Case Report

Foreign body in the right bronchus in an infant

Summary

In children under 2 years of age, foreign body aspiration is common, but sometimes there is no clinical presence that can determine or rule out the diagnosis. It presents with a sudden episode in a child known to be healthy and begins with symptoms of severe respiratory distress, even leading to a fatal event. This picture can go unnoticed by parents or caregivers. The purpose of presenting this case was to define the clinical characteristics of foreign body aspiration in the pediatric population and to assess the importance of the delay in its diagnosis and treatment. Clinical case of a 1-8/12-year-old boy who was admitted to the emergency room due to probably viral pneumonia, with a negative COVID 19 test, pulmonary deterioration, entered the PICU with management and diagnosis of an organic foreign body in the right bronchus (bean), with total atelectasis of the right lung, with resolution of flexible and rigid bronchoscopy.

Keywords: strange body, respiratory aspiration, infant, bronchi, lung

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Introduction

Aspirated foreign bodies (EC) can be classified as organic and inorganic, the first being the most common, and make the infant a subject at risk due to their exploratory instinct, the habit of putting objects in their mouths, poor swallowing, and carelessness of parents, it is clinically suspected due to the sudden onset of choking, later stridor, respiratory distress and fever and can be confused with respiratory infections or asthmatic symptoms. Some objects can remain even years. The diagnosis is based on the clinic and is supported by diagnostic elements such as chest and neck x-rays in AP and LAT, up to 19% of the object is radiopaque. In organic objects, the finding may be normal, atelectasis, over distended or non-specific. The treatment is extraction by rigid bronchoscopy in a hospital setting. What should not be done is to put your fingers in the mouth, turn it upside down or shake it, hit the back, give an IV or take products, remove it from the mother's arms.[1]

About 60% of ECs go to the digestive system, especially the esophagus, and the rest to the airways; Between 80-90% of the latter are located in the bronchi, where they can persist for a longer time, while less frequently (between 2-12%) they go to the larynx and trachea (7-8%), where they originate. more acute and severe clinical pictures. The right lung field (RPF) is the most affected (55%) due to the almost straight division of the bronchus with the trachea and the greater amplitude of the basal segments of the lower lobe; the left pulmonary field (LIC) is compromised in around 33% and only 12% of the cases are bilaterally compromised.[2]

Aero-digestive ECs are a phenomenon commonly observed in clinical practice and can cause respiratory obstruction depending on their location in the body, with high morbidity and mortality. Focusing on the eventual association between delay in treatment and the development of complications, rapid diagnosis and correct treatment by a team of health professionals trained to act with precision and immediacy in those cases of medical urgency with danger to life of the affected.[3]

Case presentation

Infant aged 1 year and 8 months, previously healthy, without drug allergies, who on 05-19-22 presented symptoms of hyaline rhinorrhea, sneezing, productive cough (not emetic or dyspnoea), without cyanosis, general condition attack, a feverish peak (not quantified), going to a private (general) doctor who prescribes; Ambroxol, Prednisolone and Cephalexin, with partial improvement. Subsequently, on 05-23-22, he was taken for evaluation in the pediatric emergency department of the IMSS hospital; normocephalic, reactive pupils, nostrils with hyaline rhinorrhea, congestive, hyperemic pharynx, hyaline discharge, with respiratory distress (RF: 40x') characterized by intercostal indrawing, use of accessory muscles, wet cough, polypnea, saturation (90%) without support of 02 supplementary, respiratory harshness, transmitted rales, diffuse bilateral wheezing. Hemodynamically stable (BP: 95/65) and tachycardia (HR: 148x´), rhythmic heart sounds, without audible murmur (Figure 1). A rapid test for SARS-CoV2 (negative) was performed, it was nebulized with partial improvement, however, the presence of significant hypoxemia (Sp02: 80%) was reported, orotracheal intubation (OTI) was performed, and arterial blood gases were performed (Table 1). He is evaluated by the pediatric intensive care service (PICU) who decides his admission, where he remains under aminergic support for 24 hours. In the PICU, IOT is connected to mechanical ventilatory assistance (AVM) controlled by pressure (Pi 18, PEEP 6, FiO2 60%), oximetry 94-96%, RF 30, the ventilator variables are changed due to desaturation report with the following variables FiO2: 80%, Pi: 15, Fi: 0.57, FR: 34, I:E ratio: 1.0:2.1, chest physiotherapy (FTT) is indicated, severe RDS is considered with PAFI 96mmhg and chest X-ray (Figure 2). On 5-25-22; moderate bronchospasm began at 00 hours, with wheezing in the right hemithorax, persistence of decreased breath sounds and desaturation of 97 to 90%, bronchodilator treatment (inhaled and systemic steroid) and bronchial hygiene measures were adjusted, reversing it. After 48 hours without the resolution of the atelectasis with the FTT maneuvers (Figure 3), pulmonology evaluation for fiberoptic bronchoscopy is requested, which is performed on 05-26-2022 with a flexible bronchoscope, reporting:

1) CE in the main bronchus right (BPD) with total obstruction,
2) Moderate endobronchial hypersecretion,
3) Foreign body aspiration (Figure 4), confirmed and complicated with pneumonia, however, given the current diagnosis and seriousness of the patient, extraction is necessary at the The foreign body was detected shortly with a rigid bronchoscope, so it was transferred to a private hospital for resolution of the extraction of a bean in a fragmented manner from the BPD (Figure 5), with resolution of the pneumonia 7 days after being in the PICU (Figure 6), going home.

