

LETTER TO EDITOR

Soft Tissue Non-Opaque Foreign Body: Ultrasonographic Findings

Dear Editor,

Since foreign bodies (FB) retained after penetrating trauma may cause severe infection or inflammatory reaction, detection and removal is necessary.¹ Radiolucent foreign bodies such as wood often remain undiscovered;² therefore, sonography plays an important role in the evaluation of these cases.³ Forty-seven patients were referred for ultrasonographic (US) examination because of the possible retention of non-opaque soft tissue foreign bodies in the lower or upper extremities during a three-year period (from January 2006 to January 2009). We detected and localized the foreign bodies in 45 of the 47 patients by ultrasonography. Then the sensitivity and specificity of sonography in the diagnosis of soft tissue foreign bodies was evaluated as 95.7% and 100%, respectively.

Sonography revealed the foreign bodies as hyperechoic objects with or without posterior acoustic shadowing in all 45 patients (Figs. 1 & 2).

Among 21 patients with wooden foreign bodies, posterior acoustic shadowing was detected in 15 cases of wooden objects and rose thorns. We detected posterior acoustic shadowing in 15 patients of 18 cases with broken glass objects, and the posterior comet tail sign was detected in two cases. In all the detected fish bones (six patients), posterior acoustic shadowing was

evident.

Conventional radiographs should be obtained to rule out the presence of radio-opaque foreign objects. Plain radiographs of wooden FB are negative in 86% of such patients.⁴ In these patients, sonography is the modality of choice for identification of such radiolucent FBs. Surgical dissection is facilitated by accurate knowledge of the location of the FB related to muscle, tendons and vessels.

We detected the posterior acoustic shadowing in 15 out of 21 wooden objects, and similar to this, Gilberts et al.⁵ demonstrated posterior acoustic shadowing in only 11 of 17 cases of wooden FBs, perhaps because of orientation of the FB in relation to the sound beam or because of the chronicity of the retained FB. Retained wooden FB absorbs fluid, which alters its imaging characteristics.¹

We detected the posterior comet tail sign in only two patients out of 18 patients with broken glass objects in the soft tissue.

We think that all the foreign bodies were seen during ultrasonographic examination as echogenic objects and most of them may show posterior acoustic shadowing in ultrasonography.

The mentioned results demonstrate the effectiveness of US in the detection of radiolucent FB. In conclusion,

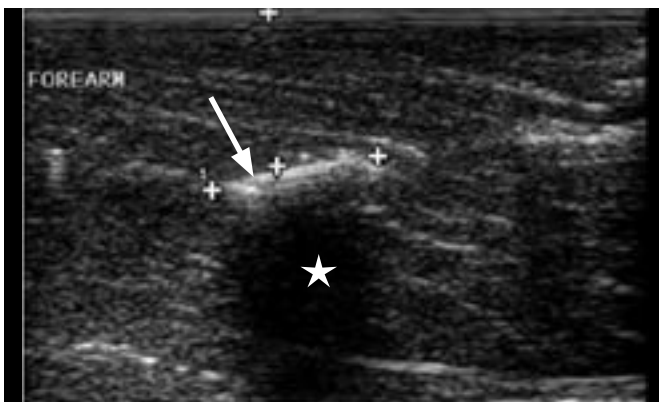


Fig. 1. Longitudinal sonogram shows a hyperechoic 2 cm long wooden foreign body (long arrow) with posterior acoustic shadowing (satellites) in the forearm of a 21-year-old man

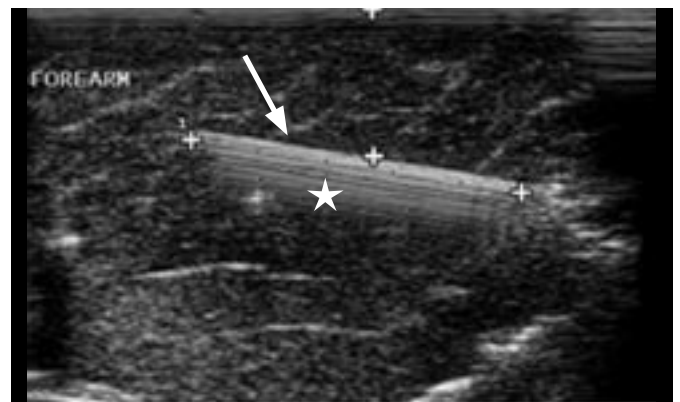


Fig. 2. Longitudinal sonogram shows a hyperechoic 5 cm long broken glass foreign body (long arrow) with posterior comet tail (satellites) in the forearm of a 21-year-old man.

sonography has a definite advantage over conventional X-ray in the detection and localization of FB embedded in the soft tissue. Therefore, ultrasonography may be used effectively to locate radiolucent FB with high certainty and should be considered for patients suspected of having a FB in the setting of negative X-rays. US can avoid misdiagnosis and may be used as a diagnostic modality in the emergency room.

Author:

Afshin Mohammadi MD

Assistant Professor, Department of Radiology, Imam Khomeini Hospital, Modaress St., Urmia, Iran.

Tel: +98441 3447 113

Fax: +98441 3469 935

Email: mohamadi_afshin@yahoo.com

References

1. Mohammadi A, Kodabakhsh M. Foreign body: a sewing needle migrating from the gastrointestinal tract to the liver. *Iran J Radiol* 2009;6(4):199-201.
2. Graham DD Jr. Ultrasound in the emergency department: detection of wooden foreign bodies in the soft tissues. *J Emerg Med* 2002 Jan;22(1):75-9.
3. Anderson MA, Newmeyer WL 3rd, Kilgore ES Jr. Diagnosis and treatment of retained foreign bodies in the hand. *Am J Surg* 1982;144(1):63-7.
4. Peterson JJ, Bancroft LW, Kransdorf MJ. Wooden foreign bodies: imaging appearance. *AJR Am J Roentgenol* 2002 Mar;178(3):557-62.
5. Gilbert FJ, Campbell RS, Bayliss AP. The role of ultrasound in detection of non-radiopaque foreign bodies. *ClinRadiol* 1990 Feb;41(2):109-12.