

Comparison of Benzyl Benzoate Lotion Versus Permethrin Solution in Addition to Crothamiton Cream as Adjuvant Therapy In the Treatment of Scabies Infestation.

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ABSTRACT

Background and Objectives: To compare the efficacy of topical benzyl benzoate lotion with permethrin solution in addition to adjuvant crothamiton cream with the aim of determining better and improved treatment option for scabies.

Methods: The trial included 150 patients aged 6–65 years with scabies who attended the Al-qudis health center for family medicine in Mosul city. Inclusion criteria: those experiencing itching and presence of burrows or secondary lesions that were characteristic of scabies on at least three sites of predilection for scabies. Exclusion criteria: serious illness, pregnant or lactating women, treatment of scabies within the preceding 1 month and suspicious cases. Eligible subjects were divided to 2 groups both of them received topical treatment consisted of a thorough bath using sulfur soap followed by application of benzyl benzoate lotion 25% for adult and 12.5% for children to all parts of the body, repeated daily for 3 consecutive days and after 1 week, the. While the other group applied permethrine 5% solution as the same manner of benzyl benzoate lotion, washed after 12 hours and repeated after 1 week. In addition, topical treatment involved application of crothamiton cream (40g) mixed with betamethasone G cream (15g) as adjuvant antiscabietic therapy and antipruritic for both groups, in addition to symptomatic treatment of itching. Where possible, close contacts of subjects with scabies were examined and those clinically confirmed to have scabies were invited to enroll in the study. All subjects and close contacts were treated simultaneously. Subjects were followed up at 2 weeks to assess compliance and examine the patients those with new or persistent lesions and pruritus were treated but excluded. Criteria for cure were absence of pruritus and of new lesions.

Results: At 2-weeks post-treatment, the treatment was effective in 70(87.5%) patients in the permethrin group and 45(64%) patients in the benzyl benzoate group, the difference between them was significant ($p < 0.0001$). The 35 patients who had not improved were excluded

Conclusions: The diagnosis of scabies requires a willing physician and a cooperative patient with increased awareness to achieve good control and successfully treatment of this health problem. Moreover, improved personal hygiene may prevent or control the spread of scabies. It is recommended that each patient with scabies should be first advised permethrin topically in addition to symptomatic treatment of itching. Since scabies is familial or house hold infection, we emphasize the treatment of all family members and all close contacts at the same time

Key words: Comparison, Benzyl Benzoate , Versus Permethrin , Crothamiton Cream

INTRODUCTION:

Scabies is a highly contagious intensely itchy parasitic infection of the skin that is caused by the *Sarcoptes scabiei* mite^{1,2}. It

occurs throughout the world, any one of any age can get scabies, but it particularly problematic in areas of poor sanitation, overcrowded families living in narrow congested rooms, and where there is

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skin-to-skin contact (such as hospitals, nursing homes, child care centers or the army prison)^{3,4,5}. There is some seasonal variation with incidence being greater in the winter than the summer, perhaps related to the tendency for more indoor overcrowding in colder weather⁶. The life cycle of *S. scabiei* begins with the pregnant female burrows into the skin laying two to three eggs a day several millimeters to several centimeters in length in the stratum corneum (outermost layer) of the skin. After about 50 - 72 hours, larvae emerge and make new burrows. They mature, mate and repeat this 10 – 17 day cycle. The incubation period for a first infection is usually 4-6 weeks in people without previous exposure, as the mites faecal contamination takes time to cause an allergic reaction. Scabies can be easily managed when treatment is performed correctly. However, as a result of the extended incubation period there may also be asymptomatic carriers who can reinfect others after treatment has been performed. It is therefore important to undertake skin assessments for at least 2 weeks post treatment⁷. Transmission is by direct personal contact i.e. by prolonged skin-to-skin contact of a sexual or social nature, and thus a quick handshake or hug is unlikely to spread the infection⁸, though transfer via inanimate objects such as clothing or furnishings is also possible⁹. The mites will die within 48 hours if they are away from the human body. The classical sites of infestation are between the fingers, the wrists, axillary areas, female breasts (particularly the skin of the nipples), peri-umbilical area, penis, scrotum and buttocks. Infants are usually affected on the face, scalp, palms and soles. Clinical infection with the scabies mite causes discomfort and often intense itching of the skin particularly at night with irritating papular or vesicular eruptions¹⁰. Much of the itching associated with scabies is as a result of the host immune reaction and symptoms can take several weeks to appear after initial infection in a person

Symptoms appear after a much shorter interval (one to two days) after reinfestation¹¹.

