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Comparison of Topical Triamcinolone and Oral Atorvastatin in Treatment of Paederus Dermatitis Northern Iran

[1]Seyed Hasan Nikookar, [2]Zohreh Hajheydari, [1]Seyed Hasan Moosa-Kazemi,
[3]Mitra Mahmoudi and [4]Soheila Shahmohammadi
[1]Department of Medical Entomology, Faculty of Public Health and Institute of Health Research, Tehran University of Medical Sciences, Tehran, Iran
[2]Department of Dermatology, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Iran
[3]Department of Pharmacology, Faculty of Medicine, Medicine University of Medical Sciences, Sari, Iran
[4]Dermatology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract: Dermatitis caused by stimulation of beetle paederus, is a common health problem in Northern and some southern parts of Iran. Since by now, traditional medicine and some corticosteroid agents have been used for treatment of dermatitis caused by beetle paederus. Because, there are few researches about classical treatment of the disease at academic level, this study planned to compare the effectiveness of triamcinolone ointment and atorvastatin tablet with placebo in treatment of paederus dermatitis in Northern Iran. A randomized double-blind clinical trial was carried out on 30 patients referred to the hospital and clinics at Sari and Neka countries in Northern Iran during 6 months. Patients were randomly divided into two therapeutic equal groups. The first group was triamcinolone ointment twice a day and a placebo atorvastatin tablet daily. The second group was oral atorvastatin one tablet (20 mg) daily and a placebo triamcinolone ointment twice a day. In Seventh day of visits, therapeutic response of the patients in triamcinolone and atorvastatin group were 93.33 and 80%, respectively. No significant differences were found in therapeutic outcome between the two groups ($p>0.05$). The results showed both of triamcinolone ointment and oral atorvastatin had similar effect on paederus dermatitis. Because the paederus dermatitis is a self-limited disease use of topical therapy for treatment of the disease is recommend.

Key words: Paederus, irritant contact dermatitis, treatment, triamcinolone ointment, atorvastatin tablet

INTRODUCTION

Staphylinidae, with more than 30,000 species are the largest family order of Coleoptera. Dermatitis is caused by the small insect as a paederus beetle (Schofield, 2005). It is a specific type of acute irritant dermatitis and is clinically characterized by sudden appearance of blister and pustules over and erythematous base and some times area of skin necrosis. Any part of the body can be affected but exposed parts are most affected. Ocular and genital lesions may be seen usually as a result of spread of pederin by fingers (Gnanaraj *et al*., 2007). Pederin is effective compound that is released after stimulation of beetle paederus (Zargari *et al*., 2003). Dermatitis epidemic was reported in many countries including Malaysia, Iran, Iraq, India, Turkey, Sri Lanka and Japan (Zargari *et al*., 2003; Rahmah and Norjaiza, 2008; Al-Dhalimi, 2008; Gnanaraj *et al*., 2007). Common differential diagnoses include irritant contact dermatitis, allergic contact dermatitis, herpes zoster and herpes simplex.

Associated complications such as keratoconjunctivitis, widespread erythema and desquamation of the upper bodies and secondary infection, pigmentation and scar can be seen with paederus beetle (Kumar *et al*., 2010). These complications were also seen in many African countries and Australia after rainfall (Smith *et al*., 1995). Distribution of this species was reported in several provinces in Iran like; Southern Fars, Hormozgan, Bushehr, Sistan and Baluchestan, Chahar Mahal and Bakhtiari, Khuzestan , as well (Nikbakhtzade, 2005). There are more than 25 therapeutic methods for treatment of paederus beetle (Frank and Kanamitsu, 1987). There are limited studies about patients only treated by triamcinolone, but we

Corresponding Author: Zohreh Hajheydari, Department of Dermatology, Bouali Sina Hospital, Pasdaran Boulevard, P.O. Box 4815838477 Sari, Mazandaran Province, Islamic Republic of Iran Tel: 2233010-16 Fax: 2234506

couldn't find any article about atorvastatin as a therapeutic agent in this regard. The statin group is an inhibitory comparative hydroxymethyl glutaryl-CoA reductase (HMG-CoA reductase) enzyme. Although, statins group are used as cardiovascular disease and Lipid-lowering Drugs, they have other therapeutic properties such as anti inflammatory, vasodilator and antioxidant effects (Law *et al*., 2003; Downs *et al*., 1998; Ridker *et al*., 1998; Steinberg, 2005; Andalib *et al*., 2007). So that, statins group can induces their anti inflammatory effect by inhibition of isoprenoids like farnesyl phosphate synthesis (Casey, 1995). Although previous study showed that statins group has anti inflammatory effect, they didn't use for treatment of paederus dermatitis in human. Therefore, this study was carried out to compare therapeutic and anti-inflammatory effects of triamcinolone ointment and atorvastatin tablet in treatment of paederus dermatitis.

