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## Beetle Pederin: A Case Report on Paederus Dermatitis Associated Tinea Infection

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### ABSTRACT

A 15-year-old female admitted with the complaints of redness, itching, burning sensation and kissing pattern of lesions on left hand elbow since 20 days and a circular rash since 5 days after intake of fish. Initially, it appeared as a rash. Erythematous papules were formed initially which were peculiar and irritating that passed through various stages to form an erythematous plaque with many vesicles that decayed to form sterile pustules. Intake of sea food resulted in worsening the rash and eventually turned into invasive tinea infection. The patient was evaluated by two local doctors but was not diagnosed. Finally, it was determined that the Nairobi fly's deadly hemolymph, pederin, was to blame (Paederus). The rash mainly affects body portions that aren't covered by clothing; recovery takes 7 to 28 days, and skin darkening is common. Typical anti-vector precautions, such as bed nets, long-sleeve clothes, and avoiding fluorescent lights, are among the preventive measures. If beetles are found on the skin, brush them off instead of crushing them to prevent dermatitis. Antibiotics, steroids, and antihistamines may be used in addition to promptly cleaning the afflicted region and applying cold, moist compresses.

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### INTRODUCTION

Paederus dermatitis (also known as spider lick and dermatitis linearis) is a rare, blistering irritating contact dermatitis characterised by erythematous-bullous lesions that appear suddenly on exposed body parts [1]. An insect belonging to the genus Paederus is responsible for the sickness. Due to low penetration, this chemical does not normally impact the palms of hands or the soles of feet [2]. This

beetle does not bite or sting, but it does discharge coelomic fluid, which includes pederin, a strong vesicant agent, when accidentally brushed against or crushed against the skin. Within 24-36 hours, this chemical causes acute dermatitis, which can be asymptomatic or accompanied by a slight itching-burning sensation. Patients may be unaware that they were gardening or staying outside during the day before the beginning of dermatitis because contact with the beetle is painless [3]. This instance of Paederus dermatitis with tinea infection caused by seafood consumption is described in this article. Tinea illness is a skin or scalp fungal infection that is very infectious. Skin-to-skin contact or contact with an infected animal or object spreads ringworm.

### Case Presentation

A 15-year-old south Indian female patient has consulted the physician with chief complaints of redness, swelling, itching and burning sensation and kissing pattern of lesions on the left-hand elbow for 20 days. At presentation, she noted that large

blisters on her left-hand elbow were pruritic and uncomfortable and an appearance of circular red rash since 5 days after intake of fish.

Her medical history included acid fly bites, paederus dermatitis, and the use of Tab. Levocetirizine 5mg OD PO, but she was unaware of any insect interaction in the 48 hours before to the occurrence. She lived in an area with fluorescent lighting.

It started with the appearance of a reddish rash (erythema) which developed into blisters. Irritation, including crusting and scaling, lasted for two to three weeks. The kissing lesions of paederus dermatitis occur because of the transfer of the irritant from one area to the surrounding areas of skin [4]. On physical examination, all vital signs are found to be normal. On systemical examination dermatological findings of the left hand are abnormal. On laboratory examination, the ESR rate is elevated which indicates the presence of infection.

The physical examination also revealed a few erythematous patches in kissing pattern of lesions, a starting stage of paederus appearing like a rash on left-hand elbow (Figure 1), after only 24 hours, it was only somewhat uncomfortable [4], but after 2-3 days, it had turned grey, resembling a burn and was identified as paederus dermatitis or acid fly bite. Her hand showed multiple scattered vesicles with an erythematous base (Figure 2). Ensuing, after 48 hours the pain increased significantly. The largest of the lesions appeared after intake of fish hence, the patient was happened to diagnose with the tinea infection. Lesions appearing as a mildly tender plaque were on the left arm with erythematous borders. The Lesions were fluctuant and hot. A closer view showed that some lesions were small, scantily visible vesicles. All vital signs were normal and no lymphadenopathy was noted.

The patient was in otherwise excellent health with no chronic medical issues. On examination of social history, the patient had a mixed food diet, bowel and bladder habits were normal; sleep durations and appetite were also seemed to be normal. Two local physicians examined the patient. Neither advocated washing or concealing the lesions (sores), nor did they warn about the risk of transmission through touch. Several pharmacists recommend rubbing the area with lemon juice, steroid cream, or triple antibiotic ointment [5].

