

Paederus dermatitis in Najaf province of Iraq

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ABSTRACT

الأهداف: محاولة تقييم مختلف المظاهر الوبائية و السريرية لالتهاب الجلد الخنفسائي في محافظة النجف .

الطريقة: أجريت دراسة رصدية مستقبالية تضمنت التقييم السريري لـ 87 مريضاً يعانون من تشخيص نهائي بالتهاب الجلد الخنفسائي، واللذين قدموا إلى عيادة الأمراض الجلدية في محافظة النجف - العراق، خلال الفترة ما بين ابريل 2006م وحتى ابريل 2007م .

النتائج: إن وقت الذروة للمرض كان في شهر مايو، أكثر الأماكن تأثراً بالإصابة هي الوجه والعنق . وكان المظهر المخيف للآفة هو السبب الرئيسي في مراجعة المرضى للمستشفى . أعراض الحرق واللسع كانت بدرجة معتدلة سريريا . أكثر الأنواع شيوعاً هي الخطبية والجغرافية وتضم لويحات حمامية مع بثور تقححية صغيرة . ولوحظت الآفات المتقابلة في 5.7% من الحالات، وتأثرت المنطقة ما حول العين في 16.1% من الحالات .

خاتمة: التهاب الجلد الخنفسائي هو حالة مرضية موجودة في محافظة النجف . الوعي بهذه الحالة بين الأطباء الممارسين سوف تساعد في التشخيص المبكر والعلاج الفوري . كما أن الوعي العام عموماً يمكن أن يساعد في انخفاض معدل الإصابة بهذه الحالة المرضية .

Objective: To assess the different epidemiological and clinical features of *Paederus* dermatitis in Najaf province.

Method: This prospective observational study, including the clinical assessment of 87 patients with definitive diagnosis of *Paederus* dermatitis, who presented to a dermatology clinic in the Najaf province of Iraq, was carried out from April 2006 to April 2007.

Results: The peak time of presentation was in May, and the face and neck were the most common sites of involvement. Frightening appearance of the lesion is the main cause that brought the patients to the hospital. The symptoms of burning and stinging were of mild degree. Clinically, the most common

presentation comprised geographic and linear erythematous plaques with micropustules. Kissing lesions were seen in 5.7% of cases. Periorbital involvement was recorded in 16.1% of the cases.

Conclusion: *Paederus* dermatitis is a common skin condition in Najaf province. The awareness of this condition among the medical practitioners will aid in the early diagnosis and prompt treatment of the disease. Also, overall public awareness can help decrease the incidence of *Paederus* dermatitis.

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Paederus dermatitis (PD) is a peculiar type of acute irritant contact dermatitis attributed to *Staphylinidae* beetle of genus *paederus*.¹ It is characterized by the sudden onset of stinging or burning sensation with appearance of vesicles and pustules on erythematous base. It usually takes a linear (dermatitis *linearis*), or bizarre geographical shape.² *Paederus* dermatitis usually affects the exposed parts of the body. This comes from a beetle that does not bite or sting, but accidental brushing against or crushing it over the skin provokes the release of a vesicant chemical pederin, which is contained in the body fluid of the beetle.^{3,4} We noticed annual outbreaks of PD in Najaf province, which is located in the middle Euphrates region of Iraq, in the last few years. Although many studies have been carried out about outbreaks of PD in various countries from different areas of the world like Iran,⁵ Sri Lanka,⁶ Tanzania,^{7,8} Nigeria,^{9,10} Turkey,^{11,12} Australia,^{13,14} India,^{15,16} Peru,¹⁷ Pakistan,¹⁸ Brazil,¹⁹ and Sierra Leone.²⁰ No previous study about PD was carried out in Iraq. The aim of this work was to evaluate the clinical and epidemiological aspects of PD in Najaf province.

Methods. This observational prospective study was conducted in the outpatient dermatology clinic in Al-Sadr Teaching Hospital, Najaf during a one-year period from April 2006 to April 2007. The diagnosis was mainly clinical depending on previous experience with this condition. The study included patients with typical history of sudden onset of vesicant dermatitis, with or without slight burning or stinging sensation, often occurred at night, and the lesions started to appear the next morning. The examination of the lesions revealed typical linear or bizarre shaped contact dermatitis-like lesions. Patients with typical lesions from affected areas with definite history of contact with insect were also included. Patients with other possible causes of contact dermatitis, and those with chronic skin problems were excluded from the study. A detailed history was taken regarding the age, gender, duration of the condition, the chief complaint, associated symptoms, and residency. The morphology, number and location of the lesions were assessed on physical examination. The study follows the ethical and scientific rules of the local scientific committee.

