Transcutaneous migration of a foreign body (needle) into the hilum of the lung of an infant

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An intrapulmonary foreign body is rarely the result of transcutaneous migration. Foreign bodies in the lung are usually the result of inhalation through the airway passages. They rarely result from migration from adjacent organs or cavities. The usual age is a toddler; under one year of age is rare. Sharp objects pose special considerations and raise the suspicion of an unusual entrance.

Foreign bodies in the airway passages usually cause chronic nonspecific symptoms such as stubborn bronchitis, recurrent hemoptysis, or bronchiectasis. Complications depend on site, size, shape, nature and duration of the foreign body. The majority of aspirated foreign bodies in children are of vegetable origin, such as peanuts and melon seeds. All foreign bodies will cause symptoms and lead to complications, some of which may be fatal.

Case Report

B.M., a 10-month old female infant was admitted to our hospital because of urinary tract infection with a high temperature. The infant was known to have short bowel syndrome as a result of volvulus neonatorum, which developed in the neonatal period. Since then she had required frequent hospitalizations. On physical examination her body weight was 6.8 kg, temperature was 39.6°C (103°F) rectally, pulse 110/minute, and the respiratory rate was 20/minute. White blood cells were

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16/103/mm³, (4-10) hemoglobin 10.4 gm/dl, (12-16), and hematocrit 30.8% (37-47). Urine samples showed numerous white blood cells and culture grew *Escherichia coli*. The chest examination was normal with equal and normal breath sounds bilaterally. On routine chest x-ray, a needle was found incidentally (Figure 1). A chest x-ray one month earlier during a previous admission due to a febrile illness was normal. Blood work was within normal limits. There was no history of choking. The direction of the needle was horizontal and not in line with the tracheobronchial tree. The infant had no respiratory symptoms. Following treatment of her urinary tract infection, workup to find the origin of the needle was initiated. A CT scan confirmed the presence of the needle extending to the hilum of the right

Figure 1. Syringe needle (without the hub) migrated transcutaneously into the right lung, (A) Postero-anterior view (B) Lateral view (chest radiograph).

Figure 2. The radio-opaque shadow at the hilum of the right lung (CT scan).

lung (Figure 2). The needle was thought to be a syringe needle because of the beveled end seen on the plain chest x-ray, but it could not be determined whether there was a hub attached to it. The CT scan did not help in that matter. Bronchoscopy was performed. The needle was seen through the mucosa outside the lumen of the right main bronchus. The tracheobronchial tree was healthy without any sign of infection and esophagoscopy was normal.

A right posterolateral thoractomy was performed. The lung was adherent at one point to the chest wall at the subscapular region. On freeing the lung from the chest wall a tract was seen in the lung through which the needle was pushed back, and it was removed without any difficulty. At that time it was realized that the most likely site of entrance of the needle was the chest wall corresponding with the site of adherence of the lung to the chest wall. It was a syringe needle without the hub. The infant made an uneventful recovery. It was learned that a common practice among medial staff is to draw blood from small infants by removing the hub of the injection needle, puncture the vein and let blood drip directly into the chest tube. The loss of such a needle in the cot of these infants may be the cause of migration into body cavities.

Discussion

Foreign body aspiration is common in children two to three years of age. Commonly the foreign body is a peanut, while needles and sharp objects are quite rare.^{1,2} Foreign bodies in the lung are the result of inhalation through the airway passages, and transcutaneous or hematogenous migration from the esophagus.^{3,4} In a literature review, only three cases of intrapulmonary needles similar to this case have been reported in children.³ In one case the route of entrance was transcutaneous; it was complicated by an abscess formation and required lobectomy for removal.⁵ One was asymptomatic like this case; the route of entry was unknown and was removed by bronchoscopic extraction.⁶ Pins and needles in the airway passages may migrate into the periphery but usually are symptomatic.^{7,8} Complications that may arise due to intrapulmonary needles are abscess formation or pneumothorax.³ Symptoms are usually related to the duration of the foreign body, but the exact duration may not be known, much like this case. The normal chest x-ray one month earlier made it of a recent origin. The route of entry is difficult to determine. However, the direction of the needle, the findings during surgery, and the absence of any respiratory symptoms, supports the notion that the needle most probably migrated through the skin. Simple extraction was possible, probably due to the recent history of entrance and the small size of the lung of the infant. Intrapulmonary needles should always be removed even if they are asymptomatic because there is always the possibility of migration into a vessel and the development of pneumothorax or pyothorax.^{3,9}

The ideal method of removing the needle is simple extraction when possible. Occasionally, lobectomy or segmental resection might be necessary when abscess formation and fibroconnective proliferation has developed around the needle. Thoracoscopic removal of a needle causing pneumothorax has been reported recently.¹⁰ This case report demonstrates the rarity of similar cases, illustrates the wide spectrum of complications of foreign bodies, the difficulties encountered in management, and lessons learned as to the source and mode of entrance of the needle.

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