

## Original Article

# A Comparative Study of Oral Ivermectin and Topical 5% Permethrin Cream in the Treatment of Scabies in Patient Suffering from Diabetes Mellitus

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### Abstract :

Scabies is one of the commonest diseases among all age groups. Topical permethrin is a widely used treatment option for scabies. Ivermectin is a newer oral agent for the treatment of scabies. This study was done to compare the efficacy of permethrin and oral Ivermectin in the treatment of Scabies in patient suffering from Diabetes mellitus. This comparative clinical trial was carried out in the outpatient department of Dermatology & Venereology, Diabetic Association Medical College Hospital (DAMCH), Faridpur from January 2012 to December 2012. A total 60 cases were enrolled purposively and divided into 2 groups. Group I received 2 doses oral Ivermectin and group II treated with 5% permethrin cream. Patients were followed up at the 3rd and 4th week. Total 86.6% patients of Ivermectin group and 90% of permethrin group were cured. Though permethrin showed somewhat more effective, the difference was not statistically significant. The study found that both ivermectin and permethrin were similarly effective in the treatment of scabies in patients suffering from Diabetes Mellitus.

**Key words:** Scabies, Ivermectin, Permethrin, Diabetes Mellitus.

### Introduction :

Scabies is a highly contagious skin infections caused by the mite *Sarcoptes Scabiei var hominis*. It is one of the

most common pruritic dermatoses usually associated with low socio-economic conditions, overcrowding and poor hygiene<sup>1</sup>. Scabies affects all age groups but most common in children younger than 2 years<sup>2</sup>. It occurs worldwide but is endemic forms in the tropics. The incidence of Scabies is 3 million per year throughout the world<sup>3</sup>. The exact incidence of Scabies in Bangladesh is not known. A study showed that the prevalence of Scabies was 21.86% in Bangladesh<sup>4</sup>. Scabies causes substantial morbidity from secondary infections and post infective complications such as acute post streptococcal glomerulonephritis<sup>5</sup>. Lesions consist of tiny gray specks, burrow, or both non specific lesions consists of papules and itchy excoriation and crusts. The lesions are usually found in inter digital folds, nipples, areolas and the periumbilical area<sup>6</sup>. Disease control requires treatment of the affected individual and all people they have been contact with, but is often hampered by inappropriate or delayed diagnosis, poor treatment compliance, and improper use of topical compounds such as benzyl benzoate<sup>7</sup>. In addition to concern over the toxicity of such compounds, parasite resistance seems to be increasing. Treatment of scabies in developing countries need to integrate drug treatment programs with efforts to improve the socioeconomic conditions and education to reduce stigma<sup>8</sup>.

Treatment options that were formerly available included sulfur, crotamiton lotion and 25% benzyl benzoate. Sulfur in 5-10% petrolatum is relatively cheap, but must be applied on three successive nights to be effective. Permethrin, malathion have become

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treatment of choice<sup>9</sup>. Currently, 5% topical permethrin cream is considered by many as the drug of choice in treatment of Scabies<sup>10</sup>. Permethrin is a synthetic pyrethroid and was one of the first thermostable and photostable insecticides developed following the elucidation of the chemical structures of natural pyrethrins in 1947<sup>11</sup>. Permethrin demonstrates extremely low mammalian toxicity, combined with insecticidal activity even higher than natural pyrethrins. These properties, backed by extensive experience of safety over 20 years in the veterinary and agricultural study, made this compound an ideal candidate for use as a treatment of scabies<sup>12</sup>. But it has the disadvantages of being cumbersome time consuming and associated with treatment failure caused by poor compliance, insufficient application and inappropriate technique of application<sup>7</sup>.

Oral Ivermectin has been introduced within the last decade as an alternative to the topical agents in the treatment of scabies. It is a semi synthetic macrocyclic lactone antibiotic agent. Some studies showed that it is safe and effective in the treatment of scabies<sup>13-15</sup>. Ivermectin is a novel antiparasitic agent effective against a variety of endoparasites and ectoparasites. With a single oral dose, ivermectin is effective against intestinal nematodes and appear to be a promising treatment for head lice infestation, which are common co-infection in developing countries<sup>16</sup>. It is not yet approved by the US Food and Drug Administration for the treatment of human scabies<sup>17</sup>. Initial reports have highlighted the utility of oral ivermectin in the treatment of scabies. Hence it is considered worthwhile to generate more data regarding the human use of ivermectin in the treatment of human scabies, comparing the result with the currently available first line treatment of scabies, permethrin<sup>18</sup>. We undertook the present study to compare the efficacy of oral ivermectin with topical 5% permethrin cream in the treatment of scabies in patients suffering from diabetes mellitus.

