

THE NOCTURNAL KISSING OF AN ANNOYING MOSQUITO; UNUSUAL INSECT BITE REACTION, A CASE REPORT AND A LITERATURE REVIEW

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Received: February 2021; Accepted: March 2021; Published: April, 2021

Citation: Ebtiam Elghblawi. The nocturnal kissing of an annoying mosquito; unusual insect bite reaction, a case report and a literature review Middle East Journal of Nursing 2021; 15(2): 26-28.DOI: 10.5742/MEJN2021.937806

Abstract

Insects represent more than half of all known living organisms in the world. Both human beings and insects share a common biodiversity and the influence of insects on human life is enormous. They share an intimate relationship in which human beings are both benefitted and harmed. Insects inflict harm by stinging, biting or transmitting diseases. Rarely, humans are harmed by inadvertently coming in contact with the toxin of an insect.

Insect dermatitis is characterized by tingling and burning within 10 minutes of contact, and sometimes the incurred dermatitis is a self-healing condition. Such cases usually happen while asleep when there is a lag time between the crush of the insect and waking up in the morning. A case while sleeping, heard the insect fly around her bare chest, in summer time, and on waving it away instinctively while sleeping, and the insect had been crushed on her bare upper chest skin, incurring a subsequent skin reaction without the typical red bite mark followed by an evolving burning ulcerative skin lesion, that took a while to subside and heal completely.

Key words: insect bite, crash, skin reaction.

Introduction

Insects play a role in humans' life as they have in common some biodiversity. They are active and thriving mostly in the summer and tropical climates. Sporadic cases of insect bites are seen in any season when the insect is active, but large outbreaks occur particularly during the summer months where accumulation of rubbish and dirt could cause their breeding to flourish and be responsible for epidemic outbreaks as they feed on the vicinity of decaying organic matter. Moreover, bright and dim lights can attract insects to human flesh in the dark over a distance of many miles. Having said so, some human beings are more appealing and attractive to insect bites while others are not. This could be attributed to certain blood group as has been postulated by some scientists. This is determined by differences in volatile chemicals and the body odour that is created by the human body and which is detected by mosquitoes and appeals as attractive to mosquitos, through their olfaction (Fernández-Grandon et al, 2015).

For instance, studies showed that pregnant ladies, ladies with great body mass, and tall men, are more appealing to mosquitos' bites. While, for children the tendency to be bitten, is not clear if it is inherited from their parents or not (Logan et al, 2010). Additionally, those who consume garlic, vitamin B or beer would repel mosquitos (Fernández-Grandon et al, 2015).

Blood feeding is crucial for most female mosquito species' life cycles, as it provides the necessary proteins for egg production. Some insects do not bite or sting, they just wander at night and approach humans while sleeping causing nuisance. Many times, the patients are unaware of the encounter with the insect as it occurs at night during sleep when the insects are crushed in a reflex action. Since it is often noticed after getting up in the morning and because of the time lag between contact and noticing the signs, it is referred to as 'wake and see' disease, in Nigeria locally. Sometimes, insects can be transferred by clothes and sheets to our concealed remote parts of bodies. Insect's toxins are released on crushing onto the skin due to reflex brushing away of the insect. Exposed areas of the body such as the face, neck and arms are

such as the face, neck and arms are most affected, however, chest, abdomen and legs are not immune to the attack of insect's bite.

The hypothesis is that it could be due to the crushed insect releasing its secretion, toxins, and excreta which lead to skin irritation, due to direct contact. Various names are given to different insects and it is suggested the use of the term dermatitis as the most accurate description as the other terms are misleading.

Greater penetration of toxin might be facilitated by wet and sticky skin in areas of high humidity. Symptoms typically begin between 24 and 48 hours after contact with the insect, with the most common being itching and burning or smarting sensation.

The evolution of the lesion depends upon the severity of the skin reaction; dermatitis, may range from mild to severe fulminate forms.

Mild cases resolve after two days with only erythema and no other lesion. Moderate cases develop significant vesiculation after four days, after which the vesicles start to dry out and exfoliate in about 7-8 days. Cutaneous necrosis can also occur.

