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Paederus Dermatitis: A Common but Misdiagnosed and Neglected Entity

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Abstract
Background: *Paederus dermatitis is a peculiar type of irritant dermatitis induced by vesicant released from rove beetles. The characteristic erythematobullous lesions are produced due to crushing of beetles, not by sting or bite. This disease is prevalent in tropical and subtropical regions.*
Methods: *A total of 75 cases were enrolled for this study over a period of four months. All clinico-epidemiological parameters were recorded and photographs were taken. Our aim was to know the clinico-epidemilogical profile of the disease and to sensitize the general practitioners about this commonly misdiagnosed entity.*
Results: *A total of 75 cases including 32(42%) males and 43(57.3%) females were studied. Affected age ranged from 3 to 64 years. Almost all age groups were involved but 15-30 years age group was most commonly affected. All affected patients were inhabitants of localities lying nearby to Satluj River. All localities were surrounded by abundant vegetation. Majority of the patients presented in the month of September and August. Face, neck and forearms were most commonly affected sites. Most of the patients presented within 48-72 hours of lesion onset. Apart from sudden development of lesion, burning and mild itching were main chief complaints of the patients. Linear pattern was the most common morphology but kissing, bizarre, geographic and whiplash like patterns were also observed. Despite being a common problem 33.3% non-dermatologists were unaware about the disease. Most of the practitioners were misdiagnosing and treating this entity for herpes simplex, herpes zoster, burns and irritant dermatitis.*
Conclusion: *Paederus dermatitis is common but neglected and misdiagnosed entity. This study describes the clinicoepidemilogical profile along with simple preventive measures for paederus dermatitis. Clinical awareness is recommended for non-dermatologists to avoid misdiagnosis.*
Keywords: *Paederus dermatitis, Beetle, Paederin, Misdiagnosis.*

INTRODUCTION

Paederus dermatitis is an insect born irritant dermatitis caused by beetles belonging to genus paederus. Accidental crushing of these beetles releases coelomic fluid containing paederin a potent vesicant. [1] Paederus or rove beetles are prevalent in moist warm tropical and temperate climates all over world. More than 622 species have been identified and at least 20 species are associated with dermatitis. [2] Most important

Indian species are Paederus fuscipes, P. irritans, P. sabacus and P. himalayicus. [3] They are small (7–10 mm long and 0.5 mm wide) with soft, dark-orange bodies and black heads, tips of the abdomen and front wings. [4] The moist, decaying vegetation of marshes, agricultural fields and areas surrounding fresh water are favorable habitats for their reproduction. [2] At night, bright light sources attract the flying beetles from habitats to human localities. [3] Their population increases rapidly at warm night particularly after heavy rains. [4] Rampur is a rural town of lands and rivers located along side the Satluj River. Most of the inhabitants are engaged in agricultural activities and have exposure to these insects due to close proximity between dwellings, surrounding vegetation and Satluj River. Although disease is quite prevalent but most of the time it is misdiagnosed and treated wrongly for herpes simplex and herpes zoster by non-dermatologists. We aimed to sensitize the general practitioners about the clinico-epidemiological profile of PD so as to increase public awareness regarding its prevention and treatment.

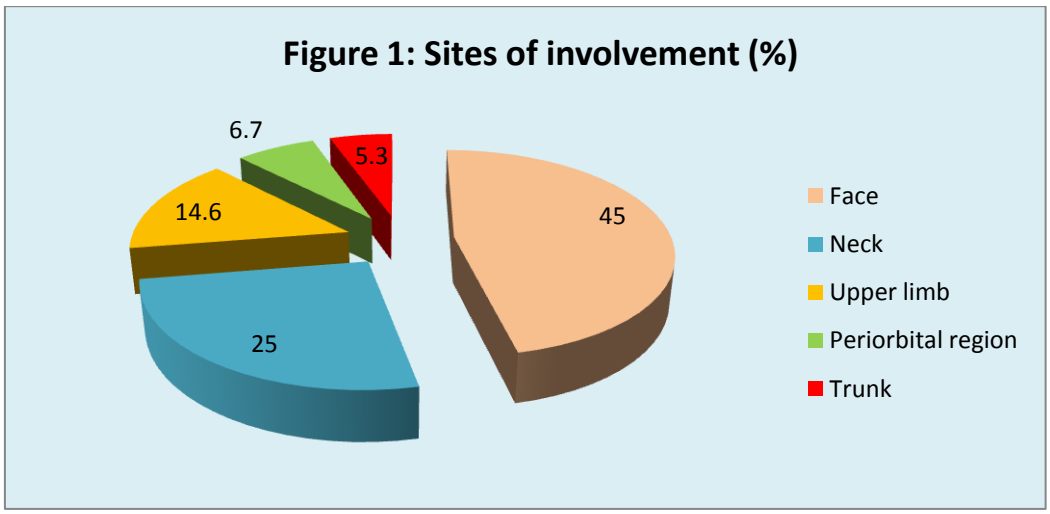
MATERIAL AND METHODS

A sudden increase in the number of cases in routine skin OPD during June to September and misdiagnosis by non-dermatologists motivated us to conduct this study.

