

Inhalation of a Foreign Body in a Child

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Received: 19 May 2022

Accepted: 05 Jul 2022

Published: 11 Jul 2022

J Short Name: COS

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Keywords:

Pencil; Penetration syndrome; Atelectasis; Rigid bronchoscopy

Citation:

Fakiri KE. Inhalation of a Foreign Body in a Child. Clin Surg. 2022; 7(12): 1-3

1. Abstract

Inhalation of foreign bodies is relatively common in pediatrics and can be life-threatening. We report the case of a 9-year-old child who has had chest pain for 15 days associated with fever. On examination, he was eupneic with the presence of a pleural effusion syndrome mimicking a pleuropneumopathy. A chest x-ray of the front showed a right basal opacity. Faced with the non-clinical improvement under antibiotic therapy, a resumption of the interrogation revealed the existence of a neglected penetration syndrome that dated back 20 days. A thoracic CT showed hyperdense linear formation, partially obstructive at the proximal part of the homolateral inferior lobar branch. A rigid bronchoscopy removed a piece of pencil located at the level of the hull. The trend was favourable. It is necessary to have in mind an inhalation of foreign body if a pleuropneumopathy that does not respond to the treatment.

2. Introduction

Inhalation of foreign bodies is relatively common in pediatrics and can lead to long-term sequelae such as repeated infections and bronchiectasis. Penetration syndrome is the key element of early diagnosis but it sometimes goes unnoticed. Usually, the foreign body is localized at the bronchial level with a predominance for the bronchus right strain. We report an unusual observation of inhalation of pencil tip after free and informed consent of parents in a boy in whom the diagnosis of pleuropneumonia has mimed.

3. Case Report

Patient aged 9 years without any particular pathological history

including no notion of tuberculosis contage known in the family. He presented for an acute chest pain installed for 15 days evolving in a context of alteration of the general condition made asthenia anorexia and weight loss not quantified. A fever of 39 ° C has been installed for 8 days. On examination, the patient was conscious, stable on the hemodynamic level, his conjunctivae were normocolored, weight = 30 kg (M), height = 135cm (M), he was febrile at 39 ° C, eupneic at 25 cycles / min, SaO₂ at 95% in the open air, FC at 106 bpm. Pleuropulmonary examination found a symmetrical chest with no signs of breathing struggle and dullness of the right hemifields associated with a decrease in vesicular murmurs and vocal vibrations to the right. Pleuropulmonary auscultation did not reveal crackling rales. A right fluid effusion syndrome has been evoked reminiscent of either pleurisy or a hydatid cyst. Chest X-ray showed a right basal water tone opacity erasing the culs de sac and the diaphragmatic dome without intercostal pinching not continuing with a bordering line at the top (Figure 1). A chest ultrasound showed a right pleural effusion of low abundance, anechogenic, without image of partitions. The count showed hyperleukocytosis at 24,050/mm³ predominantly polynuclear at 20,310/mm³, a CRP elevated to 299 mg/l the blood cultures were sterile. The patient was put on amoxicillin-clavulanic acid 80 mg/kg/d for 8 days without improvement. Faced with this development, the resumption of the interrogation revealed the existence of a penetration syndrome that dates back 20 days due to an accidental inhalation of a piece of pencil. A thoracic CT allowed the individualization of a hyperdense linear formation, partially obstructive, measuring 2.3 mm

of maximum thickness extended by 20 mm towards the proximal part of the homolateral lower lobar branch. Total atelectasis of the parenchyma of the right middle and lower lobe, site of bronchiectasis (Figure 2). An interventional bronchoscopy removed a piece of pencil sitting at the tracheal bifurcation after 30 days of penetration syndrome (Figure 3). The patient spent two days intubated pediatric intensive care unit ventilated sedated with good clinical and radiological progress (Figure 4).



Figure 1: Chest X-ray face showing opacity of water tone without bordering line or intercostal pinching



Figure 3: a 2 cm pencil tip removed by a rigid bronchoscopy

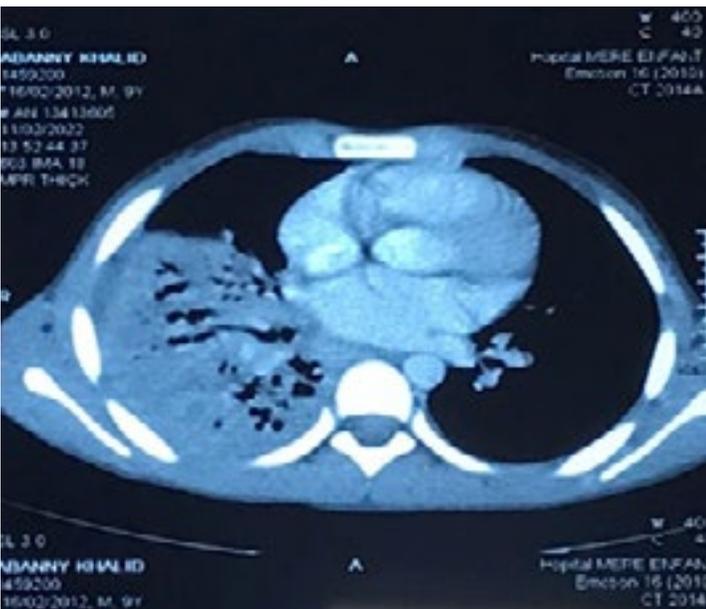


Figure 2: A thoracic CT shows a hyperdense linear formation, partially obstructive, measuring 2.3 mm of maximum thickness extended by 20 mm towards the proximal part of the homolateral lower lobar branch. Total atelectasis of the parenchyma of the right middle and lower lobe, site of bronchiectasis

