



ORIGINAL ARTICLE

DERMATOLOGY

Monsoon meteors – Varied clinical presentations of paederus dermatitis

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ABSTRACT

Objectives: This study aims to highlight the different clinical presentations and the notable ability of the disease to mimic various dermatological conditions.

Material and Methods: A prospective observational investigation was executed at the DVL OPD of a tertiary care center in Andhra Pradesh over one-month duration, from July 2024 to August 2024. Overall, 30 patients suffering from Paederus dermatitis were identified.

Results: This investigation involved 30 patients with Paederus dermatitis; 23 were male and 7 were female. Most of the patients were between 20 and 50 years of age. All patients had a sudden emergence of lesions, along with burning sensations and pain. Linear erythematous pattern (43.3%) is a common clinical pattern, followed by erythematous lesion with central grey area (13.3%), kissing lesion (10%), and burnout lesion (10%). Burning is the most common symptom. The frequently affected areas are the face, neck, as well as upper extremities.

Conclusion: Paederus dermatitis has varied clinical presentations, and understanding its presentation is crucial to prevent misdiagnosis.

Keywords: Coleoptera, Irritant dermatitis, Meteoroids, Paederus dermatitis, Rove beetle

INTRODUCTION

Paederus dermatitis is a distinctive irritating contact dermatitis marked by the abrupt appearance of erythematous along with bullous lesions on the body's bare parts. It arises from accidental contact of the skin with insects of the genus *Paederus*. The disease occurs worldwide and is commonly seen during the rainy season.

Paederus dermatitis, frequently referred to as rove beetle dermatitis or dermatitis linearis, is an acute vesicular irritating contact dermatitis that is brought on by inadvertently rubbing up against or crushing the beetle on the skin.^{1,2} This causes the vesicant chemical pederin to be produced. Pederin causes contraction, pyknosis, disorientation, karyorrhexis, karyopyknosis, and vacuolization, ultimately leading to cutaneous necrosis. After contact with the skin, the potent vesicant chemical released through crushing results in the sudden onset of erythematous lesions with vesicles and bullae, accompanied by pain and a severe burning sensation. Pederin is released in toxic doses by female rove beetles that harbor endosymbiotic *Pseudomonas* species.

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Figure 1: Linear Lesion (a) 23 year old male, liner lesion on fore arm (b) 30 year old male, linear lesion on abdomen.

Table 1: Demographic pattern of paederus dermatitis.	
Variable	Frequency (%)
Age Group (Years)	
<15	3 (10)
15–30	14 (46.66)
31–45	9 (30)
>45	3 (10)
Gender	
Female	7 (23.34)
Male	23 (76.66)
Locality	
Rural	23 (76.67)
Urban	7 (23.33)
Knowledge of contact with insect	
Yes	3 (10)
No	27 (90)
Onset of lesions after sleep/travel	
Yes	25 (83.33)
No	5 (16.67)



Figure 2: Erythematous Lesion with grey area- 35-year-old male.

MATERIAL AND METHODS

A prospective observational case series analysis was conducted in a tertiary care hospital's dermatology department in Andhra Pradesh, India, over one-month duration, from July to August 2024. Each patient who attended the DVL OPD with a clinical diagnosis of Paederus dermatitis throughout the study period was included. The overall patient number was 30. The study was approved by the institutional ethical committee prior to beginning.

A detailed clinicodemographic and clinical history was taken, including age, gender, and residential area. Patients were questioned about their awareness of any insect contact, the sudden onset of lesions after waking up or traveling, and the clinical morphology of the lesions. Associated symptoms

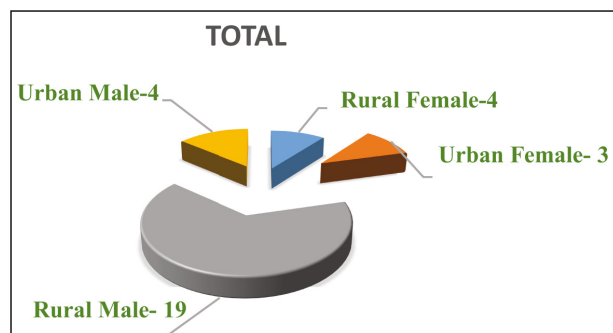


Chart 1: Graphical representation of gender and locality of the patients.



Figure 3: Kissing Lesion (a) 22 year- male, kissing lesion on neck (b) 30 year-male, kissing lesion on elbow joint.



Figure 4: Burnt out Lesion (a) 7-year-old boy, burnt out lesion on neck (b) 10 years -male, burnt out lesion on back.

such as burning, pain, and blistering were also recorded. Data analysis was performed, and the results are expressed as frequencies and percentages.

RESULTS

This case series included 30 patients over a one-month period (July–August 2024). The gender distribution was 23 male and 7 female patients. The clinical demographic profile of all patients incorporated into the research was recorded [Table 1 and Chart 1]. Twenty-five patients recognized the onset of lesions upon waking the next morning. Five out of 30 patients did not associate the lesions with sleep. Only two patients had minor knowledge of insect contact preceding the onset of the lesions: one noticed it while going into the fields, and one noticed it while entering the garden. Out of 30

Symptom	No. of patients	Percentage (%)
Pain	25	83.3
Redness	28	93.3
Blistering	21	70
Burning	28	93.3
Severe pain on touch	28	93.3

patients, 23 members are residents of rural areas, and only 7 members are residents of urban areas.

