



A Study on Paederus Dermatitis Outbreak in a Suburban Teaching Research Hospital, Kanchipuram, India.

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Abstract

Paederus dermatitis, a kind of irritant contact dermatitis by Staphylinid beetle, is more prevalent in Asia-Pacific countries with the attributes of tropical climate. Brushing, pressing, or crushing of the beetle against the skin releases the pederin toxin (pederin) that can produce urticarial, vesicular, and bullous lesions. We conducted a 1-year retrospective study of 84 patients with Paederus dermatitis attending our hospital to study the clinical patterns of dermatitis and epidemiological prevalence. It mostly affects the hostel students residing within the campus near the paddy fields. Itching was most common symptom, involving mainly the neck and arms. Linear erythematous lesions were the common sign involving the extremities (40.1%), neck (36.4%) and trunk (32.1%). Vesicles and pustule formation was seen in (51.19%) of the patients, respectively. The most striking feature of Paederus dermatitis, the 'Kissing lesions' were seen in (2.4%) of the patients. Periorbital involvement was seen in (17.4%) of the cases. Paederus beetles were frequently seen in the campus attracted by incandescent and fluorescent lights. Simple preventive measures such as use of insecticide like pyrethroid, clearing of excess vegetation would check the Paederus infection. Clinical education and awareness regarding this condition will prevent misdiagnosis.

Key Words: Paederus dermatitis, linear dermatitis, retrospective study

(Rec.Date: Jan 22, 2013 - Accept Date: Mar 06, 2013)

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Introduction

Paederus dermatitis (PD), synonym of dermatitis linearis or blister beetle dermatitis, is a irritant contact dermatitis attributed by erythematous and bullous lesions. The infection results from the hemolymph pederin, a potent vesicant, released by rove beetles (Order *Coleoptera*, Family *Staphylinidae* genus *Paederus*, vernacularly known as ‘Acid puchi’). Fortuitous acts such as brushing, crushing or pressing the beetle against the skin results in PD [1-3]. Irritants generate various responses on the skin such as stinging, burning, and tightness to erythema, urticarial reactions, frank eczema, or chemical burns.

Irritant contact reactions are the inflammatory response of the skin to exogenous agents, which activates inflammatory mediators but memory T-cell function or antigen-specific immunoglobulins are not involved. The major changes involve skin-barrier disruption, epidermal cellular changes, and cytokine release mainly from keratinocytes [4].

Paederus beetles have been associated with outbreaks of dermatitis in various countries like Australia, Malaysia, Sri Lanka, Nigeria, Kenya, Iran, Central Africa, Uganda, Sierra Leone, Brazil, and India [3,5,6].

Paederus, an active predator of a number of crop-damaging insects, occurs in warm tropical climates and breeds in wet rotting leaves and soil. Paederus are nocturnal and are fascinated by incandescent and fluorescent lights that inevitably and inadvertently bring their contact with humans [1,5].

Hence we conducted a study on PD among the patients who visited our teaching research hospital located in outer reaches of Kanchipuram district, Tamilnadu, India. The main objective was to study the clinical patterns of dermatitis and epidemiological prevalence. Lack of species identification of Paederus beetles and histopathological examination of lesions was a constraint to our study.

Materials and Methods

A total of 84 patients presenting with PD, attending our dermatology department over a period of 1 year from October 2011 to October 2012, were included in the study. After clinical examination, patient details like age, sex, residential address, initial symptoms, site of lesion and type of lesion were collected.

Results

A total of 84 PD cases were studied of which 44 (52.4%) males and 40 (47.6%) females with an age range of 10-70. The mean age was 25. The incidence of PD was found to be high during the month of May. Sixty two percent of our patients, with PD, were found to be living around the paddy fields.

Nearly, 69 patients (82.1%) presented the symptoms of itching (25%) and burning sensation (57.1%), which was the most common symptoms. Seven patients complained of pain (8.4%). Eight patients (9.5%) presented only skin lesions without any symptoms. Blisters and pustules were seen in 32 (38.1%) and 11 (13.1%) patients, respectively. “Kissing lesions” were demonstrated in 2 (2.4%) patients (Table 1). Diffuse desquamation was seen in 23 (27.2%) patients.

Table 1: Signs and symptoms of Paederus dermatitis

Signs/Symptoms	Number of cases	Percentage
Burning Sensation	48	57.1%
Itchiness	21	25%
Pain	7	8.4%
Blisters	32	38.1%
Pustules	11	13.1%
“Kissing lesions”	2	2.4%

Patients with single lesion and more than one lesion presentation were 27 (32.1%) and 57 (67.9%), respectively. Out of the 57 patients, 36 (63.2%) had two lesions, 14 (24.5%) had three lesions and 7 (12.3%) had four lesions. None of them presented with more than four lesions. Upper extremities were the most commonly infected site (40.1%), followed by neck

(36.4%; fig. 1), trunk (32.1%; figure 1), face (27.6%), periorbital areas (17.4%) and legs (3.1%; figure 1, figure 2).



