

Clinical Presentation of "Rove Beetle Dermatitis"

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Case Series

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Abstract

Objectives: This case series describes new clinical features of Rove beetle dermatitis

Methods: Interviews were conducted with four students at University Sains Malaysia with current or past Rove beetle skin infections. Information on the onset of symptoms, complication, treatment and duration of symptoms were recorded. A physician at a local clinic was also interviewed to describe the challenges in diagnosis and therapy for this condition.

Results: This case series describes new features of Rove beetle dermatitis. Redness, swelling, fatigue and localised stretching of the skin were the commonly reported symptoms. However, vibrations, twitching of the skin and difficulty in breathing were new features observed in this study. Three of the four patients were not aware of the aetiology of the condition, antibiotics and topical steroids were prescribed for the management and prevention of secondary infection.

Conclusion: Rove beetle dermatitis is a common seasonal endemic in Malaysia, with a higher incidence in the month of September and March. This case series highlights the need for a health literacy program, aimed at informing the public and medical practitioners about the aetiology, symptoms and complications of this infection.

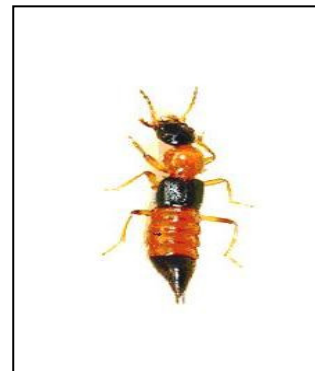
Key words: Rove beetle dermatitis, symptoms, case series

Introduction

Among the arthropods, beetles are well known for blistering skin eruptions and commonly known as beetle skin dermatitis [1]. Beetles from three families (Meloidae, Oedemeridae and Staphylinidae) are noted to cause vesicant (blistering) lesions [2]. Blister beetle (Meloidae) and Rove beetle (*Staphylinidae*, *sp Paederus*) are endemic in Southeast Asia [1]. However, Rove beetles are the largest in this family with over 26000 species world wide [2]. Rove beetles are small, elongated insects' occurring world wide from 5 mm to 10 mm in length (figure 1) are a and found abundantly in tropical areas. In Malaysia rove beetle is abundant in paddy fields (rice fields).

However, blister beetle is more common in Africa, America and Europe [3]. Rove beetle dermatitis is quite frequent among students in Penang. Many students staying at University Sains Malaysia campus have reported Rove beetle dermatitis. The main aim of this study is to report the clinical presentation of rove beetle dermatitis and compare the symptoms with previously international studies.

Figure 1 Description of rove beetles



Rove beetle (*Staphylinidae*)
Toxin (paederin)

Method

Face to face interviews were conducted with two respondents who had current and previous exposure to Rove beetle dermatitis. Information on the onset of symptoms, complications, treatment and recovery was recorded. Moreover, a physician at a local clinic was also interviewed to ascertain the difficulties in making the diagnosis and the current therapeutic regimen. Ethical clearance was obtained from the research ethics committee of Island College of Technology, Balik Pulau (EA-0109). Informed consent was obtained from the subjects to use the photographs presented in this report. All the pictures (Figure 1, 2 &3) were taken by the research team using a digital camera. Figure 1 was



enhanced using adobe photo shop software in order to provide the most suitable image for the Rove beetle.

Study location

This study was conducted in University Sains Malaysia, Penang. Penang is one of the thirteen states of Malaysia, and comprising of two parts, i.e. Penang Island and Penang mainland. USM is situated in Penang Island; the neighbouring state of Penang is Kedah, is an important rice growing region [4]. Moreover, it is a designated tropical rain forest.

