TO EVALUATE THE EFFICACY OF ANTHRALIN WITH AND WITHOUT COALTAR IN SHORT CONTACT THERAPY OF MILD TO MODERATE PSORIASIS- A RANDOMIZED DOUBLE BLIND CONTROLLED STUDY

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ABSTRACT

Background: Anthralin and coal tar, since their introduction in the treatment of psoriasis have remained one of the main modalities of treatment despite fluctuation. The principle of giving both treatments together is of course not new as the Ingram regime includes both tar baths and anthralin. It has been shown that short contact therapy with the combination of anthralin and coal tar is effective in chronic plaque psoriasis. However, clinical evidence suggested that the addition of coal tar to reduce the irritation and pigmentation due to anthralin resulted in a compromised efficacy of combinations. The antipsoriatic effect of coal tar itself is low but is boosted when combined with anthralin.

Objectives: To evaluate whether combining the coal tar with anthralin in short contact therapy in mild to moderate chronic plaque psoriasis compromises the efficacy of combination compared to anthralin alone.

Methods: Fifty cases having mild to moderate psoriasis were studied in a double blind randomized controlled study. Twenty five patients in group A were treated with anthralin ointment 0.5% and twenty five patients in group B were treated with combination of coal tar 5% and anthralin. Results were analyzed using PASI scores.

Results: P values at the end of 1st visit, 2nd visit in both the groups Group A and Group B were significant. There was also significant decrease in the PASI score in the patients treated with the combination of anthralin plus coal tar than anthralin alone (P<0.001)

Conclusion: This study demonstrates that the addition of 5% Coal tar to Anthralin regimen (0.05%) in the treatment of mild to moderate chronic plaque psoriasis did not impair the antipsoriatic effect of the combination and also increased the efficacy of the combination.

Key Words: Psoriasis, Anthralin, Dithranol, Coal tar, Short contact therapy, Combination therapy

INTRODUCTION

Psoriasis is difficult to manage in general practice, mainly because the standard treatments produce side effects, or are ineffective in both the short and long term. Anthralin (Dithranol) though efficacious has a strong reducing methylene group that binds with oxygen from the skin. The auto-oxidation of anthralin results in the formation of anthraquinones causing irritation and burning of skin. Due to this many formulations have been developed to increase the efficacy and compliance. In recent years, the main topical therapies have included anthralin or extracts of crude coal tar (CCT). The exact mode of action of anthralin and CCT in the treatment of psoriasis is unknown. CCT, however, has been shown to have an atrophogenic effect on normal epidermis indicating that it can act as a cytostatic agent on normal human skin. The principle of giving both treatments together is of course not new as the Ingram regime includes both tar baths and anthralin.
However, the clinical evidence suggested that the use of combination 5% coal tar to anthralin regimen (0.05%) in the clinic is limited as the addition of 5% coal tar to reduce the irritation and pigmentation due to anthralin resulted in a compromised efficacy of combinations. It has been shown that short contact CCT therapy is effective in chronic plaque psoriasis. The antipsoriatic effect of tar itself is low but is boosted when combined with anthralin.4,5,6

The purpose of this study was to determine whether adding 5% coal tar to anthralin regimen (0.05%) in short contact therapy is more effective than anthralin alone. Clinical assessment was recorded using a severity score determination.

MATERIAL AND METHODS

The study was conducted in 50 patients attending the department of Dermatology of M.S.Ramaiah Medical Teaching Hospital, Bangalore. The duration of the study was for a period of one year from July 2003-June 2004.

Method of collection of data

It is a randomized double blind comparative study of subjects with mild to moderate psoriasis. Patients were randomly allotted into two groups with 25 patients in each group. However, the lesions did not exceed 20% of total body surface area. Patients in one group were treated with sample A which consisted of only anthralin ointment (0.5%) and patients in other group were treated with sample B which consisted of coal tar 5% added to anthralin (0.5%). All preparations were from single batch specially prepared to ensure uniformity. Patients were instructed to apply a thin layer of the given ointment over the lesions for about 10 minutes; wipe it off with cotton dipped in any vegetable oil. Patients were then asked to expose the affected parts to the sunlight for about 20 minutes. If at any stage, marked irritation or burning occurred patients were instructed to cease therapy and report the next day. Severity score for erythema, scaling and plaque thickness was graded using PASI (Psoriasis Area Severity Index) score.7 Lesions was scored using PASI score by a dermatologist in the Department of Dermatology, who was unaware of the treatment being used by the patient.

The first visit was considered as baseline visit. There was a two week treatment phase with the baseline visit, week-2 and a follow up at week-4. During the patients initial visit medical history was obtained and body systems were reviewed. An informed consent from the patient was obtained. The data was entered in the questionnaire form and evaluated at the end of the study.

Inclusion Criteria

Patients aged above 15 years of either sex, patients withdrawn from previous antipsoriatic medications for three to four weeks and freshly diagnosed psoriatic cases were included in the study.

Exclusion criteria

Patients who received investigational medication within four weeks before the study, pregnant women, lactating women, women of reproductive age not practicing contraception, patients on concomitant use of other topical medications on the lesion were excluded.

