

Retained wooden foreign body in lung parenchyma: a case report

Akciğer parenkiminde kalan ahşap yabancı cisim: Olgu sunumu

Afshin MOHAMADI, Maryam KHODABAKHSH

Despite advances in imaging techniques, the detection of retained wooden foreign bodies remains a difficult and challenging task. The detection of wood is especially important because it may serve as a nidus for superimposed infection. The initial examination may mimic malignancy. We report a rare case of retained wooden foreign body in the lung parenchyma that was found on chest X-ray and computerized tomography as a thick wall cavity. Surgical resection was performed and a wooden particle was revealed. Review of the literature shows that presence of wooden foreign bodies in the lung parenchyma is quite rare and may present with a wide variety of densities. We conclude that foreign body should be considered in the differential diagnosis of unusual lung opacity, and it must be resected on an urgent basis due to the risk of recurrent infection.

Key Words: Foreign body; lung; wood.

Görüntüleme tekniklerindeki gelişmelere rağmen, vücuttaki ahşap yabancı cisimlerin tespiti zordur. Olayın üzerine eklenmiş enfeksiyonda mikropların geliştiği yer olarak ahşap cismin saptanması özellikle önemlidir. İlk incelemede malignite taklit edilebilir. Bu yazıda, röntgen ve bilgisayarlı tomografi incelemelerinde kalın duvarlı bir kavite olarak saptanan bir ahşap yabancı cismin bulunduğu seyrek görülen bir olgu sunuldu. Olguda cerrahi rezeksiyon yapıldı ve ahşap bir parçacık çıkarıldı. Literatür verileri, akciğer parenkiminde yer alan ahşap yabancı cisimlerin oldukça nadir olduğunu ve farklı dansite çeşitliliği ile görüntü verebileceğini göstermektedir. Yabancı cisimler, sıradışı akciğer opasitelerinin ayırıcı tanısında göz önünde bulundurulmalıdır ve tekrarlayan enfeksiyon riski nedeniyle rezeke edilmelidir.

Anahtar Sözcükler: Yabancı cisim; akciğer; ahşap.

Foreign bodies can penetrate soft tissues through open wounds and lacerations during trauma or by direct impact.^[1] Such wounds harboring foreign bodies may appear to be deceptively minor and may not be accompanied by any major symptoms. However, if these foreign bodies are left undetected in the tissues they can result in serious sequelae days, months or even years after the initial trauma. Although wooden foreign body is very common in soft tissue and orbital traumas, pulmonary parenchymal foreign bodies are a rare cause of pulmonary disease and are a rare differential diagnosis of lung opacity on chest radiographs. Only a limited number of case reports about retained pulmonary foreign body have been published in medical journals thus far. The purpose of reporting this unusual case of recurrent pneumonia and hemoptysis caused by a retained wooden foreign body is to

highlight the difficulties in detection of foreign bodies and to discuss the different imaging appearances.

We report a rare case of a pulmonary parenchymal wooden foreign body diagnosed eight years after the chest trauma. In our opinion, any discovered wooden foreign body must be resected as soon as possible.

CASE REPORT

A 32-year-old woman from a rural area presented to our hospital with shortness of breath, cough, purulent sputum, and hemoptysis. She had a history of recurrent respiratory tract infections that were resolved with antibiotics. She had a remote history of chest trauma, after falling from a horse eight years earlier. She had suddenly experienced severe chest discomfort and bleeding, but was not referred to the hospital.

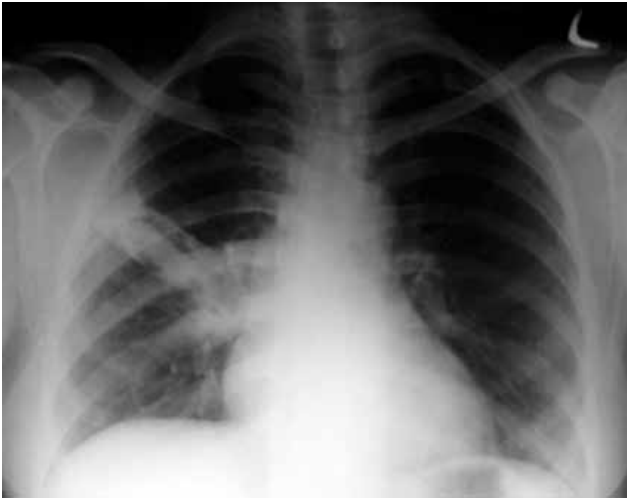


Fig. 1. Standard X-ray showing thick wall cavity containing tubular opacity in the right hemithorax.