Iraqi population being commonly affected by scabies. Hence it was decided to study the most commonly used benzyl benzoate lotion, crotamiton cream and the currently considered medicine of choice permethrin with the aim of determining better and improved treatment option for scabies.

PATIENTS AND METHODS:

Diagnosis of scabies was made clinically by dermatologist and experienced family physician, at Al-qudis health center for family medicine in Mosul city, by taking careful history including that of close contacts and family along with meticulous examination of lesions. Inclusion criteria include: Patients were aged 6 years and above; they were experiencing itching and presence of burrows or secondary lesions that were characteristic of scabies (vesicles, papules, nodules or pustules) on at least three sites of predilection for scabies (interdigital folds of the hands, elbows, wrists, buttocks, male external genitalia) Burrows were identified with a magnifying lens. Subjects were excluded for any of the following reasons: was under 6 years or over 65 years of age, serious illness, pregnant or lactating women, treatment of scabies within the preceding 1 month and suspicious cases. Eligible subjects were divided to 2 groups both of them received topical treatment consisted of a thorough bath with warm water using sulfur soap followed by application of benzyl benzoate lotion 25% for adult and 12.5% for children to all parts of the body from chin downwards, apply the scabicide under fingernails using a soft brush, repeated daily for 3 consecutive days and after 1 week, the treatment is best done at night. While the other group applied permethrine 5% solution overnight as the same manner of benzyl benzoate lotion, washed after 12 hours and repeated after 1 week. In addition, topical treatment involved application of crotamiton cream

betamethasone G cream (15g) (betamethasone 0.1% + gentamycin sulphate 0.1%) as adjuvant antiscabietic therapy and antipruritic for both groups. Each adult patients in both groups received betamethasone injection as single dose and loratadine tablet 10 mg for adults (syrup for children) 1-2 times daily for sever itching.

Where possible, close contacts of subjects with scabies were examined and those clinically confirmed to have scabies were invited to enroll in the study. Asymptomatic contacts were also treated but not enrolled. All subjects and close contacts were treated simultaneously. Subjects in both groups were instructed to wash clothing and sheets the next day with hot water, dry them in the sun and launder them with a hot iron. Subjects were followed up at 2 weeks to assess compliance and examine the patient. Those with new or persistent lesions and pruritus were needed more than 2 weeks for treatment were excluded. Criteria for cure were absence of pruritus and absence of new lesions. Treatment was considered as a failure if there was still a marked itching or appearance of new lesions performed. The patients were crossed over to the other group and they were evaluated again 2 weeks later but were excluded. The results of the study were statistically analyzed using SPSS, statistical differences in two groups, χ^2 - test was used. A p-value of <0.05 was

RESULT:

considered significant.

A total of 177 patients were studied. Twenty seven patients (12 from group A and 15 from group B) were not able to return after the follow-up examination and were therefore excluded from the study. The remaining 150 patients consisted of 105 males (70%) and 45 females (30%). Their ages ranged from 6 to 65 years (mean age 31.5 ± 15.8). Of these 150 patients, 80 were treated with permethrin (group A) and the other 70 patient (group B) with benzyl benzoate.

significant difference before treatment in any of the following characteristics: age, sex, disease and duration. The criterion for judging the effectiveness of treatment was the complete disappearance of visible lesions and itching at day 14. Also treatment tolerability and compliance were assessed retrospectively by questioning the patients. At 2-weeks post-treatment, the treatment was effective in 70(87.5%) patients in the permethrin group and 45 (64%) patients in the benzyl benzoate group (Table1). The difference between the two groups was significant ($p < 0.0001$). The 35 patients (26 males and 9 females) who had not improved were crossed over to the other treatment group but were excluded. On the next follow-up, at 4-week post-treatment, two patients in the permethrin group who showed no response at the first follow-up and was subsequently treated with benzyl benzoate still had severe itching. While the other 8 patients showed improvement. In contrast, all the 25 patients not responding to benzyl benzoate who were then treated with permethrin showed improvement in itching and skin. Only 5 patients (one in permethrin group and 4 in benzyl benzoate group) experienced irritation after application of the drug, but none had allergic reactions.

