

CLINICAL STUDY OF 100 CASES OF BEETLE DERMATITIS IN RURAL POPULATION OF GURGAONVinita Gupta¹**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: BACKGROUND: Paederus dermatitis (blister beetle dermatitis (BBD) is a geographic seasonal vesiculobullous disorder caused when beetles of the genus Paederus are crushed on the skin, releasing the vesicant pederin. Though blister beetle dermatitis is a clinical diagnosis, at times it becomes difficult to identify it. **AIM:** To study the clinical profile and factors associated with Paederus Dermatitis/ blister beetle dermatitis (BBD) in patients attending the out-patient department of dermatology of SGT Hospital, Budhera, Gurgaon. **METHODS:** 100 clinically diagnosed cases of beetle dermatitis were included in the study. The patients were evaluated by means of a standard pro forma which included detailed history and thorough clinical examination. **RESULTS:** A total of 100 cases were examined of which 67% were males and 33% females. Maximum cases reported in the month of April (25%). 32% patients had more than one lesion with involvement of multiple sites. Face (34.5%) was found to be most commonly involved site. Most of the patients presented with vesicles and bullae on erythematous background arranged in linear fashion. Constitutional symptoms were rarely seen in only 7% of the patients. No mucosal or systemic involvement was found. **CONCLUSION:** Despite its frequency, the disease is rarely described in medical literature, probably because the correct diagnosis is not made. It is important for the rural population in particular to be aware of this condition and to take adequate measures for its prevention especially during harvesting and rainy season.

KEYWORDS: Beetle, Dermatitis, Paederus, Vesicles.

INTRODUCTION: Paederus dermatitis, also known as dermatitis linearis or blister beetle dermatitis is a peculiar irritant contact dermatitis characterized by vesicles and bullae on an erythematous base on exposed areas of the body with sudden onset of burning and stinging sensation, provoked by an insect belonging to the genus Paederus, family Staphylinidae (rove beetles), order Coleoptera (beetles) after being crushed on the skin, releasing the hemolymph pederin.¹ Though common worldwide, it is most frequently seen in regions with a hot, tropical climate.

The objective of our study was to assess the clinical profile and factors associated with Paederus dermatitis in patients attending the Dermatology out-patient department of SGT Hospital, Budhera. Though commonly encountered condition, it is easily misdiagnosed leading to prolonged morbidity. This study also helps to know various preventive steps that can be taken to prevent this condition in susceptible population.

METHODS: The disease was diagnosed on clinical basis. Identification of the insect species was not possible as none of the patients could capture and bring the insect to us, although few of them recalled of some initial irritation (which could probably be attributed to contact with the offending agent).

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This study comprised of 100 clinically diagnosed cases of Paederus dermatitis who presented to the Skin out-patient department of SGT Hospital, Budhera over a period of one year from March 2013 to Feb 2014. The clinical details of all the patients were recorded using a standard proforma. Apart from clinical examination, detailed history was taken in each case including age, sex, occupation, systemic complaints like fever, proximity of residence to agricultural field or vegetation, history of other family members or room-mates being affected, past history of similar episode and seasonal variation.

All patients were asked if they could recall any contact with an insect or beetle.

Clinical examination was mainly focused to study the site (exposed or non-exposed), morphology (i.e. papule, vesicle, bulla, erythema, erosion) and pattern of lesions (i.e. linear, kissing, annular, irregular bizarre or herpetiform).

RESULTS: Of the 100 patients included in study, 67 were men and 33 were women. 20-30 years of age group was found to be most commonly affected (47%) followed by pediatric age group (21%).

68 patients (68%) had lesion on single site while 25% and 7% had two and three sites involved respectively. [Fig 4(a), 4(b)] All patients presented with lesions on exposed areas with face [Fig. 1] [Fig. 3] and neck being most commonly affected (34.5% and 22.3% resp), upper limbs (16.5%) [Fig. 4b], lower limbs (18.7%) [Fig. 2], and trunk (8%) [Fig. 4a]. Maximum patients reported in the months of April (25%) and August (23%). Around half of patients were from university campus (52%). Proximity of campus to agricultural fields and beginning of harvesting during this particular period could have contributed to this finding. Occurrence of rains in this period could be another possible reason.

Most common clinical presentation was vesicles and bullae on erythematous background (Table 1), arranged in linear fashion (Table 2).

| MORPHOLOGY | NO. OF LESIONS |
|---------------------|----------------|
| Vesicles and Bullae | 72 |
| Pustules | 19 |
| Erythema | 57 |
| Crusting | 32 |
| Erosion | 11 |

TABLE 1: Morphology of lesions of Beetle Dermatitis

| PATTERN | NO. OF LESIONS |
|------------------------------|----------------|
| Linear | 57 |
| Annular | 32 |
| Kissing | 19 |
| Irregular bizarre | 22 |
| Herpetiform | 9 |
| Total no. of lesions* | 139 |

TABLE 2: Pattern of lesions of Beetle Dermatitis

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*Total percentage is more than 100 as many patients had multiple lesions with involvement of more than one site.

