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## Selected Topics: Neurological Emergencies

### ISCHEMIC STROKE AFTER WASP STING

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**Abstract—Background:** Despite the common occurrence of hymenopteran stings worldwide, primary neurologic manifestations including stroke are rare. We report a case of a healthy male who developed a right middle cerebral artery (MCA) territory ischemic stroke after getting stung by a wasp. **Case Report:** A 44-year-old man with hypertension presented to the hospital with sudden-onset left hemiparesis, left facial weakness, and dysarthria after being stung by a wasp. Magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) scans of the brain revealed a right MCA territory infarct and a lack of flow in the distal right internal carotid artery and MCA. He was treated with intravenous tissue plasminogen activator. A computed tomography angiography scan of the brain performed 24 hours later revealed multiple regions of vasoconstriction in the territory of the bilateral MCA. Evaluations for causes of stroke, including echocardiography and telemetry, were not revealing. Immunologic testing showed significantly elevated levels of serum wasp immunoglobulin E. Therapy with aspirin and atorvastatin was started. At discharge, the patient had a mild left facial droop but normal strength in his left arm and leg. **Why Should an Emergency Physician Be Aware of This?:** Emergency physicians encounter large numbers of hymenopteran sting cases each year. These patients typically present with local reactions, such as itching, pain, and erythema. Systemic manifestations, such as anaphylaxis causing severe hypotension and bronchospasm, are less common but deadly. Neurologic complications, such as ischemic stroke, are extremely

rare. This manuscript highlights the pathophysiology and management of stroke after a hymenopteran sting. There are no guidelines for the management of stroke after a hymenopteran sting, and therefore we intend to provide some guidance to physicians for treating stroke after a hymenopteran sting. © 2016 Elsevier Inc. All rights reserved.

**Keywords—**ischemic; stroke; wasp

### INTRODUCTION

Hymenopterans—the “membrane-winged” insects that include ants, sawflies, bees, and wasps—cause nearly 100 million stings worldwide every year (1). Local reactions, such as itching, edema, pain, and erythema, are common. Systemic manifestations, such as urticaria, flushing, vomiting, diarrhea, and anaphylaxis causing severe hypotension and bronchospasm, are less common but deadly. Neurologic complications, such as ischemic stroke, are extremely rare; 13 cases of ischemic stroke after a bee or wasp sting have been published (Table 1). Previous case reports show that the timing of stroke ranges from <1 an hour to 24 hours after the sting. In most of these reported cases, the patient received multiple stings. There are no specific risk factors for stroke after bee or wasp stings, but all patients typically experience localized or systemic reactions before the stroke (2–14).

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**Table 1. Case Reports of Ischemic Stroke after Bee/Wasp Sting**

Author	Age/Sex	Sting Type and Location	Onset of Deficits	Clinical Findings	MRI/CT Findings	Treatment	Recovery
Day (2)	36/M	Wasp: multiple; neck, face, and arms	<1 hour	Headache, right hemiplegia, seizure, and coma	NR; necropsy showed left hemorrhagic cortical infarct	Antihistamines, cortisone, and phenobarbital	Died
Riggs et al (3)	38/M	Wasp: multiple; face and neck	2 days	Right hemiplegia and global aphasia	Left MCA infarct with left ICA occlusion	NR	NR
Riggs et al (4)	52/M	Wasp: single; location not recorded	A few hours, with worsening 24 days later	Dysarthria and left hemiparesis within few hours; quadriplegia and obtundation after 24 days	Three small infarcts in right MCA territory; 24 days later, diffuse bilateral ischemic white matter lesions in left parietal and insula	Epinephrine, methyl-prednisolone, and diphenhydramine	NR
Crawley and Schon (5)	30/F	Wasp: single; left arm	<1 hour	Vision loss	Left occipital infarct	Epinephrine, hydrocortisone, and chlorpheniramine	Full recovery
Bhat et al (6)	35/M	Bee: multiple; all over body	<1 day	Dysarthria, vertigo, tinnitus, and bilateral cerebellar signs	Bilateral cerebellar hemorrhagic infarct	Dexamethasone, antihistamines, and mannitol	Died
Sciffman et al (7)	57/F	Honey bee: multiple; neck, face and arm	2 days	Left homonymous hemianopia and nausea and vomiting	Right occipital infarct	Antihistamines and antiemetics	Left homonymous hemianopia
Taurin et al (8)	36/M	Wasp: location NR	14 days	Nystagmus and nausea and vomiting	Left dorsal medulla infarct	Methyl-prednisolone	Improved
Temizoz et al (9)	60/M	Bee: multiple; head face and limbs	2 hours	Left hemiplegia and dysarthria	Bilateral frontal lobe infarcts, right temporoparietal and bilateral centrum semiovale infarct	Epinephrine, pheniramine, hydrocortisone, chlorpheniramine, and aspirin	Mild left-sided hemiparesis
Dechyapirom et al (10)	64/M	Bee: multiple; face, neck, chest, and arms	16 hours	Left hemiplegia and facial nerve palsy	Right MCA territory infarct	Promethazine, methyl-prednisolone, and t-PA	Recovered
Rajendiran et al (11)	25/M	Bee: multiple; head and neck	1 day	Left arm weakness and blurry vision	Right frontoparieto-occipital infarct with hemorrhagic transformation	Antihistamines and antiemetics	Full recovery
Viswanathan et al (12)	59/M	Bee: multiple; face, neck, scalp, and anterior aspect of chest	2.5 hours	Dysarthria, left hemiplegia, left facial weakness, and left gaze palsy	Right MCA territory infarct	Antihistamines, hydrocortisone, aspirin, atorvastatin, and heparin	Left strength 4+/5 and resolution of facial palsy
Bilir et al (13)	35/M	Bee: multiple; NR	6 hours	Right hemiparesis	Left MCA infarct	Adrenaline, methyl-prednisolone, and ranitidine	Residual right hemiparesis
Wani et al (14)	40/M	Wasp: multiple; face, head, and neck	1 day	Left hemiplegia, left gaze preference, and obtundation	Bilateral thalami and left parieto-occipital infarct	Chlorpheniramine and hydrocortisone	Vegetative state

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