PASI Score was calculated in subjects having target lesions in one or more of the five anatomical regions mentioned – Trunk, Upper extremities, Lower extremities, elbows/knees, Palms/soles7

Clinical assessment was performed by dermatologist in the department of dermatology at the onset of the therapy and repeated at an interval of two weeks constituting baseline visit, first visit and second visit respectively. Fredriksson and Pettersson created the PASI in 1978 as a method to evaluate the clinical efficacy of a new treatment for psoriasis.7 When using the PASI, psoriatic plaques are graded based on three criteria: redness (R), thickness (T) and scaliness (S). Severity is rated for each index on a 0-4 scale (0 for no involvement up to 4 for severe involvement). The body is divided into four regions comprising the head (H), upper extremities (U), trunk (T) and lower extremities (L). In each of these areas, the fraction of total surface area affected on a 0-4 scale (0-for no involvement: up to 4 for severe involvement). The various body regions are weighted to reflect their respective proportion of body surface area (BSA). The composite PASI score can then be calculated by multiplying the sum of the individual severity scores for each region by the weighted area of involvement score for that respective regions and then summing the four resulting quantities.7

The highest potential score is 72; the lowest is 0. PASI scores are nearly continuous, with 0.1 increments within these values. PASI 75 or a reduction in baseline PASI score of > 75% is the standard used by FDA to assess the efficacy of psoriasis agent. The PASI score and percentage body surface area were the only measures recommended by an American Academy of Dermatology (AAD) consensus group to assess extent of psoriasis when planning treatment.7

Perilesional irritation is graded using the scale. 0-Nil, 1-Mild, 2-Moderate, 3-Sever, 4- Very severe.7

Statistical analysis

The collected data were compiled and processed using Microsoft Excel 2005. Statistical analysis was carried out...
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by statistical package SPSS 14.5. Students unpaired t test was used to evaluate the significant difference in the efficacy of Anthralin with and without coal tar in mild to moderate psoriasis. Significance repeated measures ANOVA was used to evaluate the efficacy of individual treatment at the end of the three follow up. A p-value less than 0.05 were considered to be statistically significant.

RESULTS

All the 50 patients completed the study. Out of 50 patients who received the therapy, 28 were male and 22 were females. The age of the patients ranged between 18 to 60 years. In the present study mild to moderate itching was present in 82% of patients. It was severe in 4% of patients. It was a symptomatic in 14% of patients. None of the cases included in the present study showed nail or joint involvement.

At the end of the study, PASI scores in patients treated with only anthralin (Sample A) were analyzed at baseline, 1st visit and 2nd visit and it was noted that there was a significant decrease (P<0.01) in the PASI scores from baseline to the 2nd visit. PASI scores in patients treated with combination of Anthralin and coal tar (Sample B) were analyzed at baseline, 1st visit and 2nd visit. In this group also, there was a significant decrease (P<0.01) in the PASI scores from baseline to the 2nd visit (P<0.01). P values were significant in both groups indicating that coal tar when added to Anthralin ointment did not impair the antipsoriatic action of Anthralin.

Also, the antipsoriatic efficacy in patients treated with Anthralin alone was compared to the patients treated with the combination of Anthralin plus coal tar at the end of each visit, i.e. first and second visit using PASI score. There was a significant decrease in the PASI score in the patients treated with the combination of anthralin plus coal tar than anthralin alone (P<0.001) (Table 1) (Figure 1).

DISCUSSION

Our initial clinical impression before this study was that addition of 5% Coal tar to anthralin regimen (0.05%) to reduce the irritation and pigmentation due to anthralin resulted in a compromised efficacy of combinations.

This study demonstrates that the addition of 5% Coal tar to Anthralin regimen (0.05%) in the treatment of mild to moderate chronic plaque psoriasis did not impair the antipsoriatic effect of the combination but also increased the efficacy of the combination.

CONCLUSION

Combination therapy is desirable if it enhances therapeutic efficacy, shortens the duration of therapy or reduces the incidence of side-effects. The antipsoriatic effect of coal tar itself is low but is boosted when combined with anthralin. These findings lead us to prefer combined tar-anthralin therapy as short contact therapy because of its lower irritancy in comparison with anthralin alone.

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REFERENCES

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Table 1: Effect of anthralin (Sample A), anthralin + coal tar on mild to moderate psoriasis as per PASI scores

<table>
<thead>
<tr>
<th>PASI</th>
<th>Dithranol (Sample A)</th>
<th>Dithranol + Coal tar (Sample B)</th>
<th>Significance by student t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>2.85±1.79</td>
<td>3.25±2.26</td>
<td>P=0.273</td>
</tr>
<tr>
<td>First follow up</td>
<td>2.29±1.38</td>
<td>1.08±0.97</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Second follow up</td>
<td>1.07±0.76</td>
<td>0.71±0.69</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Significance of repeated measures (ANOVA)</td>
<td>F=43.594</td>
<td>F=116.99</td>
<td>P&lt;0.01</td>
</tr>
</tbody>
</table>

Figure 1: Comparison of antipsoriatic efficacy of Anthralin and Anthralin plus coal tar as estimated by PASI score.