General physical examination turned out to be normal in most of the cases except for 7% who had low grade fever and 5% who had regional lymphadenopathy. [Fig. 3] Mucosal involvement was not encountered in any of the case.

Only 7% patients could recall an encounter with an insect and 66% patients noted the rash on waking up in the morning. Average duration of symptoms was 5 days and 75% had only erythema with variable degree of pain, itching and stinging sensation for 12-24 hrs, only to be followed by appearance of vesicles and bullae later in the clinical course.

Most of the patients were successfully treated with topical steroid and antibiotic combination and an oral antihistaminic. Oral antibiotics were needed in only 8% patients who had secondary bacterial infection with severe pain. Importance of various preventive measures like protective clothing, pest control measures, window screens, use of mosquito nets at night was told to all patients. Almost all of the patients became asymptomatic within 7 to 10 days. 34% patients on follow up still had post inflammatory pigmentation at 4-6th week.

DISCUSSION: Paederus dermatitis (also called linear dermatitis or dermatitis linearis) is skin irritation resulting from contact with the hemolymph of certain rove beetles, a group that includes the genus Paederus.² Other local names given to Paederus dermatitis include spider-lick, whiplash dermatitis,³ and Nairobi fly dermatitis.² The insect contains in its body fluid a vesicant chemical that could cause contact dermatitis.⁴ The insect does not bite or sting, but it releases its coelomic fluid during accidental brushing against or crushing of the insect over the skin.⁵

The beetle families with the greatest impact on humans are Meloidae (blister beetles), Oedemeridae (false blister beetles), and Staphylinidae (rove beetles). Blister beetles and false blister beetles produce the chemical cantharidin that causes skin blistering. There are approximately 2, 500 species within the family Meloidae worldwide, and all produce cantharidin.⁶ There are approximately 1, 000 species within the family Oedemeridae, but only a few species are known to produce cantharidin.^{7,8} The genus Paederus (Staphylinidae) contains more than 600 members. The paederin manufacture is largely confined to adult female beetles.

Larvae and males only store paederin acquired maternally (i.e., through eggs) or by ingestion.⁹ Paederus beetles do not release pederin as a defensive secretion and people are exposed to the chemical only when a beetle is accidentally crushed on the skin.¹⁰ Therefore, skin blistering most often occurs on exposed skin of body parts such as the neck, face, arms, and legs where a beetle is felt crawling on the skin and subsequently crushed. Mirror-image lesions, commonly called "kissing" lesions, may form when pederin contaminated skin is pressed against normal skin.

The dermatitis may affect persons of either sex, all ages, races or social conditions.

Males outnumber females in our study, a finding which is similar to other studies conducted by Anuj et al,¹¹ Padhi et al.¹² Variation may be attributed to the occupational exposure and dressing pattern in the study area.

Our study found peak incidence twice a year in months of April and August which can be attributed to the harvesting time and monsoons resp. Peak Incidence has been reported with variations from different geographical areas with most of the studies within India¹²⁻¹⁶ and across the world^{17, 18} reporting maximum cases between March to July. Second peak as in our study has been

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reported in September – October.^{19,20} The variation can probably be attributed to the variation of rainy season across different areas of the country, as moist and rotten leaves favors beetles to multiply on rainy days.^{14,19}

In this study we found that most common clinical presentation of Beetle dermatitis was vesicles and bullae on erythematous background (Table 1), arranged in linear fashion on exposed areas with face and neck being the most commonly affected. 13% of all lesions constituted kissing lesions. Zargari O et al in 2001,²⁰ reported 156 cases of paederus dermatitis in North Iran. Face and neck were the most commonly affected sites.

Kissing lesions were seen in 15%²⁰ and 22%¹² of the cases. Similar findings were reported from other studies from different parts of the world.^{11, 14, 19, 21}

Although it is mentioned that signs of Blister beetle dermatitis appear after 24-48 h of contact, but practically, authors have noticed that most of the patients observe the lesions in the early morning after sleep.^{1, 12}

This is similar to what we observed in our study i.e. 66% patients noted the rash on waking up in the morning and 75% had only erythema with variable degree of pain, itching and stinging sensation for 12-24 hrs. which was later followed by appearance of lesions. Basheer et al²² also reported erythema to be the first clinical sign in all cases with multiple skin blisters appearing within 48 hrs. of the complaint.

CONCLUSION: Despite its frequency, the disease is rarely described in medical literature, probably because the correct diagnosis may not be made. Under reporting of the cases because of its self-resolving nature might be another reason. As in this clinical study we learnt the harvesting and rainy seasons to be the favorable breeding seasons for the beetles and knowing the predilection for the exposed areas, we recommend periodic use of various pest control measures especially during breeding seasons along with generating awareness among the local population regarding use of mosquito nets, wearing covered protective clothing, use of window screens and regular pesticide spraying in agricultural fields.

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Fig. 1: Erythematous Linear lesion on face



Fig. 2: Irregular bizzare lesion on erythematous base on thigh



Fig. 3: Annular lesion having vesicles and pustules with crusting on erythematous base along with regional lymphadenopathy



Fig. 4a & 4b: Multiple erythematous linear lesions on trunk (Fig. 4a) and forearm (Fig. 4b) in same patient

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