



Lung abscess in a child: a case report

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ABSTRACT

Lung abscess is a rarely identified suppurative infection that has air-liquid level bigger 2 cm diameter on pulmonary graphy. It should especially be considered in the case of treatment-refractory pneumonic infections of persons with chronic diseases. In order to point out to the importance of this issue, this study presents a case of pulmonary abscess identified in a patient who was followed up due to mental - motor retardation and rehospitalized at short intervals. Our patient did not respond to parenteral antibiotic treatment, the thorax CT revealed lung abscess, chest tube insertion when the fever continue. Abscess had disappeared after 3 weeks of treatment with antibiotics.

Keywords: Lung abscess, child, pneumonia

INTRODUCTION

Pulmonary abscess is a cavitary, suppurative infection that is larger than 2 cm, which progresses with the necrosis of pulmonary parenchyma due to various reasons.¹ Pulmonary abscess occurs as secondary to pneumonia or aspiration in healthy individuals. As for secondary pulmonary abscess, it mostly occurs as a consequence of repetitive aspirations in individuals with cystic fibrosis, bronchiectasis, immune deficiency or neurological disease.² It is another rare problem of childhood period. It has a prevalence of 7/100.000 and it is often identified among men.² It may emerge at any age, however, most of the cases are below the age of 10.³ In order to draw attention to the importance of this subject, this study presents a case, who was re-hospitalized at short intervals due to persistent pulmonary tomography and diagnosed with pulmonary abscess based on the thorax computerized tomography (CT) scan that was taken.

CASE REPORT

A 5-year-old a male patient, who had mental-motor retardation, presented to the hospital due to high fever. From his anamnesis, it was learned that he was hospitalized for 2 weeks due to pneumonia and discharged 1 week ago. Temperature: 38.2 °C,

oxygen saturation 90% in ambient air, pulse:118/min, respiratory count: 49/min. The patient, who had cachectic and generalized spasticity, was identified to have reduced bilateral rough rales and right pulmonary respiratory sound. It was learned that the patient was fed only with baby formula and he was hospitalized in the intensive care unit as diagnosed with aspiration pneumonia; his values checked were as follows: leukocyte (WBC): 12020/ml, CRP: 30.5 mg/dl, sedimentation rate: 74 mm/hour, The results of other tests he underwent were normal. Infiltration was identified in the right lung on the pulmonary X-ray (**Figure 1**). After the collection of blood, urine and stool cultures, intravenous (IV) administration of 100 cc/kg 1/3 isomix solution and 100 mg/kg meropenem was started. As the patient continued to have fever on day 3 after his hospitalization and WBC: 10890/ml, CRP: 47.3 mg/dl, sedimentation rate: 101 mm/h results were received, 15 mg/kg amikacin IV was added. The follow-up showed no proliferation in his cultures. The tuberculin skin test result was found to be 0 mm. The measurement results were as follows: IgA:25 mg/dl, IgG:1664 mg/dl, IgM:254 mg/dl. Since the clinical and laboratory results of the patient did not improve on Day 7 after his hospitalization, a thorax CT scan was taken: a cavitary lesion with a diameter of 39x40

mm, providing an air-fluid level, having thick and irregular walls as well as pleural effusion were visible as superior to the lower lobe of the right lung (**Figure 2**). This lesion with thick and irregular walls was considered to be an abscess, the fluid was aspirated and the small amount of fibrinous fluid that was collected could be used only for culture tests. Metronidazole 40 mg/kg IV for anaerobes was added to the treatment. There were no proliferations in the fluid culture aspirated from the lesion. Since not enough response could be received for the administered therapies, a thoracic tube was inserted and an underwater seal drainage

was established. The fever was taken under control after the thoracic tube was inserted. Control results were as follows: WBC:10900/ml, sedimentation rate:91 mm/h and CRP:38.2 mg/dl. The thoracic tube was removed 6 days later. Improvement in the control thoracic CT was identified (**Figure 3**). The following were administered intravenously: meropenem for 21 days, amikozit for 15 days and metronidazole for 12 days. On Day 21 after hospitalization, WBC: 8900/ml and CRP: 2.6 mg/dl were identified and he was discharged with the prescription of oral cefixime + metronidazole.