Results. The total number of the patients was 87, 54 (62%) patients were males, and 33 (38%) were females. The age of the patients ranged from 4 months to 50 years (mean age 21.3±11.6 years, median age 22 years). The duration of the lesions from the time of the onset of the disease varied from 1-7 days (mean 2.3±1.7 days, median 2 days). The most recorded chief complaint was the frightening sudden appearance of the lesions in 74 (85%) patients. On further questioning, burning sensation was found in 55 (63.2%) patients, itching in 15 (17.2%), pain in 4 (4.6%) patients, and 13 (14.9%) patients were asymptomatic. Thirty-two (36.8%) patients were from urban areas, while 55 (63.2%) were from rural areas. Only 15 (17.2%) of the patients gave

the definite history of contact with the beetle. Of the remaining patients, 53 (73.6%) confirmed the presence of the beetle in their surroundings. Most of the patients notice the lesions when they wake up in the morning after the previous night contact with the beetle. The lesions presented as erythematous plaques studded with vesicles and micropustules (Figure 1). The erosions due to ruptured vesicles are more prominent in older lesions. The lesions were linear in 51 (58.6%) lesions, special railroad like appearance was noticed in 6 of these linear lesions (Figure 2). About 85% of the linear lesions were located on the face and neck. Irregular rounded or geographical lesions were present in 36 (41.4%) cases. Kissing lesions (Figure 3) were noticed in 5 (5.7%) patients especially on the axillae and antecubital fossae. The latter type of the shape of the lesion was found on the trunk and proximal extremities in 29 (80.5%) cases. Single lesion was present in 31(35.6%) patients, while multiple lesions were found in 56 (64.4%). The most common sites of involvement in descending order of frequency were the neck in 35 (40.2%) cases, face in 30 (34.4%), extremities in 27 (31%), and the trunk in 15 (17.2%) cases. Periorbital involvement was noticed in 14 (16.1%) cases (Figure 2). Some patients with



Figure 1 - *Paederus* dermatitis presented as acute onset ill defined erythematous lesion studded with many micropustules on the neck.



Figure 2 - *Paederus* dermatitis presented on the face, presented as 3 linear lesions with concomitant ipsilateral periorbital involvement resulting from spread of pederin to the eyelids by the hands.



Figure 3 - Kissing lesions on the axilla studded with pustules and vesicles often seen from the spread of pederin to adjacent skin surfaces.

multiple lesions have more than one site of involvement. The peak incidence of onset and presentation of PD was in the month of May in 46 (52.8%) patients. The other cases were presented in the months of June in 28 (32.2%), April in 6 (6.9%), July in 5 (5.7%), and August in 2 (2.3%). No case was recorded in any other months of the year. Most of the lesions disappear spontaneously in 1-2 weeks leaving a mild and transient hyper-pigmentation without scarring.

Discussion. *Paederus* dermatitis is the result of mucocutaneous contact of the members of the genus *Paederus* that contain pederin, a potent vesicant agent contained in the body fluids of the beetle.³ While, the vesicant chemical in both *Oedemeridae* and *Meloidae* is cantharidin. The clinicopathologic picture differs depending on the vesicant agent. *Cantharidin* dermatitis is characterized by noninflammatory vesicles or bullae, whereas PD is characterized by vesicles and pustules arising from intensely inflamed skin.¹⁻³ The genus *Paederus* belongs to the family *Staphyllinidae*, order *Coleoptae*, class *Insecta*, and consists of over 622 species which are distributed worldwide.^{1,4,5} Unfortunately, no previous studies were conducted in Iraq to show the predominant species in this country. Najaf province is located in the middle Euphrates region of Iraq. The climate provides hot, humid summers and cold winters. It has a population of approximately one million, with half of the population living in the rural, and half in urban areas. Most of the surrounding rural areas contain the biggest rice farms in Iraq. *Paederus* dermatitis has been a well-recognized skin disease in this province in the last few years. The general public usually refers it to as “phosphorus insect rash”. This name was wrongly given to the insect as they actually do not fluoresce, but they reflect the light of florescent lamps to which they are attracted.^{1,4,5,12} There are no previous epidemiological data about the prevalence of PD in this area.

