

Cutaneous Lepidopterism from the Caterpillar *Apona* sp.

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TO THE EDITOR

From July to September, there are increased chances of getting intimate with hairy caterpillars [1,2]. Their fine silky hair and seta (thin-gauged needlelike structure) may cause painful and/or itchy lesions. While erucism (caterpillar dermatitis) is characterized by a localized, pruritic, maculopapular contact dermatitis following exposure with toxic hair [3,4]. Lepidopterism on the other hand, is a rare systemic illness that occurs following such contact, typified by diffuse urticaria, which may or may not be, associated pulmonary symptoms [5]. Recent studies revealed increased serum IgE, cytokines and blood CD16/56+ NK precursor cells after exposure to caterpillars [6].

We report a case of a 35-year-old female who presented with intensely pruritic widespread urticarial papules and plaques after contact with a black hairy caterpillar. She was managed with a 2-week course of oral steroid, antihistamine and topical steroids with resolution of symptoms. She has a history of asthma and atopy. The caterpillar was identified at the RITM Department of Entomology, as larva of the moth *Apona* sp. She was treated with oral corticosteroid, antihistamine and Halobetasol propionate ointment for two weeks. Upon follow-up, resolutions of lesions were noted.

Caterpillars are worm-like larval forms of moths or butterflies (Order Lepidoptera, Class Insecta). They belong to phylum arthropoda with more than 165,000 species worldwide [7]. Most of them are harmless-looking and brightly-colored. However, 12 families of the caterpillar species can inflict serious human injuries from localized stings, papular dermatitis, urticarial wheals to consumption coagulopathy and renal failure [1]. Envenoming caterpillar utilizes urticating hair, setae or toxins for defense against predators. Lepidopterism (Greek *lepis*: scale and *pteron*: wing) is defined as a spectrum of medical conditions due to contact with lepidoptera and/or their products. This includes cutaneous and/or mucosal manifestations that vary in

severity from mild to severe reactions (anaphylactic shock and death) [5].

Erucism (Latin *eruca*: caterpillar) refers to localized cutaneous envenomation from poisonous caterpillar spines. These reactions are caused by caterpillars from three families: Saturniidae, Megalopygidae, and Limacodidae. Papular urticaria and dermatitis tend to be caused by furry caterpillars [8]. Caterpillar setae of some species are easily detached and can be dispersed by winds, causing dermatitis. This phenomenon has been documented with *Thaumatococcus* caterpillars [9,10]. Garments hung on clotheslines may collect airborne setae and cause dermatitis. In 1972, about 500,000 cases of dermatitis were caused by airborne setae from Asian mulberry tussock caterpillar [8].

Apona sp. larva belongs to the family Eupterotidae [11]. Eupterotidae is a member of the Moths of Southeastern Asia. There are 350 species of Eupterotidae worldwide; most common in Asia and New World tropics and it is commonly seen in Thailand and India [12-14]. *Apona* sp. are classically described as densely haired caterpillars. Its body is covered with long, black bristles with long strands (5 mm in length) at the posterior end. The head is black with a collar of long, brown bristles on its dorsolateral edge, leaving the ventral aspect devoid of bristles. They have 3 pairs of brown-colored segmented prothoracic legs, 4 pairs of short prolegs, and 1 pair of brown anal prolegs. They cannot tolerate temperatures above 25°C or below 5°C. The optimal range temperature is 20–25°C with temporal distribution between July-August [11].

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Previous pharmacological test revealed presence of histamine, 5-hydroxytryptamine and acetylcholine in the caterpillar hair, which is the most probable cause of urticaria in humans. A histamine-like substance has been isolated in *Spilosoma lutea* caterpillar hairs [8]. Other authors stated that hair extracts caused tissue damage by inducing histamine, proinflammatory products of cyclooxygenase, and nitric oxide [15]. Formic acid has been found in *Notodontid* caterpillars hair which causes skin blistering after direct contact [16]. Caterpillar setae have allergenic proteins such as thaumetopoein, which act directly on mast cell degranulation [1,17]. Fuzzy caterpillars are responsible for dermatitis, contact urticaria and anaphylactic reactions through IgE-mediated or non-IgE-mediated mechanisms [6]. Serum IgE to hair extracts has been found in the sera of forest workers exposed to *Thaumetopea pityocampa* caterpillars. Almost all workers developed urticaria, angioedema, or bronchial asthma after exposure [17].

Lepidoptera can cause immediate hypersensitivity reactions, delayed-type hypersensitivity or both. Intradermal injections causing immediate wheal-and-flare reactions have been demonstrated with *E pseudoconspersa* setal extracts [18]. Prick testing with extracts from *Thaumetopoea* caterpillars instigate significantly higher rates of positive testing in individuals with previous exposure to caterpillars compared to those without contact [19]. Patch testing with *E chrysorrhea* setae revealed erythema and edema within 5 hours, progressing to vesiculation at 72 hours [20]. Patch testing with setal extracts from *E pseudoconspersa* larva showed immediate and delayed-type reactions [21].

Management of lepidopterism is supportive. Topical application of anesthetic [3], corticosteroid and antihistamine may be given [22]. Cold compresses and calamine lotions provide partial symptomatic relief [23]. Warm compresses impregnated with sodium bicarbonate are likewise helpful. Early removal of adherent urticating hairs by applying adhesive tape or using forceps is recommended [16].

In conclusion, caterpillar envenomation is a fairly common environmental dermatitis, which is often overlooked by dermatologists. Diagnosis is often generalized as caterpillar dermatitis when in fact some cases should already be classified as Lepidopterism, in which management and prognostication may slightly differ. The role of the immune response to caterpillar exposure is still currently being investigated. Analyzing allergen similarities between species of Lepidoptera and cross-reactivity to related caterpillar may provide some insight on potential desensitization protocols. In tropical areas, where diversity of Lepidoptera is enormous, there is lack of documented caterpillar envenomation incidents and likely underrepresents the true number of cases. To the best of our knowledge, this case is the first reported cutaneous lepidopterism caused by *Apona* sp. caterpillar in the Philippines.

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