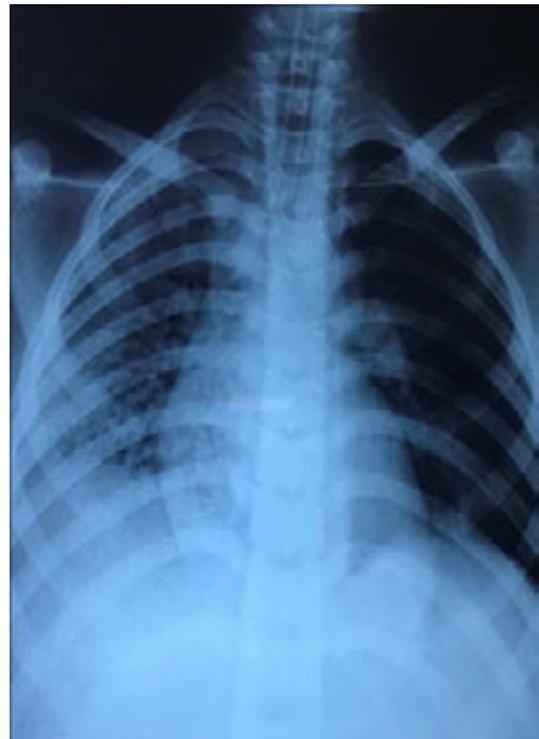


Figure 4: Control X-ray performed after extraction of the foreign body

4. Discussion

Foreign body inhalation affects the small child with a peak frequency below 3 years of age and a second peak between 10 and 11 years of age [1]. Deaths are not exceptional, as they affect one in 100,000 children per year in Europe [2]. Boys are more affected than girls because of the adventurous nature of the male sex [3]. Our patient was male. The foreign body is located in more than half of cases at the level of the bronchus right strain and preferably at the level of the intermediate trunk. In 40% of cases, it is located in the left bronchus strain and in about 5% of cases it stops in

the subglott or trachea [4]. In our case, it has become isolated at the level of the hull because of its rather large volume. The most encountered foreign bodies are dry oilseed foods inflatable balloons sarbacane projectiles and school supply. Indeed, the clinical signs are non-specific. It can be acute respiratory distress or broncho-pneumonitis [5]. Cough and respiratory gene are most often absent during bronchial immobilization, if they are associated with fever, they constitute the syndrome of stay. In the typical clinical presentation, physical examination shows a decrease in the mobility of a hemithorax associated with homolateral auscultatory silence and wheezing [6]. In our case, the clinical examination found an atelectasis that predated confusion with a fluid effusion syndrome in front of the existence of a submatity. This atelectasis could be due to the total obstruction of the bronchi by foreign-induced edema. Thus, we insist on the interest of thinking about an inhalation of a foreign body in front of any pleuropneumopathy that responds poorly to treatment. The time between the installation of signs and confirmation of diagnosis was 1 month. This delay in diagnosis was due to ignorance or error because the penetration syndrome was reported retrospectively. It seems that the causes of diagnostic delay beyond 3 days may be due to parental neglect, diagnostic error, normality of radiological images absence of atypical symptoms or signs, lack of management or false-negative bronchoscopy

The chest x-ray of the strict face with a snapshot in inhalation and exhalation helps to guide the diagnosis. It can show a very specific sign, it is air trapping responsible for emphysema on a cliché in exhalation, this testifies to the partial obstruction of the bronchial ducts that retain air at exhalation, it can show atelectasis or pneumopathies in the same territory.

However, a normal X-ray does not rule out the diagnosis of foreign body inhalation. The use of spiral computed tomography allows three-dimensional reconstructions and the individualization of distal or old foreign bodies [7].

In our observation, chest computed tomography showed the foreign body and its complication in bronchial dilation. The extraction is done under general anesthesia by rigid tube bronchoscopy, the patient has been put on corticosteroids and antibiotics, and the gesture requires perfect coordination between operator and anesthesiologist. If edema appears after extraction, the patient will be monitored in intensive care for at least 48 hours.

5. Conclusion

Inhalation of foreign bodies is an incident that can go unnoticed. It is necessary to think about it in front of any pneumonia that does not improve under treatment especially since there is atelectasis on the X-ray. Penetration syndrome may be missing if parents have not been witnesses. Prevention concerns both parents and staff in contact with the child at school.

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