Figure 1 First emergency x-ray upon arrival, both hemithoraces re-expanded (05-23-2022).

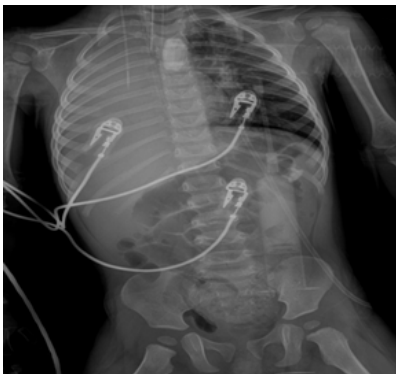

Figure 2 X-ray (05-24-22): Rx. chest with radio-opacity pattern in the right hemithorax with data of total right atelectasis.

Figure 3 48 hours later with chest physiotherapy maneuvers and bronchial lavage, without resolution.

Figure 4 Diagnostic flexible bronchoscopy of a foreign body, without being able to resolve the extraction.

Figure 5 Fragments of the bean which is performed by rigid bronchoscopy on 05-27-2022.

Figure 6 X-ray with re-expansion of the right lung after extraction of a foreign body complicated by pneumonia.

Discussion

The fundamental pillar of the success reported in this clinical case was the use of the principle of "well-founded suspicion" during the hospital stay of this pediatric patient, although there were no data initially reported by the relatives, what is given for well-founded suspicion is the total atelectasis of the right lung. In his first evaluation in the emergency room, the possibility that the object had lodged in the airway was ruled out due to the lack of symptomatological and radiological evidence that would encourage doctors to use other diagnostic methods to continue looking for the foreign body.

As reported by Antón Pacheco, J, (2021), where in his 10-year retrospective study he observed in 130 patients that cough was the most frequent symptom (76.1%), as in the clinical case presented, where needed further evidence of a foreign body. As well as, suspect due to indirect signs in a chest x-ray where air trapping or obstructive emphysema of the affected lung or lobe is found, which translates as a larger lung and with hyperlucency distal to the obstruction as reported in our case, where denoted complete atelectasis of the right lung. The same study by Antón states that unilateral air entrapment was the most frequently found radiological sign (48.8%), since at least 10% of the foreign bodies are radiopaque, which in the case presented was organic (bean), where it was not visualized by this means.[3]

Or like Lev Shlizerman, in a 10-year retrospective study where he observed 136 files, the rate of complications observed was 2 times higher in patients who arrived at the hospital 2 days or more after aspiration compared to patients who arrived earlier.[4] Some of the complications found were bronchial stenosis, tracheoesophageal

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fistula, abscess formation, laceration or perforation of the airway and also, as happened in our case study, total lung atelectasis and aspiration pneumonia.[4] Flexible bronchoscopy is a diagnostic tool, useful for airway inspection, assessing for damage, obstructions, and even for taking a sample for biopsy, and rigid bronchoscopy is the Gold Standard for the treatment of complex airway pathologies one of them was the extraction of a foreign body.[4,5] The incidence of EC aspiration in our community has decreased by 44.4% in the last 10 years.[4]

Conclusion

Foreign body aspiration is an accidental event that occurs most frequently in children 1-3 years of age. Any child with a clinical picture of sudden-onset cough, respiratory distress, or choking should be considered "well-suspected foreign body aspiration," even if not witnessed by their caregivers. As a summary of the analysis, it can be said that although foreign bodies can be accidentally inhaled or ingested at any age, children between 12 months and 5 years of age are the most likely to experience it; So much so, that around 80% of the episodes occur in children under 3, with a first increase in incidence, as based on the Mexican clinical practice guideline, in the first 2 years of life (73%). and a second one at approximately 11 (70%), especially in males; although the pediatric population with mental retardation or psychiatric disorders also constitutes a risk group.[6]

A patient with a history suggestive of aspiration, even if asymptomatic at the time of consultation, should be reviewed with the same concept of "well-founded suspicion of foreign body aspiration." The oligosymptomatic phase can miss the diagnosis if there is not a high index of suspicion. Imaging studies are useful to confirm the existence of a foreign body, but never to rule it out. Biological foreign bodies (the most frequently aspirated) are radiolucent and not visible on the radiograph. Regardless of the reporting of imaging studies, a child with "well-founded suspicion of foreign body aspiration" should be explored with airway endoscopy. Their treatment should never be delayed while waiting for an imaging study and bronchoscopy should be requested so as not to delay the diagnosis and especially for the early treatment of these patients due to the severe complications that occur in them.[7,8]

Acknowledgments

None.

Conflicts of Interest

None.

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