Comparative Study to Test Efficacy Of Topical Permethrin And Oral Ivermectin In The Management Of Scabies- A Prospective Randomized, Single Blinded Controlled Study

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Abstracts: **Background** : Scabies is a contagious intensely pruritic ectoparasitic infestation caused by mite Sarcoptes scabiei hominis. Various treatment modalities are available but topical permethrin and oral ivermectin is considered to be safe and effective in the treatment of scabies. **Aim** : To compare the efficacy of topical permethrin and oral ivermectin in the treatment of scabies. **Material And Methods** : It was an interventional study conducted in the out patient department Rohilkhand Medical College and Hospital.100 clinically diagnosed cases of scabies belonging to either sex and from 10-60 yrs of age were selected and divided into two groups. Oral ivermectin was given to group A and topical 5% permethrin was given to the group B and follow up at 1, 2 and 4 weeks of interval. at each visit and cure rate was compared. **Results** : Permethrin showed the efficacy of 89.1% in completely clearing scabietic lesions at 4 week interval as compared to oral ivermectin which showed 78.5% clearing of lesions in 4 weeks. Thus both the treatment modalities were almost equally effective. **Conclusion :** Oral ivermectin and topical permethrin both are almost equally effective but permethrine has rapid onset of action. [Aggarwal G NJIRM 2014; 5(1) : 57-60]

Key Words: Permethrin, ivermectin, scabies

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Introduction: Scabies is an intensely pruritic contagious infection of skin caused by sarcoptes scabiei hominis. Although it may infest any human in any climate, it is most common in children younger than two years and is endemic in the tropics. The female mite, whose life expectancy is about 30 days, burrows into the epidermis to lay eggs. The eggs hatches into larvae in three to four days, and larvae mature into adults in 14 to 17 days. Male adult mites are smaller than females, remain on the skin surface, and die shortly after mating[1]. There is evidence that mites can live for up to three days without a human host, and a reported outbreaks of scabies among laundry workers provides evidence that fomites may spread disease. While animal strains of scabies exist and can infect humans, the mites cannot complete their life cycle or be passed to other hosts.[2]

Symptoms of scabies infestation include rash and intense pruritis that is often worse at night. The lesions begin as tiny erythematous papules and can progress to vesicles or pustules. Linear burrows are a classic feature but are not seen commonly. Excoriation and ulceration also may be present, including urticaria, may occur. In immunocompromised hosts, bed ridden cases, insane, having sensory loss, large areas of crusting may be seen[3].

Although lesions can occur almost anywhere in the body, but web spaces, wrists creases, the axillae, around umbilicus are the most common areas. Male genitalia, female breasts, the gluteal crease, and antecubital fossae are also frequently affected. The face and scalp usually are spared except in infants[4].

Typical distribution of lesions, intense pruritus, and patchy, discrete lesions with secondary excoriation signals scabies infection. The diagnosis usually is clinical but may be confirmed by skin scrapings near the newest and least disturbed skin lesions or under the fingernail edge. Light microscopy of the scrapings may detect the female mite, eggs, and feces pellets[5]. Various treatment modalities are available for scabies like benzyl benzoate, crotamiton, gamma benzene hexachloride (lindane), and permethrin. An ideal scabicide should be effective, easily applicable or orally administered, non-sensitizing, non-irritating, non-toxic, economical, and safe in all age groups. Oral anti-parasitic ivermectin 200 μg / kg has been found to be as effective as a single or two dose regimens given at 2 weeks interval[6]. Permethrin 5% cream has been found to be effective and safe for the treatment of scabies. Whole body over night application for 12 hours is inconvenient and leads to poor compliance[7]. Ivermectin is administered orally and has the

advantage of single dose and being cheaper thus improving the compliance[8].

In the present double-blind randomized controlled study we compare the efficacy and safety of topical 5% permethrin with oral ivermectin in the treatment of scabies.

Methods: A total of 100 clinical diagnosed patients with scabies over 10 years of age attending the dermatology outpatient clinics of Rohilkhand medical college and hospital were included in the study. The diagnosis of scabies was done on the basis of history and clinical examination. Four clinical criteria to diagnose scabies are (a) demonstration of burrow (b) presence of scabetic lesions at the classical sites (c) nocturnal pruritus (d) family history of similar illness. Scraping was done in doubtful cases only.

Inclusion Criteria: Those patients who are attending skin OPD and are above ten years and upto sixty years of age of either sex and willing to participate in the study are included in the study.

