



PAEDERUS DERMATITIS

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Paederus dermatitis is a peculiar, irritant contact dermatitis caused by a beetle belonging to the genus *Paederus*. This insect does not bite or sting, but releases a fluid containing paederin, a potent blistering agent. If not immediately washed off, the chemical leads to a linear dermatitis composed of red irritated skin and blisters.

Paederus insects belong to the insect order Coleoptera (beetles) and the family Staphylinidae (rove beetles). The genus *Paederus* is quite large, with more than 600 species and a distribution in all continents except Antarctica. Species in South American countries are known by various names, such as bicho de fuego, pito, potó, and podó. Various outbreaks of dermatitis attributed to the *Paederus* beetle have been reported in southern Turkey, central Africa, Okinawa, and India.

Adult *Paederus* beetles are usually 7 mm to 10 mm long and 0.5 mm to 1 mm wide. They have a black head, lower abdomen and elytra (structure covering the wings) and a red thorax and upper abdomen. The beetles live in moist habitats and are often beneficial to agriculture because they will eat crop pests. Adults are attracted to incandescent and fluorescent lights, and as a result, inadvertently come into contact with humans. They can be especially troublesome if windows or doors are left wide open. This beetle does not bite or sting, but accidental brushing against it or crushing it over the skin provokes the release of its coelomic fluid, which contains paederin, a strong blistering chemical.

It is important to note that *Paederus* beetles are not "blister beetles," which are of the family Meloidae. Blister beetles, which also are widely distributed, do release a defensive compound when threatened. The chemical released, cantharidin, a bicyclic terpenoid, is quite different from paederin, an amide.

The manufacture of paederin is largely confined to the female. Recently, it has been demonstrated that the production of paederin relies on the activities of an endosymbiont (*Pseudomonas* bacteria species) within the beetle. Paederin is a potent vesicant, causing a reaction on the skin about 24 hours after contact. Different responses are seen in the skin depending upon its concentration, duration of exposure, and individual characteristics. In mild cases, there is a slight erythema lasting for a couple days. With moderate cases, the erythema evolves into vesicles and bullae over a few days, followed by a squamous stage when the blisters dry out over a week, and then a stage when they desquamate, leaving hyper or hypopigmented patches. Scarring usually does not occur. The lesions are characteristically linear due to smearing the crushed insect across the skin. Severe cases, in addition to showing more extensive blistering, may have additional symptoms such as fever, neuralgia, arthralgia, and vomiting.

Usually, there is little discomfort from this dermatitis in mild to moderate exposure, unless the area becomes secondarily infected. Affected individuals may inadvertently transfer paederin to other areas of the body, such as the genitals or the face. If the periorbital area is affected, conjunctivitis may develop (referred to 'Nairobi eye' in eastern Africa).

Treatment initially involves removal of the irritant by washing the area with soap and water. The blistered site should be treated with cool wet soaks, followed by a strong **topical steroid**. An interesting study was performed in Sierra Leone with 36 patients. Half of the patients were given oral ciprofloxacin in addition to the topical steroid. Healing time was statistically faster in these patients, which suggests a concurrent bacterial infection was present, most likely from the *Pseudomonas* the *Paederus* beetle harbors.

Preventing human/beetle contact is the primary method of avoiding *Paederus* dermatitis. Learning to recognize *Paederus* beetles and avoiding handling or crushing these insects will help decrease these eruptions. If a beetle lands on the skin, it should be blown off or encouraged to walk onto a piece of paper and then removed. The area in contact should be immediately washed with soap and water, and any clothes in contact with the beetle should be washed as well. Doors should be kept closed and

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window screening should be kept in good repair to help reduce entry of these insects into buildings. Since beetles are attracted to light, these should be switched off near areas where people sleep.

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