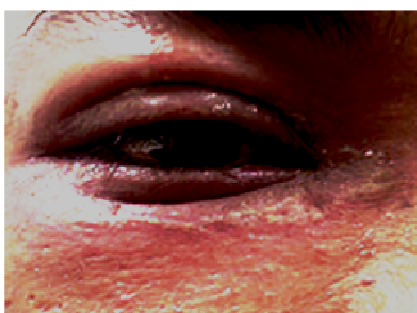
Results

Two current and two historical cases were reviewed. Of the four cases, three reported infections in the month of March. The other case was observed in the month of September. In Malaysia immediate climatic changes occur in the month of March and September, with the rainy season replacing hot and humid weather. The commonly affected areas observed were exposed parts of the body i.e hand, eye, face, nose and neck.

Symptoms reported

Frequently reported symptoms were the redness, burning sensation and the pain at the affected site (Figure 2 and Figure 3). In addition to this the stretching of the skin at the affected areas was another commonly reported symptom. The exudates from the lesion was reported on the next day. The lesions were erythematous and edematous, described as linear and 'whiplash' like in appearance. The vesicles generally appeared towards the centre of a plaque. The vesicles frequently turned into pustules. The signs appeared after 24 to 48h of contact with the beetle and last for a week. Details are described in Table 1 and Table 2. Difficulty in breathing was also reported towards the end of the infection (Table 2, Case 2).

Figure 2 Current case



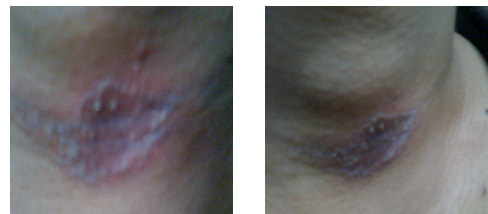
Affected eye and lid

Diagnosis and treatment

A general practitioner stated that it is difficult to differentiate Rove beetle dermatitis from other inflammatory skin conditions, without prior experience of managing the infection. The clinical presentations resemble other dermatitis and herpetic infections. Identification of the insect by the patient and the seasonal incidence are the most important clues to the diagnosis.

The prime objective in management should be the prevention of secondary infections. Antibiotics, steroidal topical preparations, pain killers and anti-histamines can be beneficial in the prevention of the secondary infections. Recovery is a slow process, two to three weeks is the usual duration of symptoms. However, climatic conditions including high humidity may delay the process of recovery.

Figure 3 Current Cases



A(i) Whiplash Rove Beetle Dermatitis at neck

A(ii)



B(i) Whiplash Rove Beetle Dermatitis on chest demonstrating pustules

A(iii)

Paederin is found on the surface of the beetle and is the agent responsible for the dermatitis. Paederin is a toxic alkaloid, vesicant capable of blocking cell division [8]. The Skin is exposed to Paederin as a result of movement or crawling of the Rove beetle [7,12].

The possible reasons for increase in number of Rove beetles in Penang

In Malaysia, Rove beetles are abundant in paddy fields [18]. There are three possible reasons. Firstly heavy flooding in the neighbouring states results in migration of the Rove beetles to the safe areas. Second after the harvest of the rice crop, the field is allowed to dry and the bushes are burned to get rid of pests. The burning of the paddy fields starts in December and continues to February, which may be the reason why the beetles migrate to neighbouring states in search of shelter. The third reason is the thick tropical rain forest of Penang makes an ideal habitat for this pest.