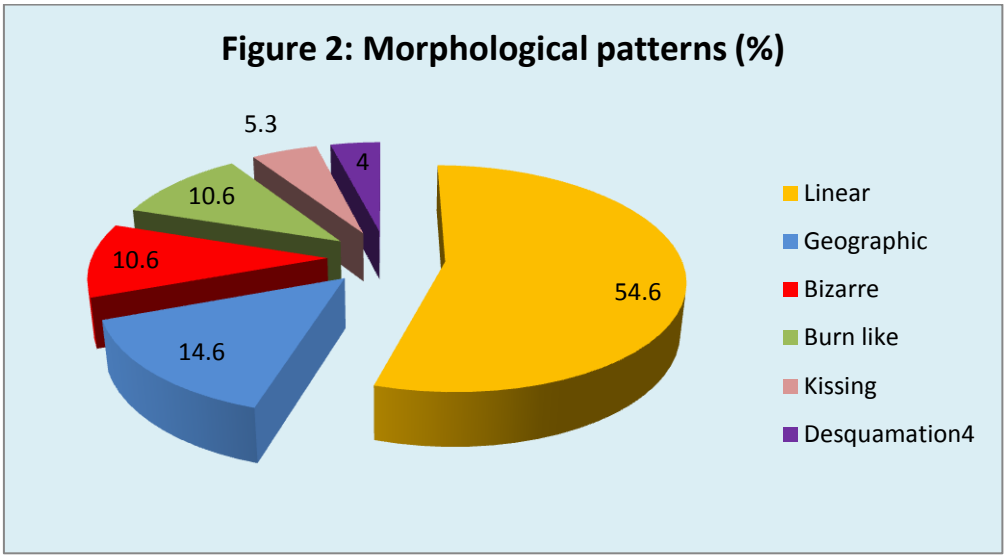
A total of 75 patients were diagnosed clinically by the dermatologist in skin OPD at MGMSC Khaneri Rampur over a period of four months. All epidemiological parameters like age, sex, occupation, residence and proximity to vegetation or river were noted down. Simultaneously clinical history regarding symptoms, duration of onset, site, size, number and morphological details were recorded. Clinical photographs of patients were also taken. Apart from it a questionnaire and clinical photographs of patients were distributed amongst 30 non-dermatologists posted here to assess the accuracy of clinical management by them. Written pamphlets regarding prevention and treatment of paederus dermatitis were circulated amongst non-dermatologists to increase public awareness about the disease prevention. Finally all results were compiled, evaluated and described here.

RESULTS

Out of total 75 registered cases, 32(42%) were males and 43(57.3%) were females. Their age ranged from 3 years to 64 years and 15-35 years age group was most commonly affected. Most (88%) of the patients presented within five days of lesion onset, only 4 cases presented after 1 week with subsiding lesions. Burning and itching were most common symptoms reported by 58 (77.3%) patients, 4(5.3%) cases had lesional pain while 13 (17.3%) cases were asymptomatic. None of the patient presented with systemic features like fever and malaise. Most (64%) of the patients had multiple (2 or >2) lesions, while 27(36%) cases presented with single lesion.



Although face and neck were commonest affected sites but other body parts were also affected. The sites of involvement in descending order were the face (45%), neck (25.3%), upper extremities (14.6%), periorbital areas and/or conjunctivae (6.7%) and trunk was affected in 5.3% cases (Figure 1).



Linear pattern was most commonly observed form in 41(54.6%) cases. Other commonly appreciated patterns were geographic in 11(14.6%) cases, bizarre 8(10.6%) cases, burn like in 8 (10.6%) cases, kissing lesions in 4(5.3%) cases and desquamation in 3(4%) cases (Figure 2).