Case report

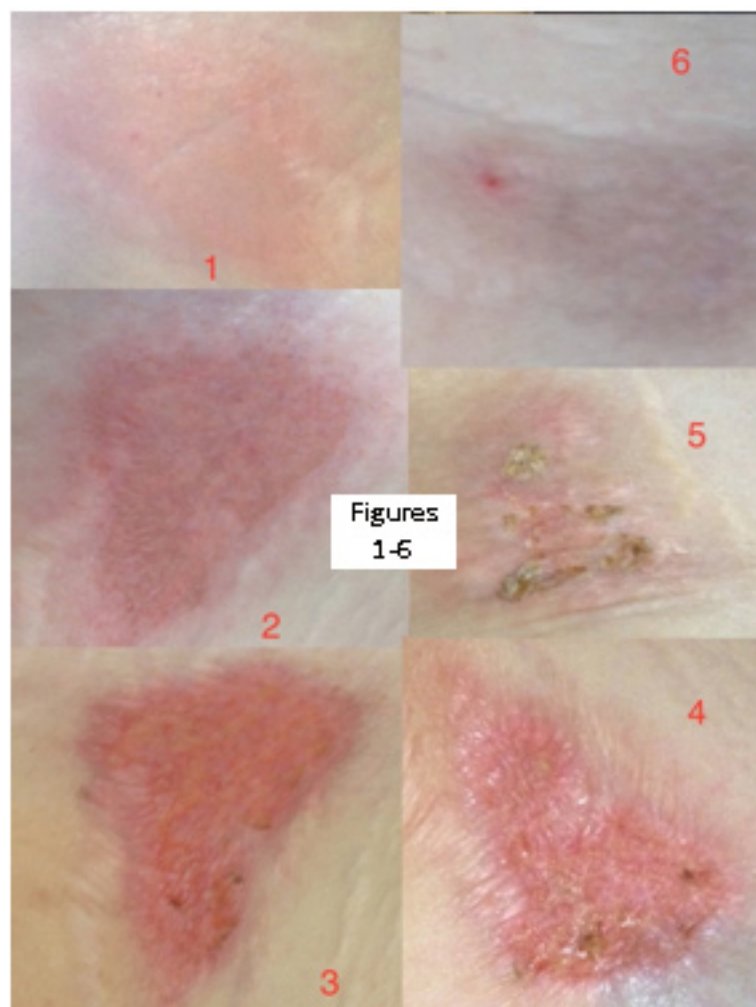
A 45-year-old lady presented with a sudden abrupt painful and burning cutaneous lesion on the right upper quadrant of the breast (Figure 1). Approximately 2 weeks previously, while she was asleep, she heard and felt a mosquito buzz close to her chest skin. It was summer time and people tend to wear light dress due to the hot humid weather along with the continuous power cuts in the capital; Tripoli. She just tried to wave away the nuisance fly and recalled feeling it crushed upon her skin, in an attempt to keep the fly away and continue her sleep. On waking up in the morning, the skin was very uncomfortable, red and started to show some local skin reaction that had extended slowly beyond the stung area, without a central bite mark (Figure, 1, 2). It was associated with severe burning sensation and few days later it started to ooze clear serous fluid which made the lady feel uncomfortable and in great as she could not tolerate her clothes on it (figures, 3, 4). She kept applying a clean sterile gauze to avoid the continuous rubbing and friction of her skin with the brassiere and her tops. A few weeks later, she noted a development of a 3 x 2.5 cm, macerated area with an ulcer of slightly raised edges along with surrounding erythema on the skin (figures 3, 4). The patient kept applying antibiotic cream (fusidic acid cream) to no avail. It was painful and with a burning sensation she affirmed.

Figures 1-4, showing different stages of the skin inflammations.

Figures 5-6. The patient experienced an excellent self-healing response, with some PIH.