The sudden appearance of the lesions with its frightening picture to the patient or his relatives was the most common chief complaint (85%). This reflects the mild degree of the symptoms. This discrepancy of the symptoms, and the appearance of the lesions give a very important clue to differentiate it from other types of dermatitis. Stinging or burning sensation was the most predominant symptom on the patient, and this is in agreement with the results of the previous published works.^{5,6,12,15,20} Although 73.6% had an idea about the presence of this insect in their surroundings, only 17.2% of the patients gave definite history of being in contact with it. The *Paederus* insect activity occurs mainly at night,⁶ and this may explain the inability of the large number of our patients to discover their contact with the beetle. The weather is very hot in the

Najaf region. With the poor supply of the electricity in the last years due to sanction that increased after the United States invasion of Iraq, residents spend their evenings and nights in the gardens of their homes and in the streets. For an even cooler place, residents often sleep on the roof. Under these circumstances, most cases are probably not caused by the intentional crushing of the beetle, rather the extensive presence of these beetles in the environment makes accidental exposure difficult to avoid. Crushing *Paederus* beetles on the skin has no immediate effect, however, acute dermatitis appears 12-36 hours later.¹⁵ This explains why most of our patients notice the appearance of the lesions during the day time, after a night contact with the beetle. *Paederus* dermatitis occurs predominantly on exposed parts of the body. The face and neck were found to be the most commonly involved sites in the previous studies,^{5,6,10,12,15,16,18,20} Our study also found this type of dermatitis more commonly over the uncovered parts of the body, and the majority of the lesions were on the neck and face. Ocular involvement in the form of periorbital dermatitis and keratoconjunctivitis has been recorded in other works.^{5,7,8} It was less prominent in our study. It was usually explained to be caused by the transfer of the toxic chemical from elsewhere on the skin by the fingers, as it is evident in **Figure 2** in which the patient has 3 linear lesions on the face with ocular lesion involving both eyelids of the same site of the face. The transfer of pederin to his eye through his hand after rubbing the lesion, is probably the only explanation. The awareness of our population of this condition probably reduces its incidence. The blister beetle causing this disease as a form of irritant contact dermatitis. This may explain the predominance of linear shape of the lesion on the face. It take the shape of the movement of the hand on the face to remove it, or along the direction of the movement of the beetle across the exposed areas, while most of the lesions on the trunk and proximal extremities were oval or geographical in shape due to crushing them (**Figure 1**). ‘Kissing lesions’ occurs less frequently in our study than in other reports.⁵ They can occur from the spread of pederin to adjacent skin surfaces, usually on flexural surfaces (**Figure 3**). The clinical appearance of PD may be confused with herpes simplex, herpes zoster, liquid burns, acute allergic, or irritant contact dermatitis, millipede dermatitis, and phyto-photodermatitis. The characteristic linear appearance of the lesions, their predilection for exposed areas, the presence of kissing lesions, predominance of burning or stinging sensation, 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.

Paederus beetles had been associated with outbreaks of dermatitis in various countries from different areas of the world.⁵⁻²⁰ The seasonal outbreaks were shown in most of these studies. In this study, 85% of the cases presented in the months of May and June. The peak time of the rash during the year varied from one country to another. Most of the studies, like the present one, showed the peak incidence of the disease on May or April,^{11,12,15,17} while it happened in September or October in other studies.^{5,10,14,20} This variation probably attributed to the variation of rainy season across different areas of the world. The beetle lives on moist and rotten leaves, and on the organic parts of the soil, causing it to multiply on rainy days.^{4,6,12} The population of the insect increases rapidly at the end of the rainy season, and then rapidly diminishes with the onset of dry weather.^{4,6,13,20} The rainy season in Iraq, ends usually in late March or early April. So, the largest proportion of the cases appeared at the beginning of the summer, after the spring rains, and decreased in later months.

