EVALUATION OF 'TETRALIN AND COPPER OLEATE' COMBINATION AS A POTENT PEDICULICIDE

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Summary

A clinical investigation with a pediculicide preparation containing tetralin+Copper Oleate as active ingredients was conducted and its therapeutic effect was compared with a preparation containing benzyl benzoate + D.D.T. The study was conducted on 50 patients with pediculosis capitis/corporis/pubis; in a skin out patient department of a public hospital in Bombay. Thery were grouped into two groups of 25 patients each. In each group, 21 had pediculosis capitis, 3 had pediculosis corporis and one had pediculosis pubis. Preparation containing tetralin + copper oleate was effective in all the patients and one application was enough in majority of patients to kill both lice and nits. However, 4 patients (i.e. 16%) showed recurrence within 7 days of stopping treatment, which was probably due to reinfection as they were found to be cured on 7th day's examination.

Medication containing benzyl benzoate + D.D.T. was also effective in all cases but more than one application was necessary in majority of patients. Hence the duration of therapy was prolonged. Recurrence was noted in 8 patients within a week (i.e. 32%) after stopping treatment.

The chief advantage of preparation containing tetralin + copper oleate lies in its comparative effectiveness from a treatment of only 15 minutes' duration. It was interesting enough to find this preparation effective in pediculosis with mild secondary infection without the use of antibiotics or chemotherapeutic agent like sulphonamides, in contrast to preparation containing benzyl benzoate + D.D.T., which by itself had no beneficial effect in presence of secondary infection. However, a clinical trial on larger number of cases is necessary for confirmation.

Lice exist wherever there are men, as they are host-specific and cannot normally survive on any other animal. Besides their great importance as vectors of certain rickettsial diseases (typhus, relapsing fever, trench fever etc) two species (phthirus pubis & pediculosis-humanis) are human ectoparasites. They are blood suckers and voracious feeders. The body louse (pediculosis humanis-corporis), the head louse (pediculosis humanis capitis) and crab louse (Pthirus pubis), all cause pediculosis. There are reports of a sharp increase in the frequency of pediculosis capitis and pediculosis pubis in United States and Western Europe[1,2,3]. This increase has occured without restriction to lower socio-economic levels. Pediculosis corporis is currently rare in the Western world except in indigent vagabonds[2].

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In all three of these obligate parasitic diseases, adult lice are relatively few. In pediculosis capitis and pubis the diagnosis is usually based on identifying the numerous eggs (nits) glued to hair. In pediculosis corporis adult lice and nits are usually identified on seams of clothing.

There are a number of commercial pediculicides. Merck and Company's 'Cuprex' has the following composition :

Active Ingredients :

Tetralin	...	30.9%
Copper Oleate	...	0.03%

Inert Ingredients :

Liquid Paraffin	...	52.72%
Acetone	...	15.75%

The relative activity of this preparation in comparison with other commercial pediculicides has been determined in laboratory tests with the body louse[4] and they indicate that it is more effective against adults and nymphs than against eggs[4]. The chief advantage of this preparation lies in its comparative effectiveness from a treatment of only 15 minutes' duration[4]. One application of it usually kills both lice and nits[4].

This is a report on our screening programme of pediculicide lotion containing tetralin & copper oleate in 50 patients with pediculosis capitis/corporis/pubis, conducted in order to study its efficacy, tolerance and duration of therapy required in various lice infections, and a comparison with the therapeutic efficacy of a pediculicide containing BB + DDT (Benzyl Benzoate 15% w/v., DDT 1.0% w/v & Benzocaine 2% w/v.).

Material and Method

50 patients with clinically diagnosed pediculosis of either capitis, corporis or pubis type were selected for the study. Previous history of other medicaments taken was noted and those were discontinued. The patients were divided into two groups of 25 each.

25 patients were given one bottle each of preparation containing tetralin & copper oleate as active ingredients. The method of application for this preparation was as follows :

For pediculosis capitis, first wash the scalp and hair thoroughly, dry it and then gently rub the solution liberally (about two table-spoons are more than enough). Keep the solution for a period of 15 minutes and then shampoo. While still damp, comb hair with a fine comb. For pediculosis corporis and pubis, apply in similar manner. It is not necessary to shave the hair in uncomplicated cases. Traces of the lotion may be removed from clothes with soap and water. Since body lice and nits are found mainly in the clothes, it is especially important that the clothing be disinfected by dry cleaning or other effective measures.