After a week of acid fly bite, the dermatitis infection got worse and got turned into an invasive tinea infection due to intake of seafood (Fish) (Figure 3). On evaluating the patient it was known as he was diagnosed with "Paederus dermatitis associated invasive tinea infection" due to intake of seafood. Tinea

infection is a highly contagious fungal infection of the skin or scalp [6]. To ensure that fish is the source of symptoms, we explored many other possible causes. The symptoms include scaly lesions with raised margins and less infected center, commonly seen during childhood, Infect skin, nails, and hair. A circular rash is a key symptom [7]. It is caused by a fungus. You can get them by touching an infected person, from damp surfaces such as shower floors, or even from a pet and also caused as secondary infections triggered by insect bites and others, in this case, it is caused by intake of fish. Biopsy and skin culture gives accurate results.

Antifungal medicine is used in the treatment. For limited disease, topical terbinafine for four weeks looks to be the best option among the many options. The decision is less clear in cases with more severe sickness. Itraconazole (100-200 mg/day for 2-4 weeks) and terbinafine (250-500 mg/day for 2-6 weeks) both appear to be helpful. It took 48 hours after starting medication for the vesicles to shrink, and the agony subsided. As time went on her dermatologist informed her that this was a classic case of Nairobi fly rash. They dried up and peeled off after 8 days. Akin to a healed burn, the scarring and discoloration that remains is similar to a scar.



**Figure 1: Starting stage of paederus by appearing like a rash (few erythematous patches in kissing pattern of lesions)**

The proper treatment plan includes Tab. Itraconazole: It is an antifungal drug, prescribed a dose of 200 mg given orally once a day at night after food for 2 weeks daily. The adverse effects include Numbness, muscle pain, mood changes, and decreased urine output. He has been told to take special pre-



**Figure 2: Paederus Dermatitis or acid fly bite (Erythematous patches with multiple vesicles on patient left hand)**



**Figure 3: Infection turned into invasive tinea infection after intake of fish (Multiple scattered vesicles with erythematous bases)**

cautions to take with sufficient food and plenty of fluids. Tab. LIMCEE: It is a vitamin supplement drug. It is given orally once a day after food. The adverse effects include Heartburns, nausea, vomiting, stomach cramps, and mild headache. Ointment T bact: It is a topical antibiotic drug dose of 5g. It should be applied topically twice a day in the morning and night after bath, with the special precaution to apply the ointment with a cotton swab. The adverse effects

include Tenderness, dry skin, swelling, generalized scales, and rash on the skin. There are no interventions in this case. The infection progression is only happened due to the unawareness of the patient to avoid seafood in this case.

Lifestyle modifications that can be done are, to clean the infected area with warm water and apply cold compressions if itching. Stay away from non-vegetarian foods. After washing and drying all towels in warm soapy water, Invest in a new towel and washcloth each time. It's important to thoroughly clean sinks, bathtubs and bathroom floors after each use. Don't share your clothes. Managing a fish allergy includes strict avoidance of the fish. While hypersensitivity or an allergy to fish protein is generally normal, it is feasible to be adversely affected to fish gelatin. Life's too short to even think about battling with hypersensitivities to fish.

## DISCUSSION

In Paederus dermatitis, the hemolymph of genus Paederus members contains pederin. Paederus beetles do not secrete their toxin as a defensive response [7] (Figure 4). Instead, accidentally crushing the Paederus beetle against the skin exposes the individual to its pederin-containing hemolymph causing an intense rash. Most present with typical linear lesions likely caused by unknowingly brushing off the beetle from their skin, but some may have larger necrotic-appearing areas especially from excessive patient scratching [1].



**Figure 4: Typical russet-colored Paederus beetle**

However, when they are smashed against the skin or the eye, they can cause irritation and blistering as a result of their bite and sting. Acute allergic or irritating contact dermatitis, heat burns, and phytophotodermatitis are among the clinical differential diagnosis of paederus dermatitis. Furthermore, patients should be warned not to crush beetles on their skin, to avoid primary injuries or sores, and not to wipe their eyes after significant involvement [2]. Instructions on general well-being can help you detect paederus dermatitis early on and



prevent consequences. They are attracted to artificial light sources, and our analysis revealed that the majority of patients used fluorescent lighting at home to attract these creepy crawlies to their surfaces. When removing the beetle from the skin, blow or brush it gently to remove the pederin from the skin. When concerned about potential exposure, individuals should promptly wash the affected sites with soap and water, along with any exposed clothing or linens, to remove the toxin before it has had time to do any harm.

## CONCLUSION

Paederus dermatitis is a common skin condition. For example, wash all towels in warm soapy water and then dry them. Invest in a new towel and washcloth each time. It's important to thoroughly clean sinks, bathtubs and bathroom floors after each use. Don't share your clothes. Pederin mucocutaneous exposure can be reduced if the public is more aware of this illness.

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## Conflict of Interest

The authors declare that there is no conflict of interest for this study.

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