The lesion in this case had evolved through an initial itchy erythematous phase followed by vesiculation and subsequent crusting and desquamation, leaving an open ulcerative oozing painful area. Typical mosquito bites appear as circumscribed areas of edema in the center of which a red bite mark may be seen. Complications are due to the direct effect of the toxin and secondary infection. Post inflammatory hyperpigmentation (PIH) and scarring can occur.

The patient should be managed like that of acute irritant dermatitis. The principles of management include immediate removal of the toxin and prevention of the effect of the toxin. This can be done if the patient comes in contact with the insect and seeks immediate medical attention. But most of the patients reach the hospital after the lesion has occurred.



During the next several weeks, the lesion kept oozing with painful burning sensations (figure, 3, 4). There were no other associated comorbidities. The lady is fully healthy with no chronic medical history. There were no mucocutaneous lesions noted. There was no lymphadenopathy. The lesion stayed as such for a complete month and then started to recover and heal up with PIH, as the photo can demonstrate (figure, 5, 6). The area faded with time and the skin made a full recovery.

Differentials in this unique case could be contact dermatitis, brown recluse envenomation, pyoderma gangrenosum. However, tracing up the history would rule out the stated differentials.

Discussion:

Mosquito bite and skin reactions are extremely common in Libya especially in the summer time, where rubbish keep piling up out in the street, neighbourhood areas and with the continuous power cuts in the capital, life becomes miserable, intolerable and unbearable. In fact, it causes all sorts of insects to breed and fly around mankind and bite.

Mosquitoes are nocturnal nuisance visitors, which suck blood for their food. Insects mostly are active from one hour after sunset, dawn till midnight.

Allergic reactions can vary and in children are mostly severe and can be fatal. This is because children still have not had the time to build up the required immunity yet. Normally, a human body builds up immunity to certain allergens over a period of time, and due to these children may experience severe allergic reactions to mosquito bites. Additionally, mosquitoes are selective in their bites to humans, where some humans are more likely to get bites than others. It has been explained that people with blood group O are nearly twice as frequently as those with blood group A to be stung. The lady was blood group O, and overweight with a BMI reading of 27.7. This was explored further and explained according to humans secretions and productions of CO₂ due to basal high metabolic rates which consequently would attract mosquitoes to certain humans specifically and make them preferential over others. Also, genetics could play a role (Seda J and Horrall S, 2019).

Mosquito bites can inflict different ranges of widespread and disseminated cutaneous eruptions to localized blisters, ulcers, and extremely itchy papules and nodules. After a mosquito bite, an allergic reaction occurs against the protein in the salivary components of the mosquito, sometimes leading to systemic reactions in rare cases. Those released toxins serve the mosquito's purpose for feeding by inflicting local vasodilation, anticoagulation and antiplatelet functionality. In sensitized patients, a local spectrum of various reactions, of species-specific, would be appreciated (Seda J and Horrall S, 2019).

The insect bite noticeably triggered an allergic reaction and, in this case, a large local reaction incurred and

resulted in a swelling that extended beyond the stung site. The patient was deeply concerned as it was looking like an unhealed skin ulcer for a month, and was extremely painful and burning as the patient exclaimed. She does not have any comorbidity associations.

Mosquito bites are skin irritating reactions, which usually resolve spontaneously without intensive medical care. However, in certain situations, mosquito bites may form a more vicious prolonged reaction (Tatsuno et al, 2015 and 2016).

Conclusion

The treatment should be individualized and tailored to suit the patient. Cooling agents such as calamine, camphor and local anesthetics like topical preparations of camphor, lidocaine, and benzocaine have been used for temporary relief of itching and burning sensations. Silver sulphadiazine has been described to give some relief of symptoms. Its antibacterial action is an added advantage.

The cornerstone of treatment is a combination of a topical steroid with an antibiotic. It has been found to be more effective than topical steroids alone. Corticosteroids act by a variety of mechanisms of action on the skin such as suppression of histamine release and mast cell inhibition. After a month, the lady made a full recovery (figure, 6).

Also, it was in a difficult area, thus keeping dry would be the ultimate goal to achieve healing and complete recovery. She was applying gauze on a regular basis to avoid friction and ongoing breakage of the skin.

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