Case 14416

Hypothemar Hammer Syndrome
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Section: Cardiovascular
Area of Interest: Musculoskeletal bone Cardiovascular system
Procedure: Diagnostic procedure
Technique: Ultrasound-Colour Doppler
Technique: Ultrasound
Special Focus: Pathology Embolism / Thrombosis
Case Type: Clinical Cases
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Patient: 36 years, male

Clinical History:

A 36-year-old policeman presented to a hand surgeon with a 2-month history of left hand pain in the volar hypothenar area, sometimes radiating into the little finger. No history of direct trauma.

Imaging Findings:

A hand radiograph showed no fracture or dislocation, no focal osseous lesion was seen.

A hand ultrasound showed no flow in the left ulnar artery, distal to the Guyons canal. The left ulnar artery at this site is enlarged and showed a heterogeneous echo-texture thrombus, completely occluding the lumen. The thrombus was seen extending into the fourth digit arteries supplying the fourth finger in the palmar aspect. No aneurysmal dilatation of the ulnar artery. Ulnar nerve appeared normal. No soft tissue abnormality was seen.

Discussion:

Hypothemar Hammer Syndrome (HHS) is a rare posttraumatic occlusive disease of the terminal portion of the ulnar artery which results in digital ischemia and Raynaud’s symptoms. It is predominantly found in men with a mean age of 40 years [1], involving the dominant hand and in occupational setting where the hypothemar portion of the hands are involved in repetitive trauma [2].

The pathogenesis of the HHS is related to the anatomic configuration of Guyon’s canal; the ulnar artery and nerve branches pass over the hook of the hamate with limited protection from palmaris brevis muscle and a small amount of subcutaneous fat and skin. Mechanical trauma to this region pins the ulnar artery against the bony hook of hamate like a hammer striking an anvil. Arterial wall damage may lead to spasm or thrombosis after an intimal injury, or aneurysm after injury to the media [3, 4].

The clinical presentation can range from no symptoms to digital gangrene [5]. Patients may complain of digit pain with paresthesia, intolerance to cold, Raynaud syndrome, ischemia of the fingers and a tender mass in the hypothemar eminence [6].

Ultrasound is a safe, non-invasive diagnostic modality to evaluate the superficial segment of the ulnar artery near
the hamate with the hook of the hamate acting as a reliable landmark [7]. Angiography is the gold standard for establishing the diagnosis of HHS. Angiography is important to assess for other diseases, as it directly demonstrates the vascular abnormality and provides a vascular map for surgical intervention [8]. Delayed filling, occlusion, tortuosity with a typical corkscrew appearance, and aneurysm formation of the distal ulnar artery segment are pathognomonic.

Multidetector computed tomography angiography and magnetic resonance image angiography can be used to utilize bone abnormalities such as hamate fracture, the relationship of the ulnar artery to the hamate, ulnar artery trauma, and can demonstrate accessory muscles or ossicles near the ulnar artery that increase the risk for traumatic lesions [9].

The therapeutic strategy for treatment of HHS depends on the acuteness of the symptoms and severity of the ischemia. Non surgical treatment will be sufficient in the sitting of vasospasm with good collateral circulation. Surgical treatment will be provided in case of significant vascular damage and poor collateral circulation.

Initial non-invasive, safe imaging modality with supporting clinical history can help in reaching the diagnosis and manage patients accordingly.

Our patient was managed conservatively by being advised to avoid repetitive trauma to the hand.

**Differential Diagnosis List:** Hypothenar hammer syndrome, Raynaud disease, Vasculitis

**Final Diagnosis:** Hypothenar hammer syndrome

**References:**


**Description:** Left hand radiograph shows normal radiograph. 

**Origin:** Radiology department, SKMC, Abu Dhabi, UAE.
Description: Longitudinal Doppler ultrasound demonstrate thrombus of ulnar artery distal to the Guyon's canal. The thrombosed wall appears thickened. Origin: Radiology department. SKMC. Abu Dhabi. UAE
**Figure 3**

**a**

*Description:* Transverse Doppler ultrasound demonstrates non compressible ulnar artery distal to Guyon's canal and its 4th digit branch, consistent with thrombus formation. *Origin:* Radiology department. SKMC Abu Dhabi UAE

**b**

*Description:* Transverse Doppler ultrasound demonstrates non compressible ulnar artery distal to Guyon's canal and its 4th digit branch, consistent with thrombus formation. *Origin:* Radiology department. SKMC Abu Dhabi UAE