Fig. 1: Clinical Presentation of Neck, Trunk and Leg

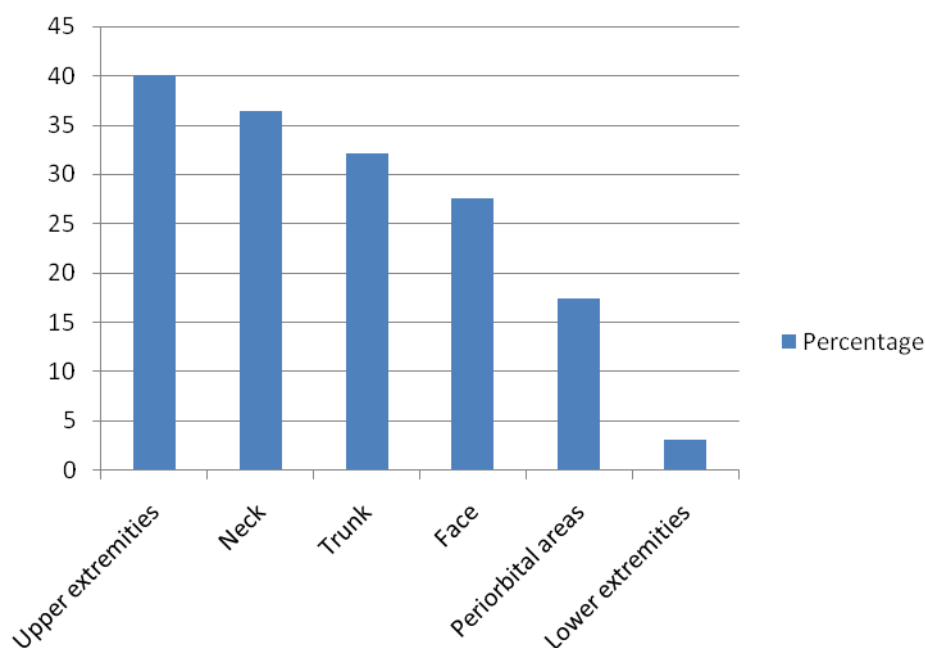


Fig. 2: Percentage distribution of sites commonly involved in Paederus dermatitis

Residual dyschromia was seen 55 (65.5%) patients after healing, but none of them showed scarring. The healing time was 2-3 weeks for most of the patients (90.5%). Eight patients (9.5%) took more than 4 weeks to heal.

There was no significant difference in clinical features or therapeutic outcome of the patients on the basis of gender. Study constraints include lack of species identification of the beetle, histopathological examination of the lesion.

Discussion

Paederus dermatitis is an irritant contact dermatitis that results from the contact with the vesicant, paederin. The genus *Paederus* consist of more than 622 species, distributed worldwide. The incidence of PD has been reported from various countries including, India [6,7], Sri Lanka [8], Malaysia [9], Nigeria [10], Iran [2], Sierra Leone [11], Egypt [12], Turkey [13], Brazil [14], Australia [15].

The most important Indian species are *Paederus fuscipes*, *P. irritans*, *P. sabacus*, *P. himalayicus*, etc [16]. The inadvertent crushing of the insect on the skin surface releases the coelomic fluid, Paederin. Paederin (C₂₅H₄₅O₉N) is an amide with two tetrahydropyran rings. The vesicant disrupts mitosis by inhibiting protein and DNA synthesis. The paederin manufacture is limited to adult female beetles [3].

In our study exposed body parts were the most affected sites, involving mainly the extremities and neck which correlates with a study done by Gnanaraj *et al*, in (17) in 2007 from south India. Similar findings were reported by Gnanaraj *et al*. [17]. Most of the patients presented with more than one lesion. Burning sensation was the most commonly observed symptom among the patients. Diffuse desquamation was also commonly observed among the patients. Residual dyschromia was seen among the patients that could be a pose a cosmetic problems.

Excessive vegetation and the tropical climate favour the breeding of the insects. Use of fluorescent and incandescent lights attracts the insects that inevitably results in infection to the people nearby such environment.

Creating awareness among people and preventing human-beetle contact would be the most feasible method to prevent PD. As a measure towards this aim, it is necessary to educate the people about the basic tactics, such as avoid crushing the beetle on the skin, clearing the excessive vegetation near the residence areas, sleeping under a bed net, killing the beetles using insecticides (malathion, pyrethroid) that are required to prevent human-beetle contact. Hence public education and clinical education will pave way for an early and prompt diagnosis and prevent misdiagnosis [2,3,8].

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