25 patients were given one bottle each, of a solution containing benzyl benzoate + DDT. The instruction for application of this medication was as follows :—

For pediculosis capitis wash the scalp and hair thoroughly, dry it and then apply the medication liberally on the scalp. Keep the solution for a period of 48 hours and then wash again with soap and water. While still damp, comb hair with a fine comb. For pediculosis corporis and pubis—apply the medication liberally on the affected hairy places in the same manner. In the case of pediculosis corporis, disinfect the clothing.

All the patients were examined after shampoo, on 3rd day, on 7th day, on 10th day and on 14th day and whenever possible at the end of four weeks. During the visits, the patient's

subjective evaluation by way of his/her symptoms and the objective evaluation by way of subsidence of pruritus, encrustation, secondary infection, increase or decrease in number of nits and lice was recorded. Empty nits and absence of lice on clinical examination after one week from the day of starting treatment (as maturation period for lice is 7 days) were taken as criteria of cure. Interestingly enough patients with pediculosis capitis with mild secondary infection when subjected to preparation containing tetralin & copper oleate showed excellent results without help of antibiotic/chemotherapy, in contrast to medication containing benzyl benzoate and D. D. T., which necessitated an antibiotic or chemotherapy.

Results

Preparation containing tetralin & copper oleate combination was tested in 25 patients in comparison with 25 patients treated with medication containing benzyl benzoate and D. D. T. All patients were of age group 8 to 60 years. These included 21 cases of pediculosis capitis, 3 of pediculosis corporis and one of pediculosis pubis in each group of 25 patients.

Of the 50 patients, 28 were earlier treated by their doctors or had practised self medication with unsatisfactory results as follows :

Topical benzyl benzoate, benzocaine combination in 8, topical mesulphen B.P.C. in 8, benzyl benzoate in 5 and gamma benzene hexachloride in 7.

The severity of infestation was graded as mild or grade I, when lice and nits were occasionally present; moderate or grade II, when lice and nits were constantly present throughout the infested part and severe or grade III, when lice and nits were plentiful interfering with patient's activities.

Preparation containing tetralin & copper oleate was effective in all 25 patients (Table 1) comprising 15 with severe infection, 8 with moderate infection and two with mild infection; the average duration of therapy being 3 to 7 days. However, 4 patients (16%) showed recurrence within seven days of stopping treatment with this preparation. 10 patients (40%) showed cure on 3rd day's examination, 13 patients (52%) showed cure on 7th day's examination, while two patients (8%) with pediculosis capitis showed significant subjective improvement on 7th day; but not complete cure. So they were advised to repeat the local application once and found to be cured on 10th day. No adverse reactions were observed or volunteered. This preparation was found to be excellent for pediculosis corporis and pubis, as there was 100% cure without any recurrence. It was

TABLE 1
Grading of infection and rate of cure

Total No. of patients treated with Preparation Tetralin + Copper Oleate	Severe Infection			Moderate Infection			Mild Infection		
25	15			8			2		
	Cap.	Cor.	Pub.	Cap.	Cor.	Pub.	Cap.	Cor.	Pub.
	13 + 9 cured — 4 Recurrence	2 Cured	—	6 Cured	1 Cured	1 Cured	2 Cured	—	—

Cap.: Capitis Cor.: Corporis Pub.: Pubis

TABLE 2

Grading of infection and rate of cure

Total No. of patients treated with Preparation Benzyl Benzoate + DDT	Severe Infection			Moderate Infection			Mild Infection		
25	14			10			1		
	Cap.	Cor.	Pub.	Cap.	Cor.	Pub.	Cap.	Cor.	Pub.
	13 — 5 cured — 8 Recurrence	1 Cured	—	8 Cured	1 Cured	1 Cured	1 Cured	—	—

Cap.: Capitis Cor.: Corporis Pub.: Pubis

equally effective for pediculosis capitis though there was recurrence in 4 patients (16%). Recurrence was probably due to reinfection as on completion of treatment with this preparation patients were found to be free from infection. One application was sufficient to kill both lice and nits in majority of cases.

