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RESEARCH ARTICLE

PROLONGED FEVER DUE TO ACUTE PNEUMONIA REVEALING ATRABRONCHIAL FOREIGN BODY IN A 5-YEAR-OLD CHILD

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Abstract

Incidents involving intratracheobronchial foreign bodies (ITFBs) are common in children and can lead to serious long-term complications such as bronchiectasis. Typically, these incidents present with a penetration syndrome following the inhalation of the foreign body. However, there are cases where the foreign body is not immediately detected, and the child may subsequently develop recurrent respiratory infections. A delay in removing the foreign body of more than 7 days after the onset of penetration syndrome can result in these complications. To minimize these risks, early diagnosis is crucial, and diagnostic bronchoscopy should be performed in cases of suspected inhalation, even in the absence of clinical or radiological symptoms. Rigid bronchoscopy remains the only reliable method for confirming the diagnosis and extracting the foreign body. We report the case of a 5-year-old child who presented with acute pneumonia revealing the presence of an ITFB, without any recent penetration syndrome or recurrent respiratory infections. Through this clinical case, our goal is to raise awareness among healthcare professionals about this rare presentation of ITFBs and to promote the adoption of optimized clinical and paraclinical practices to minimize risks.

Introduction:-

Respiratory foreign bodies represent a diagnostic emergency. In France, there are between 500 and 1,000 cases per year, primarily in children aged 1 to 3 years (1). In the United States, foreign body inhalation results in the death of 300 children annually in this age group (2). Peanuts remain the main at-risk foreign body, being involved in more than 50% of inhalation cases among children, according to most statistics (3,4). Intratracheobronchial foreign bodies (ITFBs) are usually suspected in the acute phase when a penetration syndrome is present, characterized by sudden choking, respiratory difficulties on inspiration, wheezing, retractions, and a harsh cough. Other modes of ITFB presentation are possible, which highlights the need to consider this diagnosis in any respiratory symptoms in children. The diagnosis is often established using standard chest X-ray when the foreign bodies are visible (radio-opaque). In the absence of radiographic visibility, the diagnosis of ITFB is based on clinical criteria and sometimes on indirect radiological anomalies, and is subsequently confirmed by flexible tracheobronchial bronchoscopy (5). Success rates for this intervention range from 61% to 97% (6). Rigid bronchoscopy remains a commonly used method, particularly in specialized otolaryngology departments (7).

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Case report

A 5-year-old girl, with no significant medical history, was admitted for the management of prolonged fever lasting for 8 days, associated with a productive cough with greenish sputum, which had necessitated antibiotic therapy with protected amoxicillin prescribed by a general practitioner, without improvement. On clinical examination, the child was alert, hemodynamically stable, and exhibited moderate respiratory distress with adequate oxygen saturation, a right pulmonary condensation syndrome, and a fever measured at 39.8°C. The laboratory tests showed a markedly elevated inflammatory syndrome: Complete Blood Count (CBC): Leukocytes: 20,200, Neutrophils: 15,413/mm³, Lymphocytes: 3,717/mm³, Hemoglobin: 10.4 g/dl, Mean Corpuscular Volume (MCV): 83 fL, Mean Corpuscular Hemoglobin (MCH): 28 pg, Platelets: 575,000/mm³, C-reactive Protein (CRP): 281.5 mg/L, Erythrocyte Sedimentation Rate (ESR): 110 mm, and blood culture was negative. Chest X-ray revealed a localized pulmonary lesion in the right lower lobe (Figure 1). A diagnosis of lobar pneumonia was strongly suggested; however, due to lack of improvement with protected amoxicillin, a chest CT scan was performed which showed a right basal pulmonary lesion with pre-abscess formation and right atelectasis (Figure 2). The diagnosis of atypical pneumonia was considered, and the child was placed on empirical antibiotic therapy with a macrolide, a third-generation cephalosporin such as Ceftriaxone, and Vancomycin, without improvement, and CRP rose to 357 mg/L upon follow-up. Given the persistence of symptoms despite empirical antibiotic therapy, the possibility of a foreign body was considered, leading to a rigid bronchoscopy which identified a plant foreign body obstructing the right bronchus (Figure 3). After the extraction of the foreign body and medical treatment, there was notable clinical and biological improvement with resolution of fever and the inflammatory syndrome.

