Case Report

An unusual case of sustained ventricular tachycardia following a wasp bite

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Abstract

Sustained ventricular tachycardia (VT) is a life-threatening condition which requires immediate intervention. We report a case of unusual etiology of sustained VT in a 42-year-old male after a wasp bite in the absence of anaphylaxis. The patient was treated with amiodarone and improved within 48 h. Thus, wasp stings can lead to serious tachyarrhythmias which can be life-threatening. Emergency care physicians should be aware of such arrhythmias in the setting of wasp bites which can be fatal.

Keywords: Occupational exposure, ventricular tachycardia, wasp bite

Introduction

Sustained ventricular tachycardia (VT) is a VT which lasts for more than 30 s and/or requires an intervention for termination or produces severe hemodynamic compromise or syncope before terminating spontaneously.[1] Various etiologies for the sustained VT are structural heart disease, genetic causes such as Brugada syndrome, familial causes, and idiopathic VT. A structural abnormality in the heart mostly following an ischemic episode is the most common cause of sustained VT.[1]

This is a unique case of sustained VT occurring after multiple wasp stings in the absence of anaphylaxis in a speciously healthy individual without any structural heart disease. Wasp sting can cause a wide clinical spectrum of symptoms ranging from transient painful local inflammatory reactions to occasional toxic reactions involving multiple organs.[2] Venom of the stinging insects contains histamine-like active amines, serotonin, quinones, phospholipase A2, hyaluronidase, melittin, and apamin which have hemolytic, neurotoxic, and vasoactive properties.[3] A single wasp sting releases around 50–140 mcg/sting amount of venom.[4] Most of the wasp bites occur accidentally or due to occupational exposure. Cases of cardiac arrhythmia after bee bite have been documented showing the increased tendency of cardiac symptoms after bee bite in an individual with preexisting heart disease;[5,6] however, none such case VT without preexisting heart disease has been reported till in the literature, in our knowledge. This is of immense importance as one should be aware of this life-threatening fatal condition after a single or multiple wasp bites.

Case Report

A 42-year-old male presented in emergency with history of sudden onset palpitations and chest discomfort. Half an hour before presentation in the emergency department, the patient was doing his normal routine work in kitchen garden where he was bitten by a flock of wasps over his head, back, and arms. He developed sudden pain and redness at the site of wasp bites. Thereby, he applied some oil as a home remedial measure to the local site. After about 15 min of the wasp bite, he experienced palpitations and chest discomfort which was sudden in onset and but persistent. He described them as fast and regular thumping

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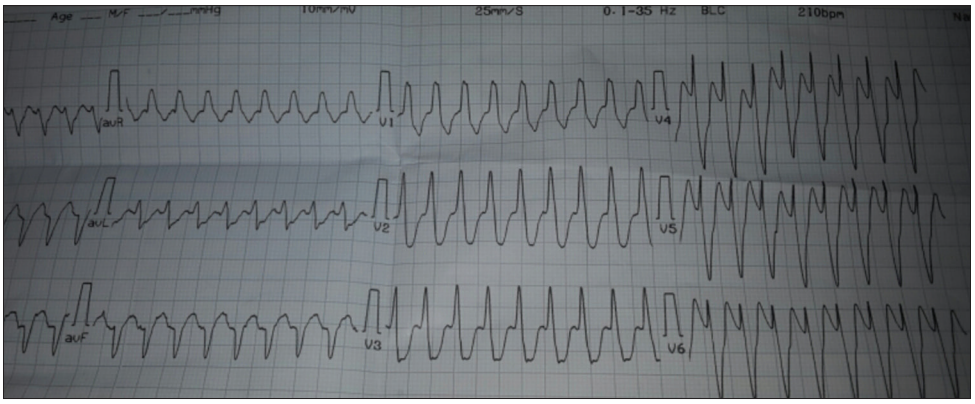

Figure 1: Sustained ventricular tachycardia (right bundle branch block type)

in the chest that he had never experienced before. The episode was not associated with loss of consciousness, sweating, or chest pain. Within half an hour of the episode, he presented to the emergency department of our hospital. He also had one episode of vomiting while coming to hospital. He had no history of ischemic heart disease, hypertension, diabetes, and any other autoimmune disease. The patient was not taking any herbal or allopathic medications. On examination, patient was conscious, well oriented to time, place, and person. His pulse was 180/min regular, blood pressure of 164/86 mmHg, respiratory rate of 16/min, and oxygen saturation of 98% at room air. He was anxious and restless. His cardiovascular examination was normal except for tachycardia. His electrocardiography was done which showed wide QRS tachycardia with loss of *P* waves fitting into sustained VT of right bundle branch block type according to the Brugada criteria for VT (as shown in figure 1). The patient was given a slow intravenous bolus of injection amiodarone 150 mg after which tachycardia improved and rhythm became sinus. The patient was put on tablet metoprolol 25 mg twice a day. The patient was also given injection chlorpheniramine and dexamethasone followed by tablet cetirizine 10 mg in once a day. Patient was kept for observation for next 48 h during which his vitals gradually improved. Transthoracic echo was normal with no regional wall motion abnormalities and normal ejection fraction. Serial electrocardiograms were normal. Further investigations such as electrophysiological studies, cardiac magnetic resonance imaging (MRI) were planned, but the patient refused for the same. The patient was discharged in satisfactory condition.

Discussion

Wasp stings have been associated with cardiac arrhythmias usually occurring in patients with preexisting heart disease. The exact mechanism of tachyarrhythmia is unknown, but many pharmacologically active constituents of bee sting such as histamine, noradrenaline, dopamine, hyaluronidase, and phospholipase A2 may induce arrhythmia.[7] The exact mechanism of wasp bite induced arrhythmias is not clearly known. This can be hypothesized as the renin secreted from the cardiac mast cells results into the activation of local renin-angiotensin system. Angiotensin I is formed from angiotensinogen, and it further leads to the activation of Angiotensin II. Angiotensin II along with vasoconstriction results into the activation of AT1 receptors on the noradrenergic nerve endings resulting into release of noradrenaline. This sympathetic system hyperactivation is responsible for cardiac arrhythmias. In the presence of hypersensitivity reaction, arrhythmias can occur due to various mechanisms such as direct antigen-antibody reaction.[8] Apompilidotoxin (a-PMTX), a neurotoxin, isolated from the venom of a solitary wasp and has been shown to slow or block the inactivation of the voltage-sensitive Na + channels.[9] In this patient, there were no previous comorbidities and there was no structural heart disease. There were no signs and symptoms of anaphylaxis in our case. There occurred monomorphic sustained VT. Such case involving multiple bee stings and monomorphic VT in patient with no previous heart disease has never been reported in literature. Thus, bee stings can lead to various tachyarrhythmia which can be life-threatening. Clinicians should be aware of such arrhythmias in the setting of bee bites which can be fatal. Further investigations such as electrophysiological studies and cardiac MRI's may further delineate the cause in such settings.

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Conflicts of interest

There are no conflicts of interest.

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