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A piece of wood in the hand diagnosed by ultrasonography

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A piece of wood in the hand of an 11-year-old girl was not visible on radiographs, but was diagnosed by ultrasonography. Ultrasonography is useful for disclosing radiographically silent foreign bodies.

The few reports on ultrasonography for detecting foreign bodies have mainly dealt with radiopaque objects with little mention of the radiographically undetectable foreign bodies (Fornage and Schernberg 1986, 1987, Gooding et al. 1987). Experiments have proved the usefulness of ultrasonography (Gooding et al. 1987, Suramo and Pamilo 1986).

We present a case of a foreign body in the hand not visible on radiographs in which the diagnosis was established by ultrasonography.

Case report

An 11-year-old girl suffered a puncture wound to the first web space of the left hand when playing on a wooden slide. She was initially treated at a local emergency room where the 1-cm puncture wound was debrided and explored. No foreign body was found, and radiographs failed to show any foreign body. Two days later, she returned complaining of increased swelling and pain. She was referred to another hospital and admitted to the pediatric service for treatment with intravenous antibiotics. The admitting diagnosis was cellulitis. Repeat radiographs did not reveal any foreign body.

The pain and swelling improved, but did not disappear completely. Examination of the hand 5 days after the injury revealed moderate swelling and tenderness of the first web space with firmness overlying the thenar musculature. There was no evidence of a tendon sheath infection. An ultrasonographic examination (Acuson 128, Mountain View, CA) of the web space region demonstrated an echogenic density in the thenar eminence measuring 3.5 cm in length. Computed tomography demonstrated a low attenuation mass in the thenar region. Exploration of the first web space revealed a 3.5×1.0×0.5-cm piece of wood adjacent to the musculature of the thenar eminence (Figure 1). After debridement and adequate drainage, the wound healed without complication.

Discussion

Anderson et al. (1982) reported that of 200 consecutive foreign bodies in the hand, radiographs visualized all the metal objects, almost all the glass fragments, but only 15 percent of the wood objects.

Computed tomography can accurately demonstrate the presence and location of most roentgenographically silent foreign bodies, as shown in our case, but this method requires radiation and is expensive.

Ultrasound detects different acoustical impedance between substances and is not dependent on x-ray beam attenuation. Most foreign bodies can therefore be detected, and ultrasonography offers the advantages of low cost and no irradiation. The results of ultrasonographic examination can, however, be limited by the experience of the operator. Likewise, the result of surgery is limited by the surgeon!

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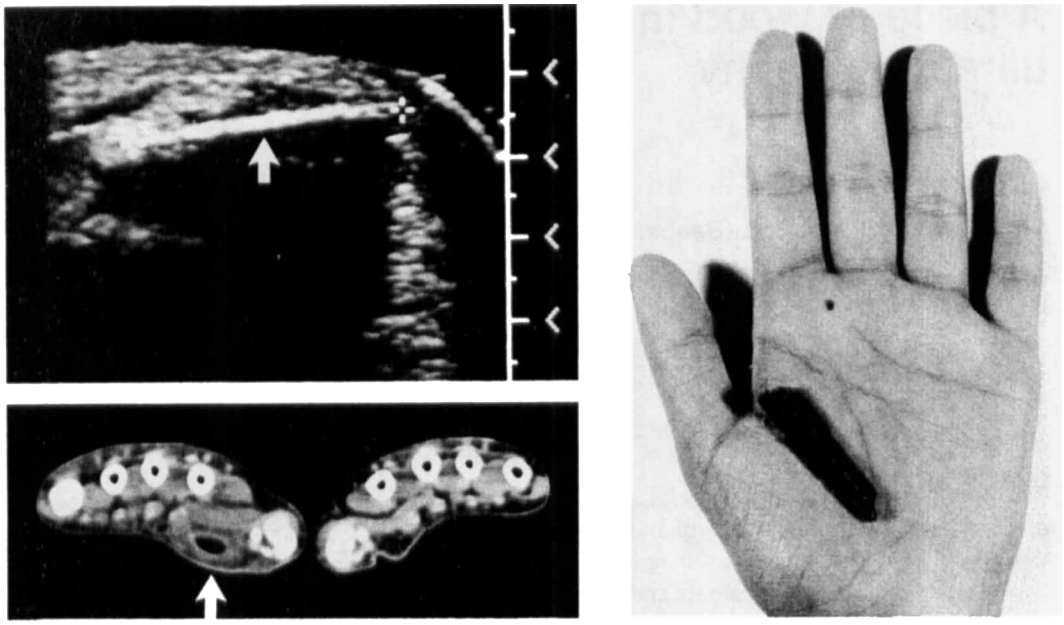

A B

Figure 1. An 11-year-old girl with a large piece of wood in the first web space of the left hand.
A. Ultrasonography 5 days after the injury showed an echogenic density measuring 3.5 cm (arrow), suggesting the presence of a foreign body. CT demonstrated a low attenuation mass in the thenar region (arrow).
B. The piece of wood overlying the position where it was found at exploration.

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