Physical examination at the current admission showed clubbing of finger and pulmonary crackle on the right upper hemithorax. A scar was found on the lateral aspect of right chest wall. She had no previous chest X-ray (CXR) for comparison. We evaluated the patient for tuberculosis and Wegener's granulomatosis and results were negative.

A chest radiograph was obtained and showed pulmonary thick wall cavity with surrounding consolidation and a tubular density within the cavity resembling a fungus ball (Fig. 1).

A computerized tomography (CT) scan of the chest obtained after admission showed pulmonary thick wall cavity with pleural thickening and pulmonary consolidation in the adjacent lung parenchyma, which contained a dense tubular opacity. This was interpreted as a calcified old hematoma in a post-traumatic pulmonary pseudocyst (TPPC) (Fig. 2a, 2b).

Because the patient showed no clinical improvement after antibiotic therapy and exacerbation of hemoptysis after one-week treatment, a segmentectomy and wedge resection of the posterior segment of the right upper lobe was performed. The excised specimen contained a tubular-shape piece of wood 7×2×1 cm (Fig. 3), which was enveloped in granulation tissue and fibrosis.

DISCUSSION

Although aspiration of a wooden foreign body into the tracheobronchial tree is not uncommon,^[2] pulmonary parenchymal wooden foreign bodies are quite rare. Most parenchymal wooden foreign bodies are a result of trauma, and the diagnosis is made on the basis of the history and physical examination at the time of presentation.^[1]

Despite advances in imaging techniques, the detec-

tion of retained wooden foreign bodies remains a difficult and challenging task.^[3] The detection of wood is especially important because it may serve as an unrecognized nidus for infection. Wood, with its porous consistency and organic nature, is an excellent medium for microorganisms. The retained wooden foreign body may result in abscess and fistula formation.^[4] In this patient, our evaluation for tuberculosis and Wegener's granulomatosis was negative. Our patient was unaware of her pulmonary wooden foreign body until surgical resection for the pulmonary pathology eight years after the trauma. The injury most likely occurred while the patient accelerated down a slope lying supine on the ground and the apex of a wooden fragment impaled her chest. In patients with recurrent unifocal pneumonia, an underlying problem such as a foreign body should be considered. Wooden fragments

