. Patients age less than 14 years, pregnant ladies, lactating mothers, having past history of seizures, severe systemic diseases, immune suppressant disorders and cabbies with crusts were excluded from our clinical trial. Exclaimed consents were taken from all patients. Patients who had not taken any oral or topical acricidal agent one month before included in our study. The 5% permethrin cream and ivermectin for oral use were packed in similarly looking boxes and evaluation team not known to contents of these packets. It was ensured that blinding of contents remain maintained throughout the contacts of clinical trial likewise all members off treatment team who taking part in applying medication. Before enrolling the patient for clinical trial a thrugh examination and detailed history of any medication infestation and other particles were noted in perform Performa. Age and gender were recorded to make demographic comparison. scabies weans diagnosed on the confirmation of egg, mites on feces and confirmed microscopically following three criteria's; typically scabies lesions in classical sites, night time itching and having history of similar symptoms enclosed living persons. Two groups were made randomly by dividing the patients with lottery method. In 1st group of patients and their close living persons permethrin cream was used (Group A), but other patients were given oral ivermectin (Group B). In group using permethrin treatment was received two applications poof topical agents for seven and fourteen days. Ivermectin was give orally as a single dose in patients of group B but in group a permethrin topical cream was asked to apply on whole body and take shower after 12 hours in each occasion. A physician having clinical experience of five years was dedicated to evaluate the efficacy of treatment during evaluation physician recorded the sites of lesion using body diagram shape. A follow up schedule for seven and fourteen days was done. Patients with history of no itching and purities were labeled as effectively cured. Patient having new lesions after fourteen days confirmed by light microcopy and those who still having itching and purities after fourteen day were labeled as treatment failure Treatment failure was defined as a patient with microscopically-confirmed new lesions at 14 days and who was not considered cured at 14 weeks. The results of the study were analyzed using computer software SPSS ver. 20. To account for statistical differences in the two groups, chi square test was used. P less than 0.05 were considered statistically significant.

RESULTS

A total of one hundred and forty patients of scabies were included in this study in which 101 (72.1%) were male and 39 (27.9%) were female. These patients were divided in two equal groups; Group A permethrin (70 patients), and group B (70 patients). Mean age of patients in group A (permethrin) was 30.65 ± 6.47 and in group B was 29.85 ± 6.59 (Table-1). It was observed that Group A cured the 49 (70%) patients and Group B cured the 47 (67.1%) patients. Nocturnal pruritus in Group A was 52 (74.3%) and 18 25.7) were not. Nocturnal pruritus of in group B was 47 (67.1%) and 23 (32.9%) were not. Severity of itching in group A was 14 (20%) mild, 42 (60%) moderate, and 14 (20%) were severe. And it was also noted that severity of itching in Group B 19 (27.1%) mild, 37 (52.9%) moderate, 14 (20%) were severe patients (Table-2).

Table No.1: Demographic Variables

Characteristics	Frequency	Percentage (%)
Gender		
Male	101	72.1 %
Female	39	27.9 %
Age		
Groups		**Mean ± SD**
Group A		30.65 ± 6.473
Group B		29.85 ± 6.592

Table No.2: Frequency of Nocturnal Purities, Severity of itching

Nocturnal Pruritus			
Groups		**Frequency**	**Percent**
Group A	**No**	18	25.7
	Yes	52	74.3
Group B	**No**	23	32.9
	Yes	47	67.1
Severity of itching			
Group A	**Mild**	14	20.0
	Moderate	42	60.0
	Severe	14	20.0
Group B	**Mild**	19	27.1
	Moderate	37	52.9
	Severe	14	20.0

When the drug were given to the patients, after given both drugs 7 day it was observed that in group A cured 51 (72.85%) and 19 (27.14%) were not cured and in group B 26 (37.1%) were cured and 44 (62.85 %) were not cured respectively (Table-3). Administration of

drug at 14 days shows opposite results as in group A 28 (40%) patients were cured and 42 (60%) were not cured and in group B 57 (81.42 %) were cured and 13 (18.57%) were not cured (Table-3).