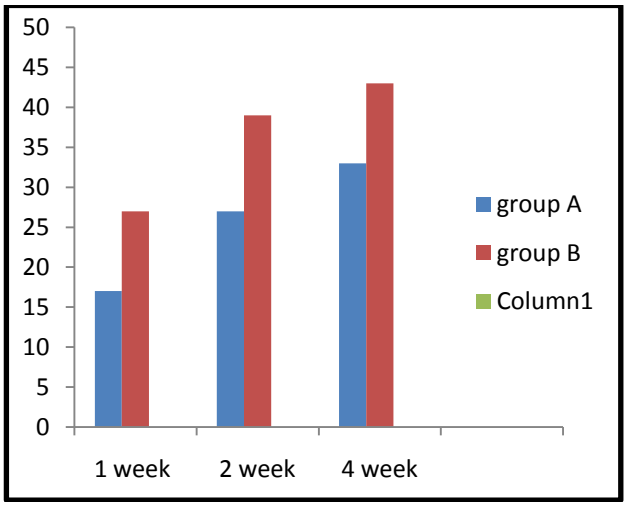
Exclusion Criteria: Pregnant and lactating women, patients with immunodeficiency or severe systemic disease or with heavily crusted or nodular lesions, secondary infection or eczematization and coexisting dermatological diseases that could interfere with the diagnosis and in monitoring the effect of different drugs in scabies were excluded. Patients with the history of treatment with anti-scabetic or topical steroid in the previous 4 weeks were also excluded.

Sample size & Randomization: All the patients attending skin OPD of Rohilkhand medical college and hospital within 6 months period were included in the study. Patients were given oral ivermectin and topical permethrin alternatively. Patients were randomized to two treatment groups; group A & B. Group A pataients had received oral ivermectin 200 μg /kg body weight. Group B patients had received topical 5% permethrin cream. Patients were instructed to apply the medication all over the body below the neck at night for 8 hours. All family contacts were provided with topical 5% permethrin cream for single overnight application but were not included in the study. Patients were advised to take oral medicines before breakfast. The results were seen after 1, 2 and 4 weeks of single application of permethrin and single dose of ivermectin.

At the first visit, all the patient particulars & details of lesions were noted. Severity of the disease was assessed by counting the number of lesions and assigned a score 0-3; 0=no lesions ; 1(mild) =10 or less ; 2(moderate)=11-49 ; 3(severe)=50 or more lesions.

The efficacy was assessed by clearance of lesions, itching, & absence of mites on microscopy.

Results: Out of 100 patients, 42 patients in group A & 46 patients in group B, 12 patients left the study without follow up. Out of 42 patients, 17 patients (40.47%) were completely cured in 1 week in group A & 27 patients (58.69%) were cured in group B out of 46 patients. After 2 weeks, 10 more patients (40%) were cured in group A & 12 more patients (63.15%) were cured in group B. After 4 weeks, 6 more patients (40%) & 4 more patients (57.14%) were cured in group A & group B respectively. 9 patients in group A and 3 patients in group B are left with mild disease . There is a graph given below showing improvement in number of patients in group A and group B after 1week , 2 week and 4 week of receiving oral ivermectin and topical 5% permethrin in single dose and topical application respectively.



The P value was 3.48 which is less than 3.84. Therefore value of P is more than 0.05 i.e. P > 0.05. So there is insignificant association between the effect of oral ivermectin and topical 5% permethrin in the treatment of scabies.

Number and percentage of patients improved

	Completely cured pt in 4 weeks	Total patients	% of patients improved
Group A	33	42	78.57%
Group B	43	46	93.47%

Where N=88

Sex distribution of the patients

	Males	Females
Group A	23 (54.76%)	19 (45.23%)
Group B	25 (54.34%)	21 (45.65%)

It has been seen that the patients after 2 weeks with permethrin were much relieved as compared to ivermectin single dose after 2 weeks, number of lesion clearance was less in group A as compared to group B. At fourth week, there was no significant different in both the group patients.

Improvement in number of patients

	Baseline	1 week	2weeks	4 weeks
Group A	42 patients			
No lesions	0	17(40.47%)	10 (40%)	6 (40%)
Mild	5(11.9%)	16(38.09%)	15(60%)	9(60%)
Moderate	19(45.23 %)	9(21.42%)	0	0
Severe	18(42.85%)	0	0	0
Group B	46 patients			
No lesions	0	27 (58.69%)	12(3.15%)	4(57.14%)
Mild	4(8.69%)	14(30.43%)	7(36.84%)	3 (42.85%)
Moderate	27(58.69%)	5(10.86%)	0	0
Severe	15(32.60%)	0	0	0

Discussion: In the study, both the treatment modalities showed equal efficacy at the end of fourth week. But it has been seen that recovery in group B patients who received topical permethrin is faster than those who received oral ivermectin. These results are consistent with the international study Usha *et al* [9]. Topical permethrin is considered as gold standard in the treatment of scabies. Permethrin is generic name for 3-phenoxybenzyl (6)-cistrans-3-(2, 2-dichlorovinyl)-2, 2-dimethylcyclopropanecarboxylate[10].

Permethrine is ovicidal and miticidal. Permethrin act by disrupting the sodium channels resulting in delayed repolarisation, paralysis and death of the mite. But application of permethrin can cause stinging and burning in some patients[11]. Ivermectin acts by binding selectively with high affinity to glutamate or γ-amino butyric acid gated chloride channels resulting in paralysis and death of the mite. Ivermectin is not effective against younger stages of parasite because the nervous system has not been developed yet. Oral ivermectin may result in headache, nausea, dizziness, vomiting, ataxia and even seizures[12].

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