Table 1 Current cases, two weeks duration

Case 1: Dated 05-3-2009 <i>(location of dermatitis: eye)</i> Age of patient 29 years Gender: Male	Case 2: Dated 12-3-2009 <i>(location of dermatitis: neck[Ai,ii,iii] and chest) figure 3</i> Age of patient 27 years Gender: Male
<p>Q. When the symptoms of dermatitis appear? I get early in the morning for pray I feel some pressure on my eye when I lean down I feel that my eye is bouncing and vibrating.</p> <p>Q. Where you slept last night? In my room, at my bed</p> <p>Q. Are you in habit of leaving night lamp ON while sleeping? No, but that day my notebook was ON.</p> <p>Q. What were the initial symptoms? First day 1. My eye was red, and I feel itchy and burning 2. I feel my eye is twitching and pain 3. My skin was stretched Second day 1. There was discharge of fluid from the affected area, look like I put some oil on my eye lid. 2. My eye was swollen Third day 1. The wound was exposed and deep, there was a lesion and yellowish blister was formed.</p> <p>Current status 1. The exposed wound is better now, however still the affected area is red, slightly painful and the skin is stretched.</p> <p>Q. Have you sought some medical attention? Yes, doctor has given me some pain killers, anti-allergy and some cream to apply on wound. On the ninth day lesion healed.</p>	<p>Q. When the symptoms of dermatitis appear? This morning when I wake up the skin was red.</p> <p>Q. Where you slept last night? I was very tired last night, I sleep at floor.</p> <p>Q. Are you in habit of leaving night lamp ON while sleeping? No, but the day I got this problem the night lamp was ON.</p> <p>Q. What were the initial symptoms? First day 1. I feel that my skin is stretched 2. The affected area was very sensitive and itchy. The itching increase if the affected is touched 3. Small yellow blisters were appearing at night time. Second day 1. When I speak and laugh I feel the affected area is vibrating. 2. Excessive fluid discharges, then I use some talcum powder after that no more. 3. pustules Third day 1. I feel fatigue and dizzy like I will get fever soon. Fourth day 1. I feel better now, it will be ok soon.</p> <p>Q. Have you sought some medical attention? No, my friend he gave me some medicated cream (steroidal) and I am using it form last four days. On the tenth day the lesion healed.</p>



Table 2 Personal experiences of the students with Rove beetle dermatitis in 2008

Case 1: March 2008	Case 2: Dated September 2008
<i>(location of dermatitis: Hand)</i>	<i>(location of dermatitis: face, eye, back, nose)</i>
Age of patient 26 years Gender: Male	Age of patient 32 years Gender: Male
Q. When the symptoms of dermatitis appear? I get early in the morning, nothing was there but immediately in afternoon I noticed that I got a red scar.	Q. When the symptoms of dermatitis appear? This morning when I wake up the skin was red, itchy, stretched and painful.
Q. Where you slept last night? In my room, but I put the mattress on the floor.	Q. Where you slept last night? I slept on my bed.
Q. Are you in habit of leaving night lamp ON while sleeping? No, but that day my notebook was ON.	Q. Are you in habit of leaving night lamp ON while sleeping? Not always sometime.
Q. What were the initial symptoms? First day 1. I feel itchy and burning 2. The affected area was red and swollen a little bit Second day 3. There was discharge of fluid from the affected area, the deep wound turned in to lesion and it becomes a bit yellowish. Third day 1. Same condition as second day	Q. What was the length of the scar? About 3.5 inch Q. Was there any pustule formation? No Q. What were the initial symptoms? First day 1. My face was red, my left eye was swollen 2. My nose was itchy, red and painful 3. I felt difficulty in breathing, I suffer through the rove beetle dermatitis about three times, and when ever I feel difficulty in breathing it is the sign that I got rove beetle dermatitis. Second day 4. The redness turned to lesions and the fluid come through the lesion 5. Unbearable itching and pain
Q. Have you sought some medical attention? No, I am familiar with this problem it can recover without any medication and I did not like to use a lot of medicines	Q. Have you sought some medical attention? Yes, I went to see doctor. He gave me paracetamol , anti histamine, Doxycycline (oral), betamethazone and Gentamycine <i>topical</i> cream was given to treat the secondary infection in eye.
Q. When the wound was recovered? It took around 13 days for the lesion to close. However, the redness remains there. After one month the scaling process started at the wound site. The black colour scalps started to peel off. The pink skin appeared. But the scars still remain.	Q. When the wound was recovered? It took around 15 days for the lesion to close. However, the redness remains there. After 30-35 days the scaling process started at the wound site. The black colour scalps started to peel off. The pink skin appeared. After 5 months the scar vanished totally.
Q. Are you familiar that how this insect looks like? Yes	Q. Are you familiar that how this insect looks like? No, [An educational session of the respondents was conducted and all the information about the rove beetle and the rove beetle dermatitis was provided to the respondent].



