

## Case Report

# Brachial artery thrombosis following multiple wasp stings

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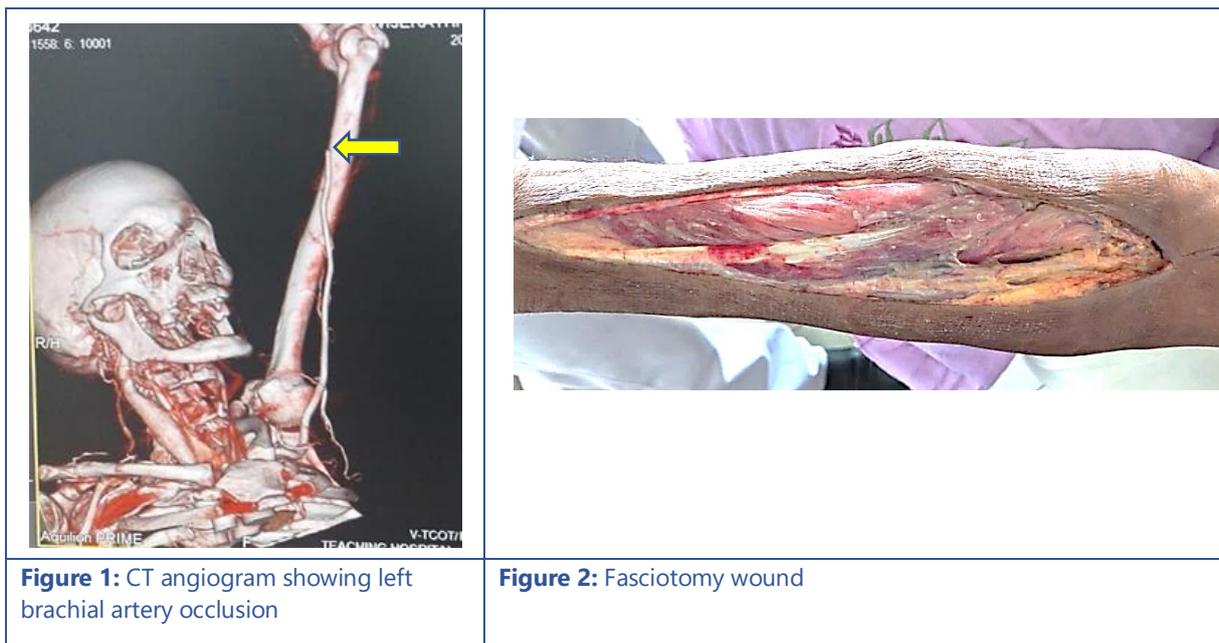
## Introduction

Wasp stings are commonly encountered in general medical wards in Sri Lanka [1]. Wasps are categorised under the insect Order Hymenoptera, which comes under Phylum Arthropoda, and is the third largest of the insect orders [2]. Wasp stings may lead to serious health issues ranging from simple local reactions to life threatening systemic complications including anaphylaxis and arterial thrombosis. Vascular thrombosis is a rare manifestation of wasp venom thus only few cases have been reported in the literature. The pathophysiology of vascular thrombosis may include the vasoactive inflammatory and thrombogenic properties of venom as well as vascular spasm caused by the venom [2,3,4]. The reported cases of vascular thrombosis include cerebral artery thrombosis and ischaemic strokes, descending aortic thrombosis, coronary artery thrombosis and myocardial infarctions but never a brachial artery thrombosis, to the best of our knowledge [3,5,6,7].

## Case report

A 65-year-old, previously healthy male from Anuradhapura presented to a general medical ward following multiple wasp bites over his head and upper trunk. On admission, he had mild local pain at the sting sites but was haemodynamically stable. He developed angioedema of the lips and tongue for which IM adrenaline was given at the emergency treatment unit. Later, he was transferred to a general medical ward for observation. About 8 hours following the bite, he developed a severe pain in the left upper limb. On examination, the limb was cold to touch with feeble radial and brachial artery pulses and finger saturation was not detectable on air. Vascular surgical opinion was sought, immediately, and an IV heparin infusion was started.

His CT angiogram revealed long segment brachial artery thrombosis from mid humerus level on the left side (Figure 1). Thrombectomy was performed on the same day and fasciotomy the next day to salvage the limb (Figure 2).



He was investigated for a cause for arterial thrombosis including full blood count, liver and renal functions, fasting blood sugar, lipid profile, ECG, 2D echo and clotting profile with thrombophilia screening all of which yielded normal results.

With the temporal association of events in this previously healthy male, in the absence of other risk factors for arterial thrombosis, it was concluded that the brachial artery thrombosis was due to wasp sting.

### Discussion

Wasp bites commonly cause simple allergic reactions whereas systemic complications including anaphylaxis and arterial thrombosis are rare. Other systemic complications of wasp bite include myasthenia gravis, peripheral neuritis, Guillain Barre Syndrome, diffuse alveolar haemorrhage, acute renal failure, thrombocytopenic purpura and vasculitis [4,8]. Wasp venom contains mainly three categories of compounds, a) high molecular weight proteins including phospholipases, hyaluronidase and antigen V, b) low-molecular-weight peptides including mastoparans, wasp kinin and chemotactic peptides and c) bioactive molecules including histamine, serotonin, catecholamines, acetylcholine and tyramine [2].

Large molecules often cause allergic reactions while smaller compounds in larger quantities lead to systemic reactions. Vasoactive substances cause vascular spasm, vascular inflammation and thrombosis [2].

The exact pathophysiology of wasp venom induced arterial thrombosis is yet to be described. It may be multifactorial. There had been several case reports where myocardial infarction was attributed to hypersensitivity, vasospasm or vascular inflammation following wasp bite [3,4,9,10]. Similarly stroke, either due to hypotension following anaphylaxis or direct vascular toxicity, has been reported [6,11,12]. Leukotrienes and thromboxane in venom cause platelet aggregation and thrombosis whereas phospholipases trigger an IgE mediated reaction

cascade leading to mast cell activation and the synthesis of number of inflammatory mediators [6]. The direct toxic effect of wasp venom compounds and vascular inflammation may also play a role. Vasospasm and blood cell aggregation followed by thrombosis is another possible mechanism. Although adrenaline is a possible culprit for vasospasm, vasospasm is unlikely to be the cause for thrombosis in the brachial artery which is a large artery. It is most likely that thrombosis was the result of the combined effect of vascular inflammation and platelet aggregation due to wasp venom.

## Conclusion

Physicians encounter a large number of wasp bites in the general medical wards. Although rare, vascular thrombosis is an important clinical outcome of wasp stings as the disability caused by such complications are severe and could have long term effects on the quality of life of the patient. Prompt investigation and management should be implemented without delay in such a clinical scenario.

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