

COMPARATIVE STUDY OF EFFICACY OF TOPICAL PERMERTHIN 5% V/S 1% TOPICAL IVERMECTIN IN THE TREATMENT OF WITH SCABIES

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Abstract

Background: Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *sarcoptes scabiei var. hominis*. It is highly contagious skin infestation. **Materials and Methods:** Out of 120 patients with scabies, 60 patients were treated with permethrin 5% and 60 patients with 1% ivermectin topically. Detailed history, clinical examination and of every patient and efficacy of topical creams was studied. **Result:** Comparison of demographic characteristics of all patients and severity of manifestation of pre-treatment were studied in both groups. P value remained significant and confirmed that it was found to be equal in both groups. But the response to treatment after two weeks of permethrin 5% topical was more efficient than that of topical ivermectin. Out 60 patients 56 (93.3%) were cleared of the disease in permethrin group, and it was 51 (85%) in Ivermectin group. **Conclusion:** Although both topical creams were equally effective, permethrin 5% cleared-up lesions and improved pruritus in patients with un-complicated scabies but Permethrin is more effective had it has quicker action. Hence for scabies both permethrin 5% topical 1% Ivermectin can be used topically and Permethrin is more effective compared to Ivermectin.

INTRODUCTION

Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *sarcoptes scabiei var. hominis*, primary scabies; infections typically cause intensely itchy rashes that worsen at night and is a highly contagious skin infestation.. But, long term scabies acts as a gate way for secondary sequelae, and complications with high morbidity, social stigmatization and increase in health care expenses. An ideal scabicide should be effective against adult mite and eggs, easily applicable, non-sensitizing, non-irritating, non-toxic, economical, quick and high cure rate, and should be safe for all age group.^[1]

The mainstay of therapy in the present era is topical and it includes benzoyl benzoate, malathion, mono-sulfiram, crotamiton, gamma benzene hexachloride and permethrin. Except permethrin, all others require either prolonged or repeated applications. Resistance to some of those drugs has also been reported. Gamma benzene hexachloride has limitations for use in children and pregnant women. Moreover it is reported that over use of gamma benzene hexachloride causes central nervous system toxicity, convulsions and even death following accidental ingestion. Overuse of even a single application of gamma benzene hexachloride may be noxious.^[2,3]

permethrin cream (5%) seems to be good substitute. It is approved by the FDA for the treatment of scabies.^[4] Ivermectin is an anti-parasitic agent with broad spectrum of activity against nematodes, ectoparasites and against *sarcoptes scabiei* in animals and humans.^[5] Hence an attempt was made to compare the efficacy of both the latest and safer drugs for any age groups so that the present study can be the guide lines to dermatologist who treat scabies patients.

MATERIALS AND METHODS

120 patients regularly visiting to Dermatology OPD of Akash institute of Medical Sciences and research centre Devana Halli, Bangalore-562-110, Karnataka were studied.

Inclusion Criteria

Presence of itching ranging from mild moderate to severe (exacerbation at night), presence of characteristic pruritic papule, pustules and vesicles with or without excoriation, presence of one or more burrow, presence of characteristic nodules and positive scraping of burrows with 10% KOH, for mite, eggs or scybala were selected for study.

Exclusion Criteria

Patients without burrows, recurrent attacks of scabies for any reasons, chronic renal disease patients, (renal failure or malignancy), un-controlled diabetes mellitus patients, immune-compromised and other chronic disorders were excluded from study. Patients less than one year age, pregnant or lactating women, Patients allergic to ivermectin or permethrin, patients with CNS disorder were also excluded from study. Patients were randomly allocated to two groups: Group A and Group B

Detailed history was taken from every patient with age, gender, occupation, locality of residence, marital status, qualification, and number of family members, nuclear or joint family, and duration of disease, character of itching and severity and exacerbation of itching at night. History of previous treatment, family history of scabies, predisposing factors history like prison, travel, medical history of DM or other diseases and drug intake were also recorded.

Clinical examination was carried out, scraping of burrows with 10% KOH was done in most cases and was examined under microscope looking for mites, eggs and scybala, Sites and distribution of burrow, characteristic pruritic papules, vesicles with or without excoriation and nodules were noted.

Pre and post treatment photographs were taken using Samsung - digital, note 5 high sensitivity, 16 mega pixels camera, in the same place with fixed illumination and distance. Patients in group A were treated by 5% permethrin cream and B group were treated with 1% ivermectin cream. Creams were applied in the evening to the body below neck and washed after 12 hours. Application was repeated after one week.