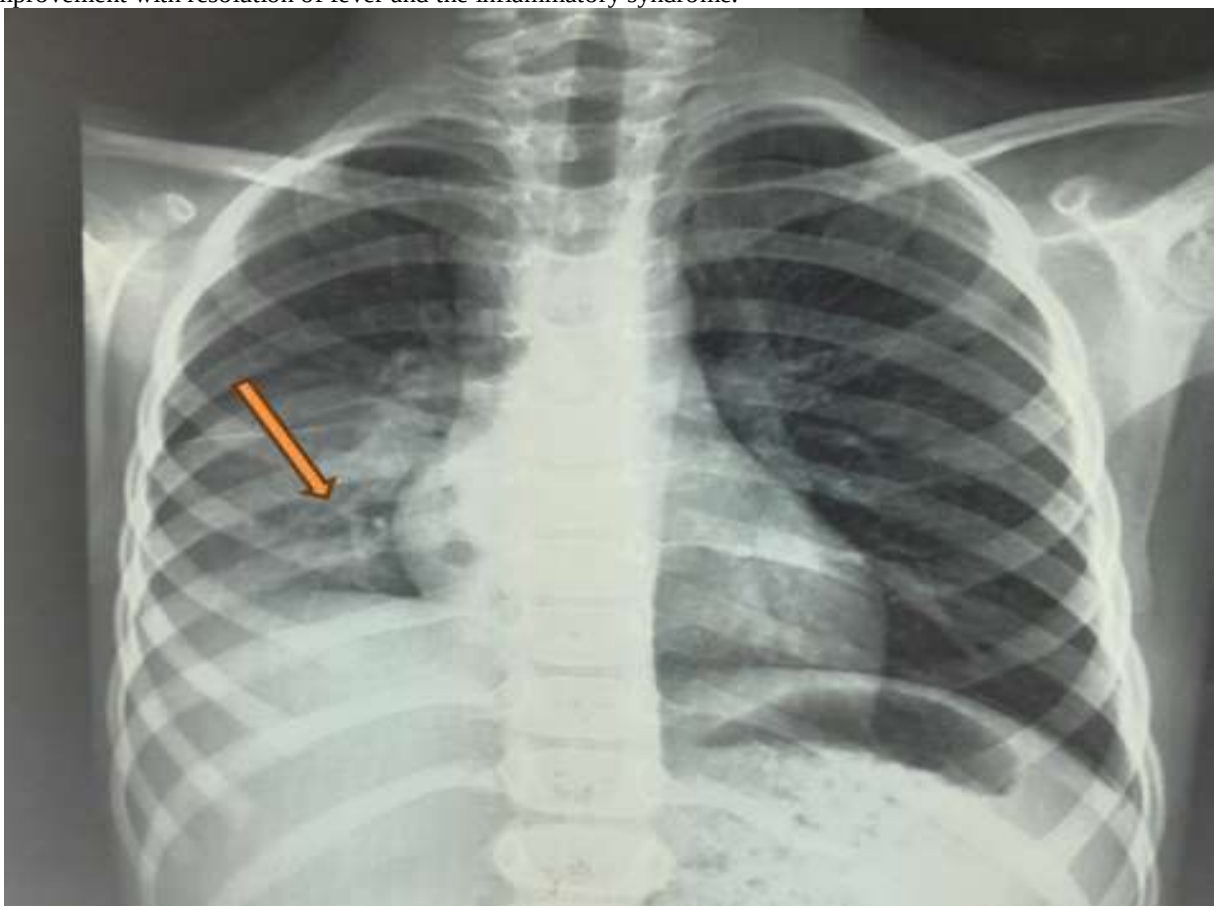

Figure 1:-Chest X-ray (Frontal view) showing a localized pulmonary opacity in the right lower lobe.

