

A Shocking Diagnosis of Thromboangiitis Obliterans

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INTRODUCTION

- In the United States, electrical injury leads to approximately **1,000 deaths and 30,000 nonfatal shock incidents** yearly.
- Although occurrence of symptomatic arterial complications is well documented after high voltage injuries, they are only a few published cases associating arterial complication with low voltage electrical injuries.
- The following case highlights how **thromboangiitis obliterans** was revealed in a patient's left hand after it was affected by electrical shock injury while his non-shocked hand exhibited only subclinical disease.

CASE PRESENTATION

- 71-year-old with COPD and a 55-pack year smoking history who presented for the clinic one day after experiencing a low-voltage electrical shock with **new onset duskiness** of his **left third and fifth fingertips**.
- The patient progressively developed **pins-and-needles and cold sensation, and discoloration of said fingertips** over 24-hours.
- **The right hand** was completely **asymptomatic** with no discoloration.
- **Bilateral upper extremity arterial dopplers** revealed **digital ischemia** of the **right 4th fingertip** and the **left 3rd and 5th fingertips**.
- The Patient was diagnosed with **thromboangiitis obliterans** and conservatively treated with tobacco cessation resulting in **resolution of symptoms**.

DISCUSSION

- **Nerves** have **low tissue resistance** thus highly conductive and prone to electrical injury.
- **Vascular injury** may lead to **coagulation necrosis**, causing tissue ischemia surrounding the vessel.
- Our patient had **evidence of subacute disease** in his uninjured hand but developed **clinically visible disease in his shocked hand** within 24-hours of injury, we speculate that the **electrical shock exacerbated a subclinical case** of thromboangiitis obliterans.
- Although non-confirmatory, this case strongly suggests **low-voltage electrical injuries** may be **prothrombotic** in the setting of **preexisting vascular disease**. If proven in a laboratory model, the finding would help to elucidate the reason why a **hypercoagulable state is frequently associated with medical devices that deliver low-voltage electricity**.

RESULTS

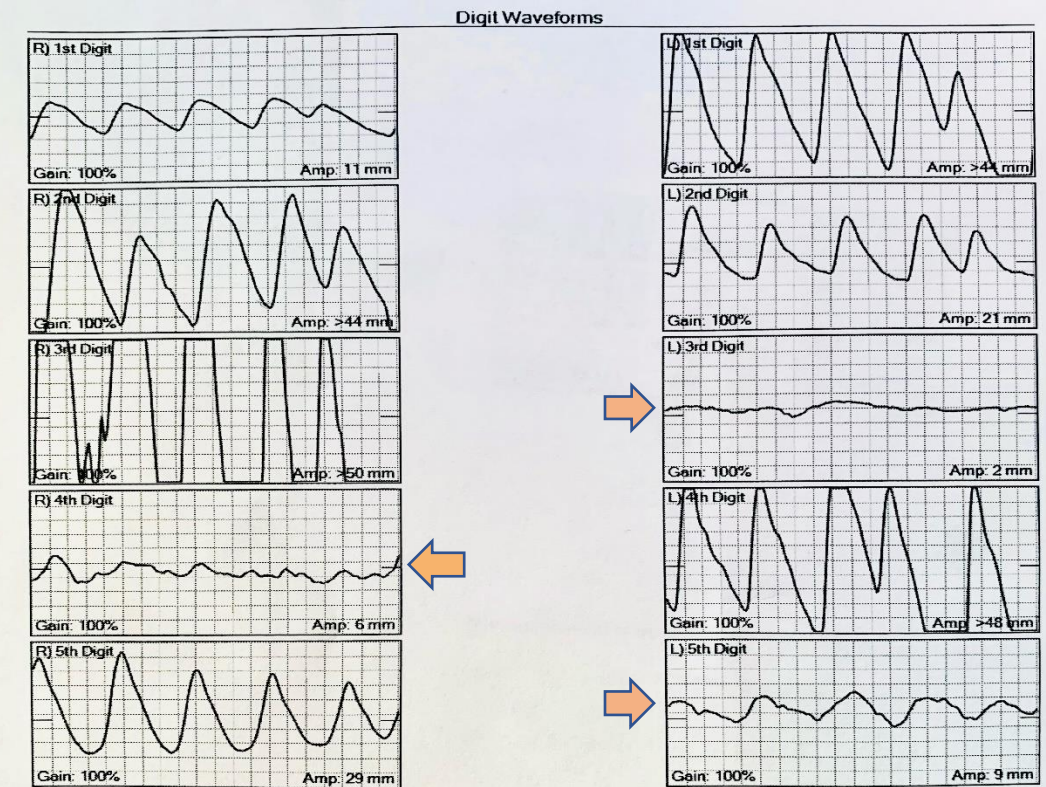


FIGURE 1

Doppler waveform of the upper extremities. Low amplitudes are seen in the Right 4th digit, Left 3rd and 5th digits as indicated by the arrows.



PICTURE A: patient's left normal hand 6 months after smoking cessation

PICTURE B: patient's left hand 4 days after electric injury

FIGURE 2

FIGURE 2: Picture B shows patient's left hand days after electric shock injury and picture A shows patient's left hand 6 months after injury and smoking cessation