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Visual Diagnosis in Emergency Medicine

FLEXOR TENOSYNOVITIS USING ULTRASOUND

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CASE REPORT

A 59-year-old male with a history of silicosis and methicillin-resistant *Staphylococcus aureus* soft-tissue infections of the hand presented to the emergency department for 3 days of left finger swelling, erythema, and severe pain upon movement. He initially denied history of puncture, wounds, or trauma to the affected area, but upon further questioning did recall recent superficial wound to the left hand while working with a car engine. Examination revealed a finger in flexed position, erythema spreading to the palm, tenderness along the flexor tendon, and joint ecchymosis (Figure 1). Pertinent laboratory studies included leukocytosis (white blood cells 13.6 K/μl), C-reactive protein 33.9 mg/L, and lactate of 2.14 mmol/L. Plain films of the hand demonstrated no fracture or dislocation but did demonstrate soft-tissue swelling of the left third finger. Further evaluation with bedside ultrasonography performed revealed peritendinous effusion in both longitudinal (Figure 2) and

Figure 1. Palmar view of hand demonstrating erythema, finger flexion, and ecchymosis of the proximal interphalangeal joint.

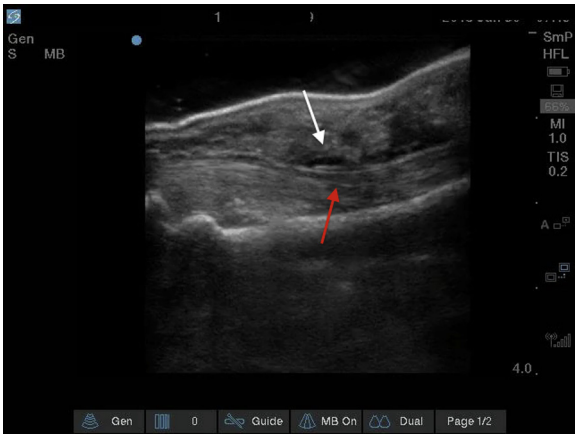

Figure 2. Longitudinal linear probe view demonstrating peritendinous effusion (white arrow) above the underlying tendon sheath (red arrow).

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Figure 3. Transverse linear probe view with peritendinous effusion (white arrow) surrounding the deep tendon.

transverse planes (Figure 3) concerning for tenosynovitis. The patient was placed on broad-spectrum antibiotics with vancomycin and zosyn in addition to emergent orthopedic consultation.

DISCUSSION

Flexor Tenosynovitis of Left Upper-Extremity Third Digit

This orthopedic emergency is classically diagnosed with the Kanavel signs: fusiform digit swelling, tenderness along the flexor tendon sheath, semi-flexed digit, and pain with passive extension (1,2). Ultrasonographic findings of flexor tenosynovitis include peritendinous effusion and thickened synovial sheath, which have been shown to have a sensitivity of 94%, specificity of 74%, and negative predictive value of 96.7% (3). Treatment consists of emergent orthopedic consultation, antibiotic therapy, and possible surgical debridement, as delay in therapy can lead to boutonniere deformity, deep space infections, adhesions, and amputation (4).

The patient eventually became febrile to 40.1°C (104.1°F) with tachycardia. Surgical debridement revealed murky serous fluid along the flexor tendon sheath from the distal phalanx to the metacarpophalangeal joint with a postoperative diagnosis of flexor tenosynovitis and septic arthritis. Wound cultures unfortunately did not yield a causative organism; however, i.v. antibiotics were initiated 23 h before operative intervention. Joint aspirate culture sensitivities have been shown to drop significantly (79% vs. 28%; $p < .006$) once antibiotics have been initiated (5). The early diagnosis of flexor tenosynovitis can be difficult, as patients rarely present with the classic Kanavel signs. As demonstrated in this case, ultrasonography can assist in identifying early soft-tissue and tendinous changes of the flexor tendon mechanism, leading to earlier initiation of antimicrobial therapy and surgical consultation.

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