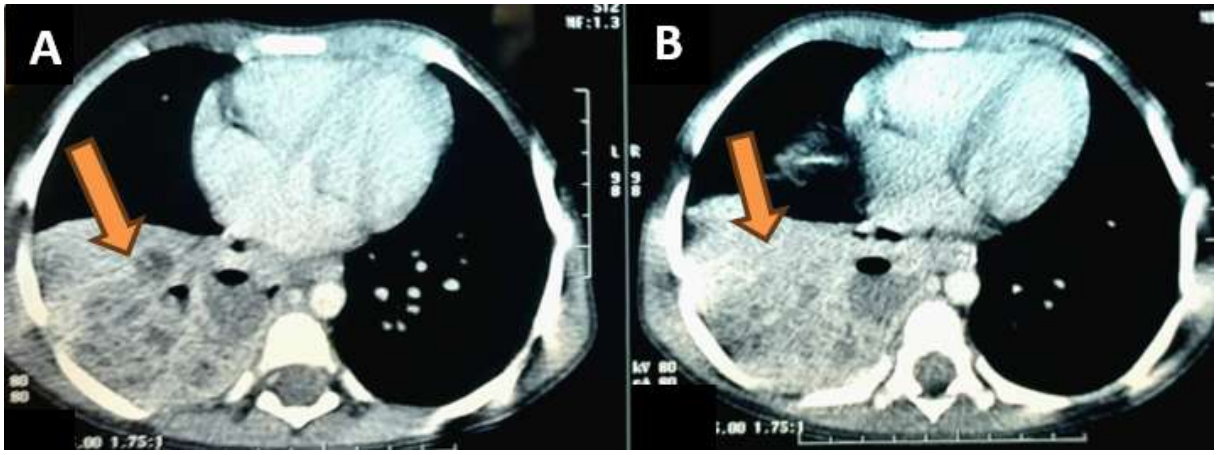

Figure 2 (A and B):-Axial chest CT scan sections showing a right basal pulmonary lesion with pre-abscess formation and atelectasis.

Figure 3:-Plant foreign body after extraction via rigid bronchoscopy.

Discussion:-

The discovery of a foreign body in the respiratory tract requires urgent diagnostic management. In the acute phase of a penetration syndrome, intratracheobronchial foreign bodies (ITFBs) are usually suspected. Diagnosis relies on standard chest X-ray if the foreign bodies are radio-opaque. Otherwise, the diagnosis of ITFB is based on clinical symptoms and sometimes on indirect radiological findings, confirmed subsequently by flexible tracheobronchial bronchoscopy (5). In cases of acute asphyxia in the prehospital setting, it is imperative to perform the Heimlich maneuver systematically. Sometimes, in cases of respiratory distress due to upper airway obstruction, the only urgent option available is tracheobronchial obstruction relief using rigid bronchoscopy (8). In other situations, these foreign bodies may go unnoticed, which can lead to recurrent respiratory infections and bronchiectasis, potentially progressing to pulmonary parenchymal destruction in children (5,9). Our case presented an atypical mode of presentation compared to what is classically described in the literature. The patient presented with prolonged fever associated with acute pneumonia that showed no improvement despite ten days of empirical antibiotic therapy. Diagnostic techniques include flexible bronchoscopy and radiology. Chest CT is more sensitive than standard X-ray

for detecting pulmonary abnormalities (10). In our observation, both chest X-ray and CT did not lead to the diagnosis of the foreign body. The diagnosis of ITFBs is often delayed. ITFBs are most commonly located in the right bronchial tree (9,11), which was confirmed in our observation. Generally, ITFBs are primarily of organic origin, particularly plant materials such as nuts and seeds (6,11). In the study conducted by Cataneo et al., radio-opaque foreign bodies were present in 20.7% of cases (12). In our patient, the foreign body was of plant origin. The advent of flexible bronchoscopy has revolutionized the treatment of ITFBs, with success rates varying between 61% and 97% according to various published studies (6). Rigid bronchoscopy remains widely practiced, particularly in otolaryngology departments (7). Thanks to these two techniques, the need for surgery has been significantly reduced. The extraction of ITFBs is complex in low-resource countries, with surgical intervention rates varying between 6% and 10.4% (6,13). In developing countries, this rate can reach up to 13% in cases of late-diagnosed ITFBs (11). The preferred method for treatment is flexible bronchoscopy, possibly supplemented by rigid bronchoscopy (14). The method performed for our patient was rigid bronchoscopy. General anesthesia remains the safest method to ensure proper tracheobronchial endoscopy and facilitate the extraction of the foreign body (15). However, this anesthesia carries high risks, requiring precise management to ensure adequate oxygenation and sufficient anesthesia levels, thus allowing endoscopic manipulation in patients at risk of complete airway obstruction. Risk factors for perioperative hypoxemia include young age, duration of endoscopy, the nature of the foreign body (particularly plant-based), presence of pneumonia, and mode of ventilation (spontaneous ventilation) (16). Healthcare professionals must be vigilant regarding the variability of clinical presentations and examination results for any respiratory symptoms in children, to avoid long-term complications such as recurrent respiratory infections and severe pulmonary damage. Proper follow-up and early management are crucial to ensure complete recovery and prevent serious sequelae.

Conclusion:-

Inhalation of a foreign body into the airways is common in children and can lead to severe respiratory distress. A tracheobronchial foreign body may present in two typical ways: either through an acute penetration syndrome immediately after inhalation or through recurrent respiratory infections. However, other modes of presentation are possible, highlighting the importance of considering this possibility for any respiratory symptoms in a child. In the absence of prompt removal of the foreign body, it can lead to acute asphyxiation, threatening the child's life. Diagnosis is often confirmed by a standard chest X-ray when the foreign body is radio-opaque. Bronchoscopy has revolutionizedboth diagnostic and therapeutic management.

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