Bio. Res. Today 2025, 7(9):255-257

Biotica Research Today

e-ISSN: 2582-6654

September, 2025

Article ID: RT1814 **Popular Article**

Occurrence of *Paederus*-Associated Dermatitis in Urban Lucknow: A Case Report

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Conflict of interests: The author has declared that no conflict of interest exists.

How to cite this article?

Routray, S., Jena, S., 2025. Occurrence of *Paederus*-Associated Dermatitis in Urban Lucknow: A Case Report. *Biotica Research Today* 7(9), 255-257.

Abstract

Insect associated human diseases are often creating havoc. In the animal kingdom, various structural perfections and protective modifications has enabled insects one of the successful organisms. *Paederus* dermatitis is caused by a rove beetle, *Paederuss* spp. also known as Nairobi fly that releases the toxin pederin. The current case report documents an outbreak of such beetles in a multistoried residential society of urban Lucknow, Uttar Pradesh, India. About 5 to 10% of the residents were affected by such dermatitis over multiple floors. The affected open skin areas show symptoms of irregular reddish blisters which often misdiagnosed with other fungal infections. The morphological investigation confirmed the species as *Paederuss* spp. The current case report focuses on the need for preventive awareness and accurate clinical diagnosis in managing such insect mediated dermatitis.

Keywords: Dermatitis, *Paederus* dermatitis, Pederin, Rove beetle

Introduction

Dermatitis is a general term for skin inflammation often indicates to rash, redness, or swelling. Insect mediated dermatitis is a significant under recognized skin conditions often resulted from the direct contact with certain insects and their by-products such as, toxins, hairs, or saliva (Chintagunta *et al*., 2022). The affected open skins express the symptoms like redness with mucotic membranes and such severity extent depend upon the sensitivity of the host sensitivity. In the diversified geographic regions of India, insects like *Paederus* beetles, slug caterpillars, bees, ants, reduviid bugs, blister beetles often lead to the development of such symptoms when they come across the human skins. Among these, *Paederus* dermatitis, caused by the accidental crushing of rove beetles releasing pederin, presents as linear erythematous lesions with burning and blistering, often misdiagnosed as herpes zoster. Various reasons such as, increased urbanization, expanded areas under night lights, reduced natural vegetation and expanded agricultural activities have led to the increased incidence of such insect mediated dermatitis and it necessitate the public awareness and early clinical diagnosis. The Rove beetle, *Paederus dermatitis* (family: Staphylinidae), also known as Nairobi fly or Kenya fly often cause such dermatitis. The acute irritants because of the contact dermatitis in human are common in tropical and subtropical regions with hot and humid climates. States like Tamil Nadu, Punjab, Rajasthan, Odisha and West Bengal has reported the incidence of this dermatitis. The current case was observed in Lucknow in a multistoried building in which occurrence of the beetle and associated blisters were observed.

Materials and Methods

The current incidence was noticed in a multistoried building of a residential society located near IIM Chauraha, Mubarakpur, Lucknow, Uttar Pradesh (26°56' N, 80°54' E). Several residents reported the appearance of such type of symptoms (reddish blisters, painful lesions, on neck, arms and legs). Clinical diagnosis confirmed these were *Paederus* associated dermatitis. Observations were taken during the evening hours on building walls, near lights where adult beetles were found to be actively attracted to artificial light sources and were frequently seen resting on window

Article History

RECEIVED on 01st July 2025 RECEIVED in revised form 20th September, 2025 ACCEPTED in final form 21st September, 2025

panes and illuminated walls, also near cushions of sofa and other furniture. Adult specimens were collected manually and preserved in 70% ethanol for further taxonomic identification. Morphological features were examined under a stereo zoom microscope and species-level identification was carried out using taxonomic keys (Kavyamol *et al*., 2024) relevant to the genus *Paederus*.

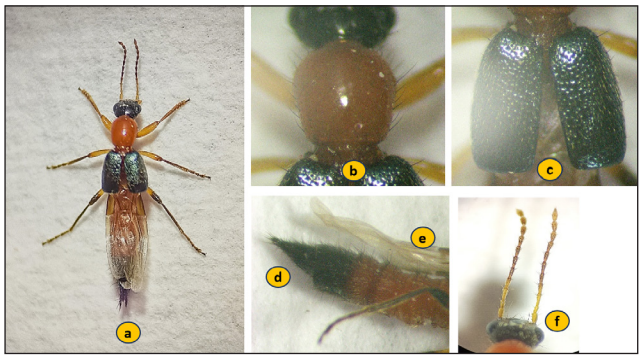

Figure 1: Morphological features of the *Paederus* beetle; (a) Adult Paederus; (b) Prothorax; (c) reduced elytra; (d) abdominal end; (e) membranous hind wing; (f) antennae

Results and Discussion

The observed symptoms were characterized as, reddish inflammation, fluid filled blisters along with a severe burning sensation with deep discomfort (Figure 2). Initially, there was a burning sensation without any blisters. Later, reddish blisters appeared 2-3 days after the insect came in contact with the skin. Further these lesions swelled and spread showing localized swelling, tenderness and inflammation. Sensitive skins were difficult to be touched. The site collected beetles were examined morphologically and were concluded as the species of *Paederus* spp. the adults were approximately 7 to 10 mm long with exhibition of aposematic coloration, metallic bluish black or bluish green elytra, a clear reddish orange pronotum and a black head with dark posterior abdominal segments (Figure 1). The body was elongated and slender, with shortened elytra exposing several abdominal tergites. Hind wings were membranous and folded beneath the reduced elytra, while antennae were filiform, composed of 11 segments (Choate, 1999). Under the family Staphylinidae, *Paederus* represent a minor fraction and are having diurnal characteristics in vegetations where warm humid conditions prevail. Certain outbreaks of *Paederus* dermatitis have been documented in India. In a boy's hostel in Northen India, an outbreak of such insects-mediated skin issue has been reported (Chauhan *et al*., 2013). *Paederus alfierii* was identified as the species causing facial lesions affecting about 78% of the individuals. In another case in Aizwal and Mizoram an outbreak of *Paederus melampus* affected 259 individuals where the symptoms were seen mostly on the face, neck and arms (Lalmalsawma and Pautu, 2017). The beetles have been noticed to get attracted to the lights significantly during 06.00 pm to 8.30 pm. Mechanical barriers have been found effective in taking preliminary precautions against this beetle. Use of bed nets, closing doors and windows during evening time, additionally minimizing bright lights near sleeping areas and clearing vegetation in and around buildings and balconies can significantly reduce this beetle menace. Most importantly, recognizing the beetle and spreading awareness among can greatly help in preventing damage. Fusidic acid-based cream has found effective in preventing the spread and further secondary bacterial infection.

Figure 2: Blisters on arms, palm, legs due to *Paederus*

Conclusion

The present case from a multistoried residential building in Lucknow adds to the growing body of evidence linking increased urbanization and artificial lighting with rising incidences of *Paederus* dermatitis. The change in vegetation around the city may influence its spread to multistoried buildings. These observations underscore the importance of public health awareness, early clinical recognition and simple preventive measures such as reducing unnecessary night lighting and installing mesh screens on windows to minimize beetle entry and further use of fusidic acid-based cream.

Acknowledgements

The authors are thankful to the Biocontrol Laboratory, ICAR-CISH, Lucknow for studying the taxonomical studies.

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