| Characteristics | Group A N=80 | Group B N = 70 |
|---|-----------------|-------------------|
| Sex distribution | | |
| Male | 55 | 50 |
| Female | 25 | 20 |
| Age (in years) mean (SD) | 30.9(12.8) | 32.7(18.9) |
| History of contact | 80 | 70 |
| No of family members with scabies | | |
| ≤ 5 | 8 | 11 |
| >5 | 72 | 59 |
| Effectively treated patients at 2 week (%) | (87.5%) 70 | 45 (64%) |

DISCUSSION :

Scabies infestation represents a considerable burden of ill health in many communities, including Iraq because of the increase numbers of internee in prisons. Although patients do not die of this condition, it would be wrong to say that scabies is a disease of minor importance, the pruritus is often extremely severe, producing much loss of sleep, disability and unhappiness¹². In addition to secondary complications such as impetigo, cellulites, pyoderma, bacteremia and glomerulonephritis¹³. Our results show that topical permethrin (cure rate 87.5%) was superior to benzyl benzoate (cure rate 64%) in treating scabies. This result is in accordance with previous studies that have reported excellent cure rates with permethrin (cure rate 91%)^{14,15}, while Narendra et al., 2009 did not give permethrin that coveted position and recommended that each patient with scabies should be first advised to use benzyl benzoate topically¹⁶. On other hand, other studies indicate that the cure rates of treatment with benzyl benzoate were around 50%^{17,18}. Crotamiton is popular antipruritic cream but it is relatively weak scabicide agent. The success rate varies between 50% and 70%, the best results have been obtained when applied twice daily for five consecutive days^{19,20}. Data from a previous trials suggested that crotamiton has significantly less efficacy than permethrin²¹ therefore in the present study crotamiton cream was used as adjuvant scabicide cream for five consecutive days. Treatment of scabies is theoretically simple but failure is often caused by inadequate, inappropriate application and may be due to reinfestation that avoided if the instructions are clearly followed but result from failure to treat contacts^{22,23}. In previous studies no resistances had been reported to permethrin treatments¹⁰, most treatment failures can be attributed to inadequate application²⁴. However, resistance is

solution and benzyl benzoate lotion treatment groups respectively in first 14 days of treatment. This failure was occur for those patients who had lived in crowded houses, more than five affected family members with scabies, and not follow the treatment instructions which emphasized the treatment of all family members and all close contacts, whether or not they are itchy, on the same day because they may be infested but symptomless⁷. Treatment of scabies not only includes a scabicide but also symptomatic treatment of itching and secondary bacterial infection which results from the intense itching that breaks the skin and opens way for secondary bacterial infection²⁶. Itching may persist for several weeks after successful treatment as a result of cutaneous irritation which results from body reaction to the dead mites and their waste products, which remain in the skin. On the other hand, topical scabicides may cause allergic contact dermatitis with severe itching, so the patients should be discouraged from overusing scabicides¹⁰.

As a result of itching skin becomes scaled, crusted and unsightly for this reason patients can be treated as for eczema with emollients and topical corticosteroids²⁷, with or without topical antibiotics depending on the presence of secondary infection with *Staphylococcus aureus* in addition to oral antihistaminics²⁸. In this study, one of our aims was to stop the itching that achieved with administration of systemic corticosteroid and oral antihistamine in addition to local corticosteroids that mixed with topical antibiotic and crotamiton cream that apply accurately to each bump for five consecutive days. As a result of this symptomatic treatment, itching duration were subsided in the first 4-5 days of treatment, while in previous other studies that depended on the uses of scabicides alone, itching was persist for up to six weeks²⁹. A hot wash for bedding and clothes is recommended in all studies of scabies because mites can be killed by insecticide and heat (usually at a

control the spread of scabies^{30,31,32}.

CONCLUSION:

Scabies is a common dermatological problem that can be managed effectively if physicians possess an appropriate knowledge of the available drugs and instructs patients appropriately. It requires a willing physician and a cooperative patient with increased awareness to achieve good control and successfully treatment of this health problem. Moreover, improved personal hygiene may prevent or control the spread of scabies. We recommend that each patient with scabies should be first advised permethrin topically in addition to symptomatic treatment of itching. Since scabies is familial or house hold infection, we emphasize the treatment of all family members and all close contacts

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