Regarding symptom presentation, burning was reported in 28 out of 30 patients with active lesions, redness in 28 out of 30, and blistering in 21 out of 30 patients (70%). Pain was observed in 25 out of 30 patients (83.3%) [Table 2].

Table 3: Morphological patterns of paederus dermatitis.

Symptom	No. of patients	Percentage (%)
Linear lesion	13	56.67
Bizarre erythematous lesion	4	13.33
Erythematous lesion with grey area	4	13.33
Kissing lesion	3	10
Burnt out lesion	3	10
Pustular lesion	1	3.3
Nairobi eye	1	3.3
Postinflammatory hyperpigmentation	1	3.3



Figure 5: Peri Orbital Involvement, 16 years- male, lesion in peri orbital area.

The predominant clinical pattern as shown in Table 3 was a linear erythematous plaque with vesicles [Figure 1]. The linear pattern of presentation was identified in 13 out of 30 patients (43.3%). This was followed by the next most common pattern in our study, which was erythematous lesions with a central grey area, observed in four patients (13.3%) [Figure 2]. Bizarre erythematous lesions were observed in four patients (13.3%), kissing lesions were observed in three patients (10%) [Figure 3], burnt-out lesions were seen in three patients (10%) [Figure 4], and Peri Orbital Involvement (Nairobi Eye) observed in one patient (3.3%) [Figure 5].

DISCUSSION

Paederus dermatitis is an irritant contact dermatitis's entomological model. It is brought on by insects belonging to staphylinidae subfamily of the order Coleoptera, genus Paederus. Pederin is the principal toxin responsible for dermatitis, along with two other known toxins, pseudopederin and pederone. An amide with two tetrahydropyran rings is

pederin; it is a weak acid that has been evidenced across all developmental stages of Paederus species.^{3,4}

Pederin is a highly potent toxin for eukaryotic cells. The reaction to pederin typically occurs 12–48 hours after exposure. Paederus dermatitis presents as acute dermatitis, with lesions corresponding to the shape and size of the area where the vesicant chemical was released. It is distinguished by vesicles, pustules, as well as bullae on severely irritated skin.

Paederus dermatitis is a self-healing condition; scarring and hyperpigmentation are commonly seen.^{5,6} The number of cases tends to increase during or after the rainy season. Certain Paederus species can occasionally have large populations of adults, particularly in tropical and subtropical regions. Paederus beetles, notably Paederus melampus, are associated with dermatitis outbreaks in countries like Sri Lanka and India. In India, high prevalence is seen in regions such as Odisha, West Bengal, Punjab, Rajasthan, Tamil Nadu, and Karnataka. These beetles, typically measuring 7–10 mm in length, inhabit moist environments, feeding on small insects and plant debris. Paederus species are found globally, are primarily nocturnal, and are strongly attracted to light. In our study, 25 out of 30 patients noticed lesions immediately upon waking, aligning with the nocturnal activity of the beetle.

In our study, 28 out of 30 patients (93.3%) were unaware of contact with the insect, and 25 out of 30 patients (83.3%) noticed lesions upon waking in the morning. Males (23) were predominantly affected compared to females (7). The majority of patients were inhabitants of rural regions rather than urban areas. These findings are like those of other studies, such as the one by Tamilselvan et al.⁷ However, an investigation by Kumaraguru et al. reported that females were more commonly affected than males.⁸

Face, as well as neck, are frequently reported sites, followed by upper extremities and trunk, like findings in other studies in India and abroad. Burning (93.3%), pain (83.3%), and redness (81%) were the most common symptoms, followed by itching and blistering (70%). These findings align with those in other studies.

The predominant morphological pattern in our investigation had been linear erythematous lesions (43.3%), followed by bizarre erythematous lesions with tiny vesiculopustules (13.3%), erythematous lesions with a central grey area (13.3%), kissing lesions (10%), burnt-out lesions (10%), and ocular involvement (1%). Research by Tamilselvan et al.⁷ reported similar results; however, research by Kumaraguru et al.⁸ discovered that bizarre lesions were the most common, followed by linear lesions. Chintagunta et al. reported diffuse erythema, fine scaling, and patchy exfoliation as the predominant features.⁵

While lying on the ground, utilizing artificial light, and having plants surrounding residential areas constitute major risk factors for PD (Paederus dermatitis), these characteristics do

not rule out the diagnosis. The dermatitis can affect individuals of any sex, age, race, or social condition because it depends on the actions of the patient and the environment of the insect. More often, the body's exposed parts are impacted.

As irritant contact dermatitis, the cases must be treated by removing the irritant, washing with soap and water first, applying cold wet compresses, and then applying topical steroids as well as antibiotics.^{9,10}

CONCLUSION

Paederus dermatitis is a prevalent dermatological condition in our environment, exhibiting many clinical manifestations and frequently lacking a history of insect interaction. Although being self-limiting, the sickness induces discomfort in individuals, that can be readily mitigated by heightened awareness of the condition. The enduring consequence of Paederus dermatitis is post-inflammatory pigmentation.

Ethical approval: The research/study approved by the Institutional Review Board at RMC Institutional Ethics Committee Cell, number IEC/RMC/2024/1354, dated 30th October 2024.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent.

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