**Materials and Methods:**

This open labeled comparative clinical trial was carried out at the outpatient department of Dermatology and venereology of Diabetic Association Medical College Hospital, Faridpur. During the period of January 2012 to December 2012 a total of 60 Clinically diagnosed cases of scabies were studied. Patient's data were recorded on pre designed case record form. Patients of either sex suffering from Diabetes mellitus & Scabies were included. Patients had to satisfy at least 3 of the following criteria 1). Family or Contacts with similar type of illness 2). Serious itching all over the body which increases during night 3). Presence of papules, nodules or vesicles on typical body sites like finger webs, wrists, periumbilical regions and genital areas 4). Presence of scabies burrows and 5) Positive microscopic examination (Mite, ova or feces). Pregnant or Lactating mother, patient treated for scabies within last 4 weeks or treated with corticosteroids within last one week were excluded

from the study. Patient suffering from diabetic nephropathy, diabetic retinopathy, diabetic neuropathy were also excluded from the study.

A total of 60 cases were enrolled and divided into 2 equal groups each containing 30 patients who were almost matched in terms of age and sex. Sampling and group allocation were done purposively. Before enrolment each patient was examined thoroughly for signs of scabies. Burrows were identified by magnifying lens and microscopy of skin scrapings was done to search for mites, ova or fecal pellets.

Group A 30 patients received oral ivermectin, 2 doses 200 microgram per kg body weight separated by one week. Remaining 30 patients were allocated to group B who received local treatment with 5% permethrin. Permethrin cream was applied according to the standard method for 12 hours and was repeated once after one week. Patients were advised to bath with warm water before application of permethrin cream. If there were sign of super infection, it was treated with antibiotic before intervention. Any symptomatic contacts were also treated but not enrolled. Subjects in both groups were instructed to wash their clothing and bed linens in hot water and to dry them in the sun for 3 days.

All patients were followed up at 3rd and 4th weeks to assess treatment efficacy. Efficacy was evaluated by relief of symptoms and disappearance of lesions.

**Result:**

A total of 60 clinically diagnosed cases of scabies were included in study.

**Table I:** Comparison of outcome of large chalazion between two groups..

Characteristics	Ivermectin Group	Permethrin Group
Age (Years)		
16-25	5 (16.67%)	10(33.33%)
26-35	15 (50%)	8(26.66%)
36-45	6 (20%)	8(26.66%)
>45	4(13.33%)	4(13.33%)
<b>Total</b>	<b>30(100%)</b>	<b>30(100%)</b>
<b>Sex</b>		
Male	21(70%)	20(66.66%)
Female	9 (30%)	10(33.33%)
<b>Socioeconomic Status</b>		
Poor	25(83.33%)	18(60%)
Middle Class	5 (16.67%)	12(40%)

In Ivermectin Group 70% were male and 30% were female, in permethrin group 66.66 % male and 33.33% were female.

**Table II:** Effectiveness of treatment after 4 weeks.

	Ivermectin Group	Permethrin Group	P value*
Cured	24(86.66%)	27(90%)	0.278
Not Cured	6 (13.34%)	3(10%)	

\*Test done by Chi-Square test

Table II shows the effectiveness of treatment with Ivermectin and permethrin at follow up after 4 weeks.

In Ivermectin Group 70% were male and 30% were female, in permethrin group 66.66 % male and 33.33% were female.

At the follow up at 4 weeks 24 (86.66%) patients of Ivermectin group were cured and 27 (90%) of permethrin groups were cured. (Though permethrin showed somewhat more effectiveness in treatment of scabies, the difference was not statistically significant (P Value >0.05))

Both Drugs are well tolerated and no adverse effect was observed in both Ivermectin and permethrin group.

### Discussion:

Permethrin is a widely used drug in the treatment of scabies. The present study was undertaken to compare the efficacy of Ivermectin and Permethrin in the treatment of scabies. In the present study 86.6% patient treated with Ivermectin and 90% treated with permethrin were completely cured. (Though permethrin showed some higher efficacy, the difference was not statistically significant.) A study in India found 95% cure rate with two doses of Ivermectin in the treatment of scabies, whereas permethrin was effective in 97.8% patients<sup>19</sup>. Another study in Pakistan found that the cure rate was 100% in both groups<sup>20</sup>. A study in Bangladesh found 96.7% cure rate with two doses of Ivermectin in the treatment of scabies, whereas permethrin was effective in 83.3% of patients follow up after 4 weeks<sup>22</sup>. These four studies support the result of the present study.

The current study also showed that both Ivermectin and permethrin were effective in scabies of patients suffering from Diabetes mellitus. Ivermectin has several clinical advantages that make it superior to topical treatment. It is safe, inexpensive, simple to administer, easily supervised and treats the entire skin surface including neglected areas<sup>23</sup>. Ivermectin can also be given safely to patients of scabies with secondary eczematization, erosions or ulcers where topical therapies, such as permethrin, benzyl benzoate can cause serious cutaneous & systemic side effects in addition to the problem of compliance.

### Conclusion :

An attempt was made to compare the efficacy of oral ivermectin & topical 5% permethrin in the treatment of scabies in patients suffering from Diabetes mellitus.

A total 60 clinically diagnosed cases of scabies were studied for a period of 4 weeks. The study demonstrated that Ivermectin is similarly effective as it has more advantages than topical treatment. However, the availability of an effective oral scabicide agent opens a new era in the management of oldest identified diseases of men, leaving hopes of even eradicating the disease<sup>24</sup>.

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