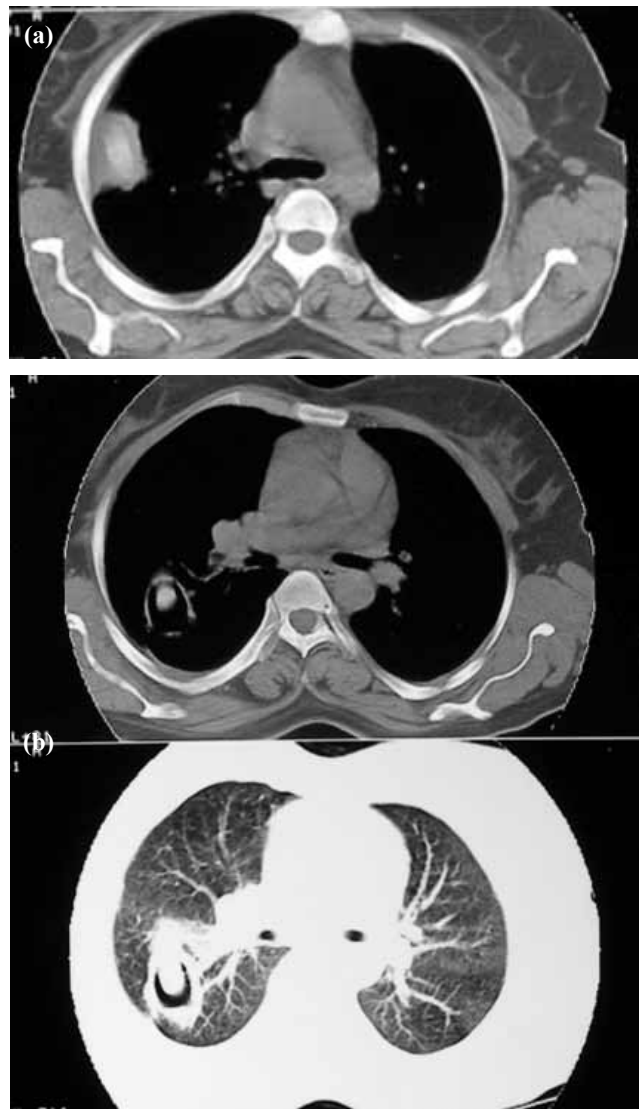


Fig. 2. CT scan demonstrating (a) dense tubular opacity with pleural thickening, and (b) thick wall cavity containing tubular opacity.



Fig. 3. Segment of wood revealed in the excised specimen.

account for the largest proportion of retained foreign bodies after trauma to the human body.^[5]

Radiographs have been reported to revealed wooden foreign body in only 15% of patients.^[5] In our patient, the CXR retrospectively showed the foreign body in the pulmonary cavity. Although the diagnosis was not made preoperatively in this patient, the CT scan showed that the abnormality had square margins and tubular appearance, which in retrospect suggests a foreign body.

CT has been shown to be useful in the evaluation of suspected wooden matter. The attenuation of a retained wooden foreign body varies in relation to the content of air and fluid in the interstices of the wood. Within approximately one week, the wood absorbs blood products and exudates and increases its attenuation.^[6] Dry wood, with a high air content, has been reported to mimic a gas collection.^[7]

Bodne et al.^[8] cited three cases of wooden foreign bodies with various attenuation values, ranging from close to air in acute cases to high (near to calcium) in chronic cases. In our case, the attenuation value of

the wood particle was 190 HU, which is a high density near to calcification. TPPC is a rare complication, sometimes encountered after thoracic trauma. In our patient, we found that retained wooden foreign body can cause formation of TPPC. In our opinion, pulmonary wooden foreign bodies must be operated as soon as possible because they can serve as a nidus for recurrent infection.

REFERENCES

1. Al-Zahrani S, Kremlı M, Saadeddin M, Ikram A, Takroni T, Zeidan H. Ultrasonography detection of radiolucent foreign bodies in soft tissue compared to computed tomography scan. *Ann Saudi Med* 1995;15:110-2.
2. Thomas V, Chandy G, Rolston DD. Foreign body in the lung for 45 years without symptoms. *Br J Dis Chest* 1986;80:292-4.
3. Peterson JJ, Bancroft LW, Kransdorf MJ. Wooden foreign bodies: imaging appearance. *AJR Am J Roentgenol* 2002;178:557-62.
4. Ochiai H, Yamakawa Y, Fukushima T, Yamada H. Neuroimaging of a wooden foreign body retained for 5 months in the temporalis muscle following penetrating trauma with a chopstick-case report. *Neurol Med Chir (Tokyo)* 1999;39:744-7.
5. Anderson MA, Newmeyer WL 3rd, Kilgore ES Jr. Diagnosis and treatment of retained foreign bodies in the hand. *Am J Surg* 1982;144:63-7.
6. Ginsberg LE, Williams DW 3rd, Mathews VP. CT in penetrating craniocervical injury by wooden foreign bodies: reminder of a pitfall. *AJNR Am J Neuroradiol* 1993;14:892-5.
7. Ho VT, McGuckin JF Jr, Smergel EM. Intraorbital wooden foreign body: CT and MR appearance. *AJNR Am J Neuroradiol* 1996;17:134-6.
8. Bodne D, Quinn SF, Cochran CF. Imaging foreign glass and wooden bodies of the extremities with CT and MR. *J Comput Assist Tomogr* 1988;12:608-11.