CLINICAL PHOTOGRAPHS OF PATIENTS SHOWING VARIOUS PATTERNS OF PAEDERUS DERMATITIS

Figure 3: Erythmatous plaque with cauterization

Figure 4: Burn like pattern over neck

Figure 5: Kissing lesions

Figure 6: Nairboi eye appearance

The peak incidence of disease occurrence was found in the months of September and August 37.3% cases were registered in September, 33.3 % cases in August, 17.3% cases in July while rest of the cases presented in the month of June. Patients were treated according to severity of lesions. Most cases had mild and localized disease so treated with topical corticosteroid- antibiotic combination (mometasone and fusidic acid cream). For severe cases, oral corticosteroids alongwith oral antihistamines and topical antibiotic were prescribed. Where secondary infection was seen, systemic antibiotics were also added. To know about the disease awareness amongst 30 non-dermatologists/general practitioners (GPs) a small questionnaire was distributed and clinical photographs were also displayed during monthly academic session. Out of 30 doctors, only 8 (26.6%) doctors were encountering the patients of PD frequently in their routine OPD. Despite being a common problem 33.3% non-dermatologists were unaware about the disease. Only 5(6.6%) local clinicians were diagnosing and treating the disease accurately. Most of these doctors were treating the PD for herpes simplex, herpes zoster or irritant dermatitis.

DISCUSSION

Paederus dermatitis is also known as spider lick, night burn, blister beetle dermatitis and dermatitis linearis. [5] It is a seasonal insect born vesiculo-bullous dermatitis reported from hot and humid tropical regions. Earliest records of PD were published by Vorderman from Java in 1901 later on Ross firstly described this disease at East Africa in 1916. [6] Since then seasonal outbreaks has been recorded from various countries including, India, Sri Lanka, Malaysia, Nigeria, Sierra Leone, Egypt, Turkey, Brazil and Australia. [3] Indian outbreaks of PD have been reported from Tamil Nadu, Punjab, West Bengal and Jodhpur. [7] PD is common in various parts of India, but may not be easily diagnosed by non-dermatologists due to lack of awareness and familiarity. Here we are reporting disease from peripheral health institute of HP although one more study has been done at rural medical college of HP. [7]

Paederus beetle belongs to Order Coleopetra, Family Staphylinidae. Beetles do not bite or sting, but releases a toxin paederin when it is accidentally crushed on the skin. Paederin is highly cytotoxic and as little as 1 ng/mL blocks the synthesis of DNA of eukaryotic cell proteins in ribosomes (60S subunit). [4] Paederin is considered to be 12 times more poisonous than the

cobra venom. [7] The incidence of paederus dermatitis increases during the rainy season. In our study, the peak incidence was noticed from June to August 2010 in accordance with other studies. [5, 8] Exposed body parts such as head, neck and upper extremities were most commonly affected sites in our study. A similar observation was made in a study of 77 cases in Punjab by Handa et al. [9] Up to 20% of patients are totally asymptomatic and present only with the skin lesions and similar was our observation. [4] The burning sensation and pruritus were main symptoms of our patients in line with study done by Mittal et al. [10]

Skin lesions were usually linear, vesiculobullous or pustular on an erythematous base in our study. Other patterns like geographic, whiplash, bizarre and burn like are well described in literature also. [5] Ocular involvement, known as "Nairobi eyes" is usually secondary to rubbing eyes with hands contaminated with paederin. [11] Edema, conjunctivitis and excess lacrimation are common symptoms. [11] Most patients present with multiple lesions and same was the observation of our study. Most of the lesions become crusted and scaly within a period of 1 week. Nearly all patients heal with residual skin discoloration (about 80% hypopigmentation, about 20% hyperpigmentation), in a period of 14 to 21 days. [4]

Although local clinicians are familiar with the condition, PD should be borne in mind as a cause of unusual skin lesions in patients from endemic areas. The clinical appearance of PD may be confused with herpes simplex, herpes zoster, liquid burns, acute allergic or irritant contact dermatitis, cantharidin dermatitis, millipede dermatitis and phytophotodermatitis. [12] The characteristic linear appearance of the lesions, their predilection for exposed areas, the presence kissing and finally epidemiological features (occurrence of similar cases in a given area, the seasonal incidence and identification of the insect) should enable the clinician to arrive at the right diagnosis. Overall public awareness can help to decrease the incidence of PD. Turning off fluorescent lamps at dusk when the beetles are most active can decrease exposure to the beetles. Moreover, patients should be advised not to crush beetles on the skin, not to manipulate primary lesions and not to rub the eyes following primary involvement. [13]

As a self-healing skin disorder, paederus dermatitis needs no specific treatment. Application of wet dressings and topical steroids is sufficient. Antibiotics can be prescribed to prevent bacterial infection, if necessary. [14] Vasudevan and Joshi (2010) found the combination of steroid, antibiotic application and oral antihistamines was effective in treating 94% of cases. Most of our patients responded well to topical combination of antibiotic and steroid (Mometasone and fusidic acid). [15]

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