Clinical presentation

Slight redness of the affected areas within the first 12-24 hours is usual [8,9,10,11], with the onset of blisters on the 2-4th day followed by pain. [14]. The blister formation may be a response to serine proteases and neutrophil elastase released in response to *Paederin* [15, 16]. Following blister formation there is the appearance of linear lesions (that look like whip injuries) and are also known as mirror image or kissing lesions [17].

However, the clinical observations in this study differ from those described in text books. The redness, itching and pain on the affected area were the common symptoms on day one. In addition the swelling, stretching of the skin and 'vibrations' in the affected areas (chest, neck 'figure 3' and eye 'figure 2') were other recognised symptoms. The lesions were deep and exposed, exudates from the lesions were commonly reported. A new finding reported by only one individual, was difficulty in breathing. Two possibilities exist; one of the patients was hypersensitive to *Paederin*. Alternatively as the affected site was the nose and surrounding area that led to the experience of dyspnea, (Table 2, case 2). Unlike, the findings of [8, 10, 11] no one has reported neuralgia, arthralgia and vomiting. However, feeling tired and dizzy were reported by one patient. These new clinical presentations may help further catalogue the known clinical features and assist the general practitioner to make a diagnosis. Recovery occurs within 8- 10 days as the lesions dry and dark scales appear [8,10,11]. After four weeks the black scales start to peel off, exposing new pink skin. After six months the scars vanished (Table 2, case 2), but in one case scars were still apparent after 12 months (Table 2, case 1). However, the scaling process was more rapid in the case 2 (table 1) on the 8th day the black scale desloughed spontaneously and pink skin appeared.

Differential diagnosis and treatment of rove beetle dermatitis

Diagnosis of the Rove beetle dermatitis is important. The manifestation of Rove beetle dermatitis may be a clinical conundrum and the differential diagnosis includes herpes simplex, herpes zoster, liquid burns, acute allergic or irritant contact dermatitis, millipede dermatitis and phytophotodermatitis [19]. For effective treatment and accurate diagnosis it is essential that the clinician should thoroughly check the features of the lesions, confirm the presence of 'kissing' lesions, review the incidence of similar cases in the locality, note the seasonal incidence, identify the insect and seek a histopathology report to confirm the diagnosis [20].

No known effective treatment is available. The use of anti-histamines and analgesics relieves the sign of inflammation. However, the oral and topical use of antibiotics, with or without corticosteroids may help to prevent secondary infection [21].

Factor responsible for the outbreak of Rove beetle dermatitis

In addition to burning of stubble in paddy fields, climatic changes also have a vital role in the outbreak of Rove beetle dermatitis. This case series records three cases in the month of March and one only in September. The rainy season starts immediately in February and continues till the end of May, similarly the second wet season starts in September and ends in November [22]. The remaining months are hot. When the rainy seasons start the immediate variations in temperature and humidity are observed, this could be a possible reason for the invasion of the Rove beetles into homes and increased prospect of human infection. [23,24,25]. These findings are consistent with the findings Nandakishore which similarly reported a high incidence of Rove beetle dermatitis in the month of September and March [26,27]. Moreover the use of bright lights at night and in the increased popularity of high rise apartments are the other factors that increase the chance of human contact with Rove beetles [28].

Conclusion

Rove beetle dermatitis is a common seasonal endemic in Malaysia, with a higher incidence in the month of September and March. These findings highlight the need of a health literacy program, directed at the public and highlighting the aetiology, symptoms and complications of this infection. Increased public awareness will ultimately assist doctors with the differential diagnosis.

Recommendations

Though Rove beetle dermatitis does not have an impact on economy in terms of direct cost, the associated morbidity may impact on the local economy. These findings suggest the need for health promotion activities to educate local people about Rove beetle. Moreover, the horticulture department may promote different ways of disposing of stubble in paddy fields. Burning the beetle's usual habitat may be one of the reasons for the migration of these pests to neighbouring states.

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