The main limitation in this work was the inability to collect samples of these insects, and study their entomology in Iraq, to compare it with other neighboring areas and countries. This study showed that PD is a common problem in Najaf Province. The present cases represent the cases recorded in one of the 3 major hospitals in Najaf province. Other patients with PD does not seek medical care due to the mild symptoms and transient feature of the disease. The clinical and epidemiological features of this entity in our patients were more or less the same as reported elsewhere. It may stimulate entomologist in Iraq to survey the most predominant species of *Paederus* species in Iraq, and to start the control of its replication to reduce the incidence of the disease.

References

- Singh G, Yousuf Ali S. *Paederus* dermatitis. *Indian J Dermatol Venereol Leprol* 2007; 73: 13-15
- Burns DA. Diseases caused by arthropods and other noxious animals. In: Tony B, Breathnoch S, Cox N, Griffiths C, editors. Rook's textbook of dermatology. 7th ed. Oxford (UK): Blackwell Scientific Publication; 2004. p. 33.27-33.28.
- Grekin RC, Samalaska CP, Vin-Christian K. Parasitic infestation, stings and bites. In: Odom RB, James WD, Berger TG, editors. Andrew's diseases of the skin. 10th ed. Philadelphia (PA): WB Saunders; 2006. p. 526-573.
- Morsy TA, Arafa MA, Younis TA, Mahmoud IA. Studies on *Paederus alfieri* Koch (Coleoptera: Staphylinidae) with special reference to the medical importance. *J Egypt Soc Parasitol* 1996; 26: 337-351.
- Zargari O, Kimyai-Asadi A, Fathalikhani F, Panahi M. *Paederus* dermatitis in northern Iran: A report of 156 cases. *Int J Dermatol* 2003; 42: 608-612.
- Kamaladasa SD, Perera WD, Weeratunge L. An outbreak of *paederus* dermatitis in a suburban hospital in Sri Lanka. *Int J Dermatol* 1997; 36 : 34-36.
- Poole TR. Blister beetle periorbital dermatitis and keratoconjunctivitis in Tanzania. *Eye* 1998; 12: 883-885.
- Fox R. *Paederus* (Nairobi fly) vesicular dermatitis in Tanzania. *Trop Doct* 1993; 23: 17-19.
- William AN. Rove beetle blistering (Nairobi eye). *J R Army Med Corps* 1993; 139:17-19.
- George AO, Hart PD. Outbreak of *Paederus* dermatitis in southern Nigeria: Epidemiology and dermatology. *Int J Dermatol* 1990; 29: 500-501.
- Sendur N, Sark E, Karaman G. *Paederus* dermatitis. A report of 46 cases in Aydin, Turkey. *Dermatology* 1999; 199: 353-355.
- Uslular C, Kavukcu H, Alptekin D, Acar MA, Denli YG, Memisioglu HR, et al. An epidemicity of *Paederus* species in the Cukurova region. *Cutis* 2002; 69: 277-279.
- Todd RE, Guthridge SL, Montgomery BL. Evacuation of an aboriginal community in response to an outbreak of blistering dermatitis induced by a beetle (*Paederus australis*). *Med J Aust* 1996; 164: 238-240.
- Banney LA, Wood DJ, Francis GD. Whiplash rove beetle dermatitis in central Queensland. *Australas J Dermatol* 2000; 41: 162-167.
- Gnanaraj P, Venugopal V, Mozhi MK, Pandurangan CN. An outbreak of *Paederus* dermatitis in a suburban hospital in South India: A report of 123 cases and review of literature. *J Am Acad Dermatol* 2007; 57: 297-300.
- Sujit SR, Koushik L. Blister beetle dermatitis in West Bengal. *Indian J Dermatol Venereol Leprol* 1997; 63: 69-70.
- Davalos AV. Epidemic dermatitis by *paederus* irritant in piura, Peru at 1999, related to El Nino Phenomenon. *Rev Soc Bras Med Trop* 2002; 35: 23-28.
- Mokhtar N, Singh R, Ghazali W. *Paederus* dermatitis amongst medical students in USM, Kelantan. *Med J Malaysia* 1993; 48: 403-406.
- Diogenes MJ. Contact dermatitis by pederine: clinical and epidemiological study in Caera state, Brazil. *Rev Inst Med Trop Sao Paulo* 1994; 36: 59-65.
- Qadir SN, Raza N, Rahman SB. *Paederus* dermatitis in Sierra Leone. *Dermatol Online J* 2006; 12: 9.