"Is this just a cellulitis?"

DALHOUSIE UNIVERSITY Inspiring Minds

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Billy's case

Billy, 38, presents to the ED. He is a right-handed electrician who crushed his right fifth finger under a ladder 4 days earlier. He was seen in the ED yesterday and put on antibiotics but the pain has been getting worse and his hand "feels tight." Also, he now has tingling in all digits, including his thumb.

History

Billy has a past medical history of depression for which he takes amitriptyline. He has no drug allergies. His immunizations, including tetanus, are up to date. He is neither diabetic nor a smoker.

Examination

On examination, his vitals are stable. His hand and fingers are swollen and erythematous (Figure 1).

His third and fifth digits:
- Erythematous, swollen but neurovascularly intact
- Laceration on the volar aspect of the fifth proximal phalanx down to the tendon sheath
- Held in flexion at rest
- Painful with passive extension
- Swollen (fusiform) with point tenderness over the flexor sheath

Billy's right hand:
- Erythema and fluctuance over the volar wrist
- Decreased extension and flexion secondary to pain of the wrist and fingers which radiates up to the elbow

For more on Billy, turn to page 2.

Questions & Answers

1. What is the differential diagnosis?

The differential diagnosis for Billy's case is:
- Cellulitis
- Flexor tenosynovitis (FT)

2. What is FT?

FT is a pathophysiologic state causing a disruption of normal flexor tendon function in the hand. A variety of etiologies are responsible for this process but most acute cases of FT are the result of infection. However, FT can also be secondary to acute or chronic inflammation due to:
- diabetes,
- overuse, or
- arthritis.

The pathophysiology of FT is that of a closed-space infection. The sheaths of the index, middle and ring fingers run from the metacarpal neck at the level of the first annular pulley proximally to the insertion of the flexor digitorum profundus distally (Figure 2).

The small finger and thumb sheaths are continuous with the ulnar and radial bursae in the palm, respectively.

Because the radial and ulnar bursae are contiguous, infections in either the small finger or thumb are at risk of communicating and potentially progressing to the carpal tunnel.

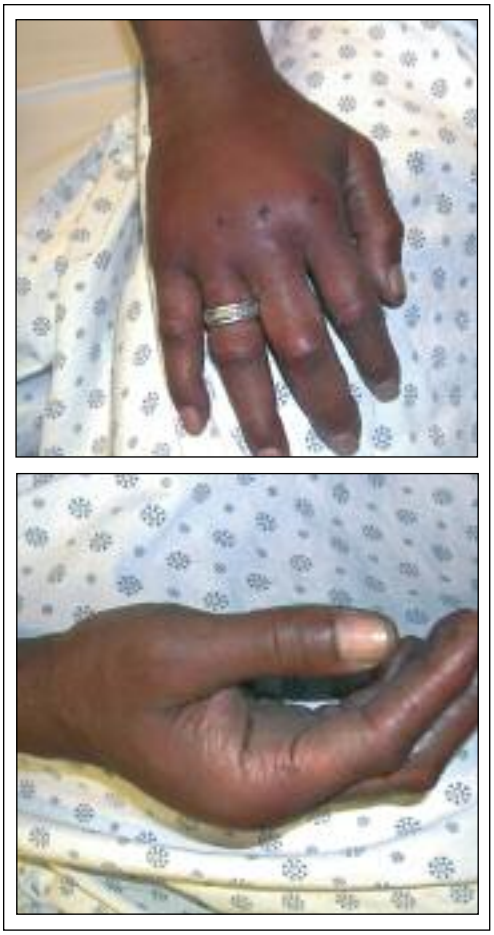

Figure 1. Images of Billy's hand upon presentation to the ED.

Infection in any of the fingers may spread proximally into the wrist and forearm (Parona's space). The initial infection may also move into:

- the fascial spaces within the hand,
- adjacent osseous structures,
- synovial joint spaces, or it may
- erode through the layers of the skin and exit superficially.

3. *What are the important signs and symptoms to assess in a patient with a possible FT?*

To diagnose FT, assess the patient for Kanavel's four signs:

- Intense pain accompanies any attempt to extend a partly flexed finger (which is the earliest and most important sign)
- Flexion posture (for comfort)
- Uniform swelling of the entire finger
- Percussion tenderness along the course of the tendon sheath

Billy's case cont'd...

Billy was admitted to the hospital and underwent emergent incision and drainage with packing of the tendon space. He gradually improved on IV antibiotics and required a prolonged course of physiotherapy.

He was left with a minor deficit in the ability to extend his right fifth finger.

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Figure 2. Diagram showing the flexor compartments of the hand.

4. What is the initial management?

Initial management of FT involves:

- X-rays of the right hand to ensure there is no open fracture (Figure 3)
- Not suturing the wound closed
- Early IV antibiotics (IV cefazolin 1 gm to 2 gm q.i.d./t.i.d.) should be initiated
- Splinting the finger into a "safe position"
- Elevation (initially) until the infection is under control
- Plastic surgery consult for admission to hospital or OR for early exploration of the hand

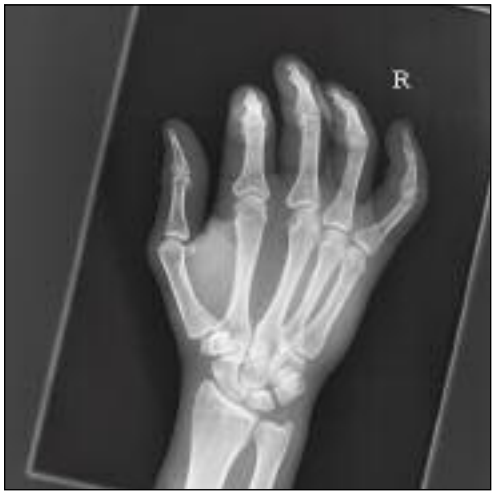

Figure 3. Normal hand x-ray.

5. Remember...

Always have a high index of suspicion and, if FT is suspected, consider early surgical consultation. Begin treating the patient with IV antibiotics and appropriate analgesia. Splint the hand into a safe position and make certain that it remains elevated as much as possible. If the patient is not seen by a surgical service in the ED, ensure they have early out-patient follow-up or bring them back to the ED within 24 hours for reassessment. Dx

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