

Development and Resolution of Cutaneous Lesions Caused by Black Fly Bites (Diptera: Simuliidae)



To the Editor:

Black flies, also known as buffalo gnats or turkey gnats, are blood-feeding insects in the insect family simuliidae. Immature black flies breed in fast-flowing water, from which the adults emerge in great swarms (usually) in spring or early summer. Black flies are notorious nuisance pests in certain parts of the world and are vectors of the agent of onchocerciasis in tropical areas. Nuisance biting alone can be serious, even fatal, with many reports of livestock and poultry deaths due to black fly biting.¹⁻³ Outbreaks were a major problem in the southern United States during the early 20th century¹ but disappeared until recently. This reemergence may be due to the elimination of harsh pesticides and the cleaning up of creeks and rivers.

Black fly bite reactions include papules, erythematous wheals, indurations, or extensive swelling of the affected area.⁴ In addition, adenopathy (black fly stiff neck) may occur from bites on the face, neck, and scalp.² There are many reports of reactions to black fly biting in the northern United States and other parts of the world,^{2,5-7} but none from the southern United States, where black flies have typically not been a problem. Here we carefully document the timeline of bites and subsequent development of cutaneous lesions in an entomologist who was investigating a black fly outbreak along the Pearl River in central Mississippi during the spring of 2018.

METHODS

The entomologist bitten by black flies was examined by the second author and bite reactions were described and photographed over the following 72 hours. Samples of the offending insect were collected and identified as *Simulium meridionale*.

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Requests for reprints should be addressed to Jerome Goddard, PhD, BCH-EPP, Box 9775, Mississippi State University, Mississippi State, MS 39762.

E-mail address: jeromegoddard10@yahoo.com

RESULTS

From March 26 to April 2, at least 10 black fly bites were noted on the patient's arms, neck, and face. Bite reactions sometimes developed into large indurations by 48 hours (Figure 1). Two bites on the neck were carefully followed for 48 hours (Figure 2). At first, there was nothing but erythema and a small hemorrhagic center. Four hours later, lesions developed into a central wheal with surrounding erythema. The diagnosis was papular urticaria, presumably resulting from hypersensitivity to black fly salivary proteins. A raised urticarial papule developed at each bite site with surrounding erythema that itched intensely. Over the course of 24 hours, the urticarial lesions resolved, leaving only an erythematous flattened lesion. By 48 hours, the lesions had completely faded.

DISCUSSION

We show here that attacks from black fly bites in southern states may result in intensely itchy indurations or papular urticarial lesions lasting approximately 48 hours. Although there have been reports of black fly bites and resulting med-



Figure 1 Induration from a black fly bite 48 hours earlier.



Figure 2 Development of black fly bites on the neck. There were 2 black fly bites here. hr = hours.

ical conditions in the lay literature from southern states,⁸ this is the first careful documentation of the timeline of a local hypersensitivity reaction.

Jerome Goddard, PhD^a

Patricia Stewart, MD^b

Hunter Deerman, MS^c

Tina M. Nations, MS^c

Wendy C. Varnado, PhD^c

^aDepartment of Biochemistry
Molecular Biology, Entomology
and Plant Pathology, Mississippi
State University

^bDepartment of Clinical Immunol-
ogy and Allergy, University of
Mississippi Medical Center Jackson

^cBureau of Environmental Health
Mississippi Department of Health
Jackson

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