The composition of permethrin cream: Aqua (deionised water) Permethrin lano line, paraffinum liquidum, Glycerine, cetearyl, Alcohol, Cetyl Alcohol, stearic Acid, Glyceryl monostereate, cetearth-20, Isopropyl Myristatem, Phenoxyethnol, EDTA.

Group-B - Sixty (60) patients treated with Ivermectin cream was used in the same way as in the group-A. Ivermectin 1% had a composition of Ivermectin BP 1% WW - cream base q.s excipients; Disodium EDTA, Methyl paraben, propyl paraben, propylene Glycerol, cetostearyl Alcohol, Cetonacrogol, Glyceryl Monostereate.

Both groups were followed up for 2 weeks and the response included disappearance of burrows, characteristic pruritic papules, pustules, vesicle and reduction in itching.

The duration of study was December-2021 to March-2022

Statistical Analysis

Various parameters including demographic, characteristics of patient's severity of manifestation. Response to both topic creams was compared with t test. The statistical analysis was performed in SPSS software. The ratio of male and female was 2:1.

RESULTS

Table 1: Demographic characteristics of the study population

	Permethrin 5% (60)	Ivermectin (60)	t test	p value
Age	34.74 ±15.30	35.10 ±11.12	0.15	0.87
Sex				
Male	40	35	0.9	0.82
Female	20	25	0.9	0.32
Height	173 ±30	174 ±15	0.92	0.36
Weight	69 ±32	70 ±55	0.12	0.9

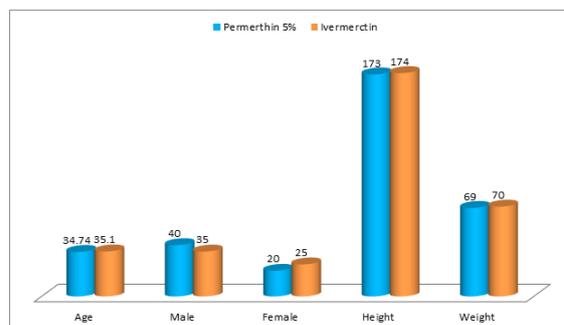


Figure 1: Demographic characteristics of the study population

Table 2: Severity of Manifestation of pre-treatment of patients

Lesion	Permethrin (60)	Ivermectin (60)	t test	p value
Mild	13	14	0.21	0.82
<50 Moderate (20-100)	15	16	0.20	0.83
Severe > 100	32	30	0.35	0.71

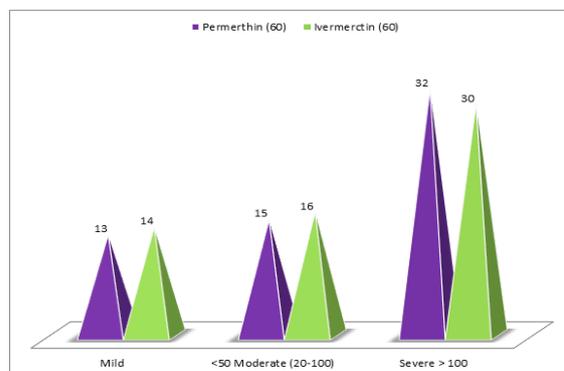


Figure 2: Severity of Manifestation of pre-treatment of patients

[Table 1] Demographic characteristics of study population - 37.72 ±15.30 Mean value of age in permethrin and 35.10 ±11.2 in Ivermectin using patient's t test was

0.15 and p value was in significant (p>0.87)

- 40 males in permethrin group and 35 in Ivermectin group, t test was 0.9 and p>0.82 (Insignificant)
- 20 females in permethrin group and 25 in Ivermectin group, t test was 0.9 and p>0.32 (Insignificant)

- 173 ±30 of patients in permerthin group and 174 ±15 in Ivermerctin group, patients, t test was 0.92 and p>0.36 (Insignificant)
- 69 ±32 of patients in permerthin group and 70 ±55 in Ivermerctin group, patients, t test was 0.12 and p>0.9 (Insignificant)

Table 3: Response to treatment after 2 weeks

	Permerthin (60) Group-A	Ivernerctin (60) Group-B	t test	p value
Effectively treated patients at 2 week	56 (93.3)	51 (85%)	1.48	0.14

Permerthin in is more effective Ivermerctin when treated continuously for 2 weeks