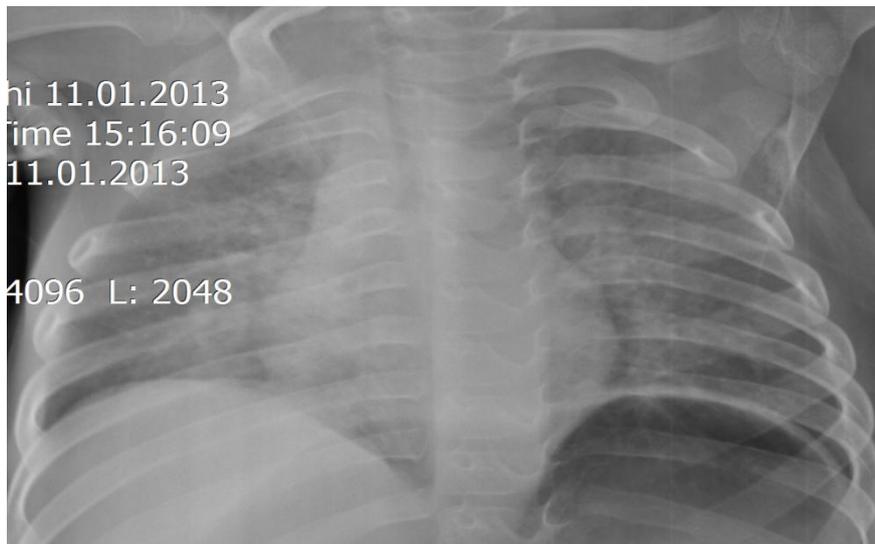


Figure 1 Pulmonary X-ray of the patient on presentation

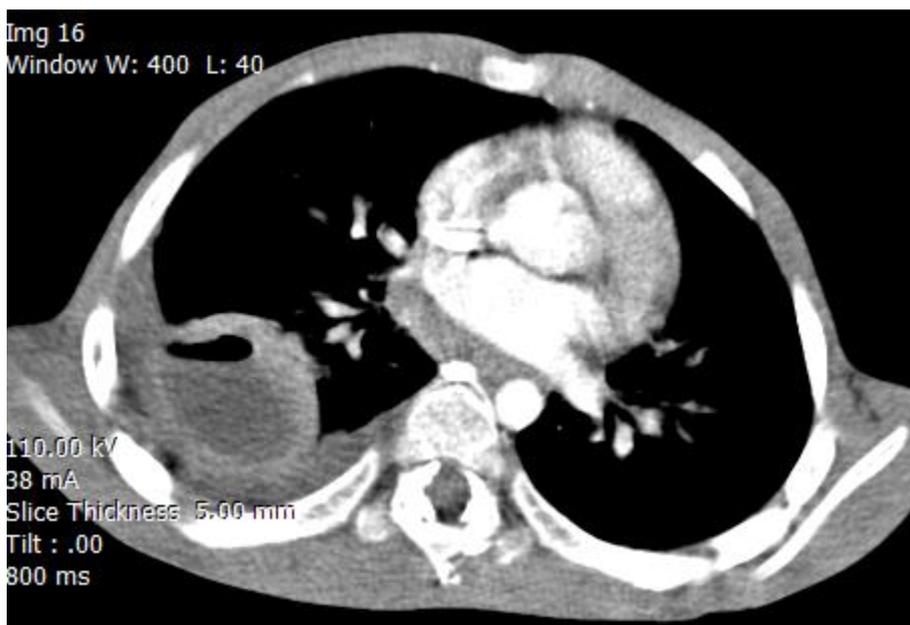


Figure 2 Thoracic CT slice of the patient for diagnosis

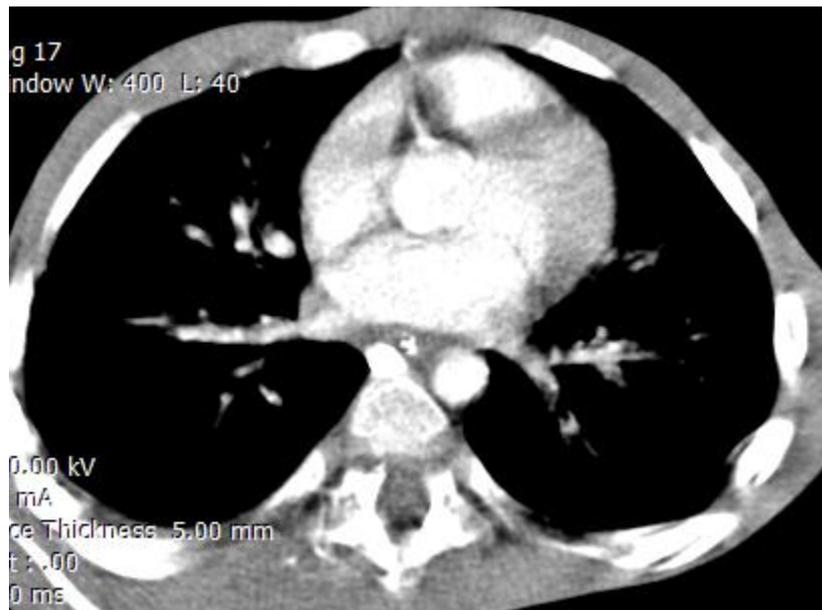


Figure 3 Thoracic CT slice of the patient for control

DISCUSSION

The most frequent reasons for pulmonary abscess, which is rarely diagnosed in our age, are aspiration and necrotizing pneumonia. This condition develops in pediatric age group most frequently as a result of aphagia that develops on account of cerebral palsy.⁴ The pulmonary abscess that developed in our case was considered to be related to aspiration since he had mental-motor retardation and was being fed in a specific way. The number of aspiration episodes, volume of aspirated material and inadequacy of mucociliary clearance mechanisms are also factors that are related to the development of pulmonary abscess.⁵

The most frequently observed symptoms of persons with pulmonary abscess are cough, fever, expectoration, chest pain and weight loss.⁴ The only symptom for presentation in our case was fever. In the physical examination of cases with pulmonary abscess, tachypnea, dyspnea, decreased respiratory sounds and rales in auscultation may be identified.⁵ In our case, tachypnea, tachycardia and hypoxemia as well as decreased bilateral rough rales and respiratory sounds in the right lung were identified.

Imaging is very important in definitive diagnosis of pulmonary abscess. As the fever becomes persistent and clinical picture is deteriorated in a pneumatic child, the diagnosis is made on the basis of pulmonary X-ray and/or thoracic CT taken upon suspicion. The presence of air-fluid level in