MATERIALS AND METHODS

A randomized double-blind clinical trial was carried out in Northern of Iran during 6 months from May 2009 to November 2009 (Fig. 1). This study was approved by ethic committee of vice chancellor of Mazandaran University of Medical Sciences and written consent forms were completed by all the participants. Inclusion criteria were diagnosis based on clinical signs and physical examination of dermatitis due to paederus beetles lasted less than 72 h of onset of the lesion, lack of previous treatment and age ranged above 10 years. Exclusion criteria were pregnant and nursing women and children under 10 years, patients with associated disorders such as cardiovascular, nephritic and diabetes mellitus. The patients were selected by simple random sampling method and divided in two therapeutic groups. The first group was triamcinolone-treated ointment twice a day and a placebo atorvastatin tablet daily. The second group was treated by atorvastatin orally one tablet (20 mg) daily and a placebo triamcinolone ointment twice a day. All medicines were prescribed by the dermatologist as a main colleague of the proposal and all therapeutic agents prepared in the same shapes by the Pharmacologist as a co-investigator. Patients were advised to use drugs regularly and do not use other drugs during treatment. All patients were visited 3 times (the first day, seventh and fourteenth); results of each questionnaire were recorded. Follow up of the patients was performed by the third

Fig. 1: The study area in the Mazandaran Province*, Iran

co-investigator. The patients were considered sever (acute) dermatitis when they had vesicular, pustular on an erythematous base with burning and itching sensation with more than 5 cm^2 or multi focal lesions. Moderate (subacute) dermatitis patients were who had patch and erythematous papules, burning and itching sensation and lesion of 5 cm^2.

The mild cases were defined as erythematous lesions and scaling less than 5 cm^2 size with mild itching. Patients were classified into the following groups during the second and third visit:

- Full recovery of disease: all symptoms disappeared, vesicules and pustule were improved and just the form of lesions remained similar to erythematic or pigmentation
- Relative improvement of disease: symptoms were subsided; patch and erythematous papules reduced in number and size
- No change in the disease: No change was observed in the disease

RESULTS

Table 1 shows demographic variables including Age, Marital status, literate, occupational status and sex of the patients in the two studied groups.

Characteristics lesion of the patients in atorvastatin group was as follow: acute lesion was seen in 9 cases and subacute seen in 6 patients. Site of lesions were observed on face and scalp in 6 cases, neck area in 7, upper extremities in one case, body in 4 cases and in one case was located on lower extremities. Size of lesions was less than 5 cm in 13 cases, 6-10 cm in 1 case, 11-15 cm in 2 cases, 16-20 cm in 2 cases and 3 cases had more than 21 cm size of lesion. None of them had pervious history of paederus dermatitis. Furthermore, none of the patients in atorvastatin group have shown side effects of the medicine.

Characteristics lesion of the patients in triamcinolone group was as follow: acute lesion was seen in 8 cases and subacute seen in 7 patients. Site of lesions were observed on face and scalp in 5 cases, neck area in 7, upper extremities in 3 cases, body in 6 cases and in 2 cases was located on lower extremities. Size of lesions was less than 5 cm in 5 cases, 6-10 cm in 9 cases, 11-15 cm in 3 cases, 16-20 cm in 1 case and 3 cases had more than 21 cm size of lesion. Two of the patients had pervious history of paederus dermatitis.

The present study shows that 53.3 and 60% of the subjects had acute conditions in triamcinolone and atorvastatin groups, respectively. In both group, the most site of lesion was observed in neck area. The least site of lesion was seen on extremities in the two groups. The size of lesion was less than 5 cm^2 in 23.8% of patients in triamcinolone group and 61.9% in atorvastatin group (Table 2).

Therapeutic response in triamcinolone group at first week was better than of the patients in atorvastatin group, but the result was not significant between the two groups ($p>0.05$) (Table 3).