Preparation containing benzyl benzoate and D. D. T. was effective in all 25 patients (Table 2), comprising 14 with severe infection, 10 with moderate infection and one with mild infection, the average duration of therapy being 7 to 10 days. In this group eight patients (i.e. 32%) showed recurrence within 3 to 14 days after stopping treatment. One patient (4%) showed cure on 3rd day, 3 patients (12%) showed cure on 7th day. 21 patients on 7th day's examination showed objective improvement in the form of subsidence of pruritus, reduction in the population of lice and nits and they were advised to repeat local application once and were re-examined on 10th day. 10 patients (64%) showed cure on 10th day, while 5 patients still showed persistence of infection and they were advised 3rd application with the medication. Examination of these 5 cases on 14th day showed cure. Two cases of pediculosis corporis and one case of pediculosis pubis showed severe degree of erythema and burning 48 hours after this medication. However, the pediculosis was cured.

Tolerance

Both preparations "tetralin and copper oleate" and "benzyl benzoate and DDT" produced more or less identical results and tolerance was very satisfactory in 94% of patients. Preparation containing tetralin and copper oleate was well tolerated in all three lice infestation—capitis, corporis & pubis, in contrast to preparation containing benzyl benzoate and DDT, which showed significant, local irritant effect in cases of pediculosis corporis and pediculosis pubis. Preparation containing tetralin and copper oleate was preferred for its excellent effects on pediculosis with mild secondary infection since it was effective without the use of antibiotics or chemotherapeutic agents like sulphanamides. However, a clinical trial on larger number of patients is necessary for confirmation of this finding. Preparation containing benzyl benzoate & DDT had no beneficial action on secondary infection and prior administration of antibiotic or sulphonamides was necessary in infected cases.

Discussion

Pediculosis capitis/corporis/pubis has world-wide distribution[6]. Pediculosis capitis is encountered in pre-school

children of both sexes[2]. As soon as children attend school, the frequency decreases rapidly in males but continues in females[2]. Pediculosis pubis is typically transmitted by sexual contact. Like gonorrhoea, pediculosis pubis is more common in females than in males aged 15 to 19 years[2,6]. The sex distribution is reversed over the age of 20 years[2,6]. Pediculosis corporis infestation is transmitted chiefly by contaminated clothing or bedding.

Treatment of pediculosis with gamma benzene hexachloride (GBH), malathion and chlorophenothane (DDT) is well known. However, the body louse has been shown to be resistant to GBH, chlorophenothane and malathion except in the United States[2]. Resistance of head lice to chlorophenothane and GBH has been noted in Britain[7], but not in the United States and other countries[2]. But chlorophenothane as well as malathion are not widely available in United States[8]. On taking into consideration these facts, it appears that, preparation containing tetralin and copper oleate is a valuable addition to pediculicides available commercially.

Pediculicidal activity of this preparation has been studied by laboratory tests[4].

In the present study of this preparation, it was found to be very effective for pediculosis corporis, pediculosis pubis and pediculosis capitis, in comparison with preparation containing benzyl benzoate and DDT. Recurrence rate with the former preparation was in 16% of patients in contrast to 32% of cases among those treated with the latter. The average duration of therapy with the preparation containing tetralin and copper oleate varied from 3 to 7 days and with the preparation containing benzyl benzoate and DDT duration varied from 7 to 10 days. The claim that "one application of the former preparation usually kills both lice and nits", was found to be true in majority of patients in the present study. This preparation, i. e. the preparation containing tetralin and copper oleate, was found to be an excellent therapeutic agent for pediculosis corporis and pediculosis pubis, giving 100% cure without any recurrence. It was equally effective for pediculosis capitis.

Tolerance was very satisfactory with preparation containing tetralin and copper oleate in all the three types of lice infections—capitis, corporis & pubis; as compared to preparation containing benzyl benzoate and DDT, which was found to be locally irritant when used for pediculosis corporis and pediculosis pubis.

The preparation containing tetralin and copper oleate was notable for its beneficial effects on pediculosis with mild secondary infection. However, a clinical trial on a large number of patients is necessary for confirmation of this finding. The preparation containing benzyl benzoate and DDT did not show any beneficial effect on secondary infection and necessitated prior treatment with antibiotic or sulphonamide.

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