When we applied chi-square test to check the association, it was observed that cure was associated with severity of itching for both the groupsP= 0.001for group A and 0.000 for group B significant values, and not associated with Nocturnal pruritus for both the groups P= 0.660 and 0.065 (Table-4-5).

Table No.3: Frequency (Percentage %) of Cure at 7 and 14 days

Groups		Frequency	Percentage (%)
Cure at 7 Days			
Group A	Cured	65	92.9 %
	Not Cured	5	7.1 %
Group B	Cured	62	88.6 %
	Not Cured	8	11.4 %
Cure at 14 Days			
Group A	Cure	51	72.9 %
	Not cured	19	27.1 %
Group B	Cured	62	88.6 %
	Not cured	8	11.4 %

Table No.4: Inferential Results

Groups	Nocturnal Pruritus	Cure		Total
		Not Cured	Cured	
Group A	No	1	17	0.596
	Yes	5	47	
	Total	6	64	
Group B	No	3	20	0.668
	Yes	8	39	
	Total	11	59	

Table No.5: Inferential Results

Groups	Severity of itching	Cure		P Value
		Not Cured	Cured	
Group A	Mild	4	10	0.010
	Moderate	1	41	
	Severe	1	13	
	Total	6	64	
Group B	Mild	0	19	0.000
	Moderate	0	37	
	Severe	11	3	
	Total	11	59	

DISCUSSION

No statistical major difference was found in efficacy when a single dose of oral ivermectin and topical permethrin were used for the treatment of scabies. Scabies have high rate of relapse and resistance to treatment against both groups of drugs. Group A treated with permethrin topical showed 73.7 % and 66.7 % cure rate respectively at interval of seven and fourteen days, meanwhile in group P treated by oral ivermectin showed 68.3% and 66.7 % cure rate at seven and fourteen days interval respectively our observation is almost identical to the results of clinical trial conducted by Madan et al. and Meinking et al.[12, 13] our results are comparable with Abedin et al [14] regarding the efficacy of both treatment options. In 2007 Akhtar et al. used oral ivermectin in divided dose of 300 microgram/kg in sixty patients. They reported 100% efficacy regardless of age which is nearly identical to our observation.

A treatment regime of 12 mg oral ivermectin was used by Auben and Humbert in France for the treatment of clustered scabies[15]. Similarly 100% efficacy we reported by Khan and Yamin in 30% based clinical trial. Their results are nearly equilent to observation made by our study. [16, 21, 22]

But a clinical trial conducted by Usha and Nire showed 70% patients were cured in a group using oral ivermectin as compare to 97% cure rate bin topical permethrin therapy at even days interval, this observation showed that permethrin is superior to oral ivermectin which differ from our observation. But oral ivermectin treated group having almost 70% cure at even days which is comparable our observation 73.3%. But this difference has no statistically significant effect between two groups. This difference most probably due to variation in compliance as in ivermectin group drug was taken by patient under direct supervision as compare to topical permethrin group in which patient applied lotion out of direct supervision that may be the cause of difference in compliance due to inappropriate application. An element of resistance against topical permethrin may be the reason over the year. [12, 16, 17].

Mainking et al conducted a clinical trial in 1995 labeled as open trial with two follow up visits reported 45% of cabbies patients respondents like our study, with 100% response rate at two week interval while using 200 microgram/kg. In multiple clinical trials no laboratory investigation were done while using oral ivermectin as in our clinical trial [17, 18, 19, 20]

CONCLUSION

Both drugs are effective in treatment of scabies, at 7 days interval Permethrin 5% is more effective than Ivermectin but at 14 days interval of treatment Ivermectin have better treatment effects.

Limitations: The limitation of our clinical trial was contraindication regarding the use of ivermectin in patients of less than 5 years of age, pregnant ladies and lactating mothers and possibility of ivermectin to cross immature blood brain barriers leading to increase percentage of drug precipitating nervous system disorders. We also face difficult to find out treatment efficacy in all contacts. So further studies are required to check effectiveness of these treatment regimes in above mention groups.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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