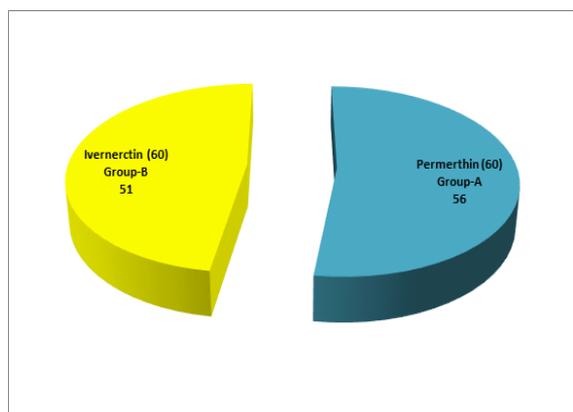


Figure 3: Response to treatment after 2 weeks

DISCUSSION

Present comparative study of Efficacy of topical usage of permerthin 5% V/s 1%Ivermerctin in the treatment of patients with scabies. The demographic characters the age of the patients 34.72 + 15.30 in permerthin 5% (Group-A), 35.10 + 11.12, t test was 0.15, p>0.87 (Insignificant).

In gender study 40 males in group-A (permerthin 5%) and 35 Males in group-B (Ivernerctin), t test was 0.9 and p>0.82 (Insignificant). 20 female in group-A, 25 females in group-B, t test was 0.9 and p>0.32 (Insignificant).

Height of patients L73 ±30 in group-A, 174 ±15 in group-B, t test was 0.92 and p >0.36 (Insignificant) Weight of the patients - 69 ±32 in group-A, 70 ±55 in group-B, t test was 0.12 and p <0.9 (Insignificant) [Table 1]. The severity of the manifestations of pre-treatment in both groups. The lesions Mild (<50) 13 in group-A, L4 in group-B, t test was 0.21 and p>0.82. Moderate (50-100) - 15 patients in group-A, 16 in group-B, t test was 0.20 and p>0.83. severe cases (>100) 32 patients in group-A, 30, t test was 0.35 and p>0.71 [Table 2]. Response to treatment after two week effectively treated at 2 weeks 56 (93.3%) complete heal of scabies in group-A (permerthin) and 51 (85%) heal of scabies in group-B (invermerctin), t test was 1.48 and p value p>0.14

[Table 3]. These findings are more or less in agreement with previous studies.^[6,7,8]

Permerthin 5% cream is a welcome addition to the available therapies for scabies. It is cosmetically elegant and easy to use, has no objectionable odour and does not stain clothing. Skin irritation, including itching, swelling and redness, may occur with scabies and temporarily worsen after treatment with permerthin.^[9] Presumably due to absorption of dead parasite proteins, mild burning or stinging may also occur. Oral ivermectin has already been established as an effective treatment modality treatment in the treatment of severely crusted scabies lesions in immune compromised patients or when other topical therapy has failed. Topical ivermectin 1% has also been tried in treating scabies with success. In our study topical ivermectin 1% was seen to be as effective tpocal 5% permethrin in the treatment of scabies at 2 rweeks follow up. This is in contrast with previous studies that have reported better cure rate with 5% permerthin compared to 1% ivermectin when used weekly for two weeks. It has been seen in other studies that topical ivemerctin to be as effective as topical permethrin when used weekly once over a period of 4 weeks. The data from 4th week showed that use of ivermectin continued to decrease both the lesion and the degree of pruritis. When compared with permerthin the difference in efficacay was not significant at 4th week in those studies. In our study patients on permethrin showed relatively faster symptomatic response (itching) and signs (papules). This could be because permerthin acts on all stages of mites (ovum, larva and adult) and also from its action on the voltage sensitive sodium channel of the parasite; as this channel is necessary for the generation of action potentials in excitable cells, its disruption causes paralysis of the mite and leads to its death.^[10] Since the prior dosage of permethrin killed most of the mites, the improvement in pruritis can be due to die to decrease in the egg laying stages of mite.^[11] Ivermerctin though very effective on the adult stages of the mite, has not been proven to be ovicidal and a single or two applications may be inadequate to eradicate all the stages of the parasite and two more doses may be required for another 2 weeks for a complete cure.^[12] It is also reported that, higher number of patients showed clearance of lesions at the end of 4 applications (at weekly intervals) in both the ivermectin and permethrin groups. Efficacy was almost equal as compared our results and both were effective in preventing recurrence of scabies, over a period of 2 months.^[13] Topical permerthin is established as safer and topical ivermerctin has also been reported in recent studies to be safe when used topically.^[14]

CONCLUSION

Present study is a comparative study of topical permerthin 5% V/s 1% ivermerctin in treatment of

patients with scabies. Both topical creams were found to be equally effective in the treatment of scabies. Our study differs from other studies which have shown permethrin 5% % to be more effective compared to 1% ivermectin.

Limitation of Study

Our study was an open label study with a small sample size. Further double blinded studies with large sample size are required to establish the differences in efficacy of 5% permethrin and 1% ivermectin.

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