Therapeutic outcomes in the two groups are shown in Table 4. Although, full recovery in atorvastatin group was seen more than triamcinolone group, but the result was not significant between the two therapeutic groups ($p>0.05$).

Table 1: Demographic characteristics of the study sample of the patient in Sari and Neka cities, Mazandaran Province, 2009

	Triamcinolone		Atorvastatin		Total	
Variables	No.	%	No.	%	No.	%
Age (year)						
10-25	7	46.66	2	13.33	9	30
26-45	7	46.66	11	73.33	18	60
>46	1	6.66	2	13.33	3	10
Marital status						
Married	6	40.00	11	73.33	17	56.66
Single	9	60.00	4	26.66	13	43.33
Literate	15	100.00	15	100.00	30	100
Occupational status						
Official	1	6.66	5	33.33	6	20
Privacy	4	26.66	5	33.33	9	30
Housekeeper	3	20.00	2	13.33	5	16.66
Non	7	46.66	3	20.00	10	33.33
Sex						
Male	10	66.66	9	60.00	19	63.33
female	5	33.33	6	40.00	11	36.66

Table 2: Lesions' characteristics of patients with paederus dermatitis in Sari and Neka cities in Mazandaran Province, 2009

	Atorvastatin		Triamcinolone		Total	
Variable	No.	%	No.	%	No.	%
Acute	9	60.00	8	53.33	17	56.66
Sub acute	6	40.00	7	46.66	13	43.33
Lesion places						
Head and Face	6	31.57	5	21.73	11	26.19
Neck	7	36.84	7	30.43	14	33.33
Hand	1	5.26	3	13.04	4	9.52
Body	4	21.05	6	26.08	10	23.80
Leg	1	5.26	2	8.69	3	7.14
Past history						
Yes	0	0.00	2	13.33	2	6.66
No	15	100.00	13	86.66	28	93.33
Lesion sizes (cm^2)						
Less than 5	13	61.90	5	23.80	18	41.86
6-10	1	4.76	9	42.85	10	23.25
11-15	2	9.52	3	14.28	6	13.95
16-20	2	9.52	1	4.76	3	6.97
More than 21	3	14.28	3	14.28	6	13.95

Table 3: Therapeutic response of the patients to the two treatment methods

	Triamcinolone		Atorvastatin		
Therapeutic period day	No.	%	No.	%	p-value
7	14	93.33	12	80	>0.05
14	1	6.66	3	20	>0.05

Table 4: Therapeutic outcomes in the two studied groups at the end of treatment

	Full recovery		Relative improvement		Pigmentation		
	No.	%	No.	%	No.	%	p-value
Triamcinolone	8	53.3	10	66.6	5	33.3	0.7
Atorvastatin	4	26.6	2	13.3	1	6.6	0.7
Total	18		9		3		

DISCUSSION

Although paederus dermatitis is a self-limited disorder, due to cosmetic side effects such as scar and pigmentation especially in exposed area like face and neck, early treatment seems necessary. Despite more than 25 therapeutic methods, none of them could be able to neutralize the toxic effect of paederus (Frank and Kanamitsu, 1987). Statins group as an inhibitory comparative hydroxymethyl glutaryl-CoA reductase (HMG-CoA reductase) enzyme induces their anti inflammatory effect on paederus dermatitis. In present study, 10 subjects in atorvastatin groups had full recovery, 4 had relative recovery and 1 subject had pigmentation at the end of therapeutic period. We found no significant relationship between the two groups ($p>0.05$). Also, in a single blind clinical trial conducted in Northern Iran. The effects of topical application of Flucinolone was reported with 100% improvement (Davoudi *et al*., 2006). The results of their study corroborate our results. Similarly previous study, in this study, the best therapeutic results had obtained at the end of the first week of treatment (Armstrong and Winfield, 1969). Andalib *et al.* (2007) reported that atorvastatin at a dose of 10 mg kg^{-1} had the most anti-inflammatory effects on rat animal model. According to the results of this study, because topical triamcinolone has the same effect as atorvastatin, it seems using of systemic statins is not judgment.

On the other hand, the dosage of atorvastatin used in our research, may be insufficient and recovery observed in our patients may be due to self-limited characteristic of the disease.

CONCLUSION

It seems that both of triamcinolone ointment and oral atorvastatin has similar effect on paederus dermatitis. Because the paederus dermatitis is a self-limited disease, we recommend use of topical therapy for further case-control investigations with more samples.

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