parenchyma is typically seen on the pulmonary X-ray. Among 20% of abscess cases, the pulmonary X-ray may not lead to a definitive diagnosis in the initial stage.⁶ In our case, the fever was persistent even though the appropriate pneumonia treatment was delivered. Since the picture was acute and the location of abscess was critical, the diagnosis could be made only on the basis of a pulmonary CT.

A pulmonary abscess is generally singular and it is seen in a single lobe. However, they may be multiple or localized in different lobes among patients with aspiration pneumonia, necrotizing pneumonia and especially immune deficiency.⁷ The abscesses occurring as a result of aspiration are seen more often in the right lung than the left lung since the right main bronchus has a wider angle with trachea as compared to the left one. Pulmonary abscess is mostly seen in the higher lobe segment of the right lung or in the lower lobe superior segment.⁷ If aspiration took place when the patient was in supine position, the abscess develops most frequently in this segment since the lower lobe superior segment is in the lowest point in this position.⁵ In our case, the single abscess was identified to be superior to the lower lobe of the right lung.

Anaerobic microorganisms, *Staph. aureus* and gram negative basils are the most frequently seen factors for pulmonary abscesses.⁸ The presence of multiple agents is more common among aspiration

pneumonia cases as compared to other community-acquired pneumonia cases. The reason for pulmonary abscess due to infected secretions or foreign body aspiration is anaerobic bacteria at a rate of 30-70%.⁶ No factors could be identified in the blood and abscess material cultures of our case. However, a therapy against the anaerobes was also administered as part of the treatment.

In persons with pulmonary abscess, the treatment should be completed to reach 4-8 weeks as oral treatment following an IV treatment of 2-3 weeks.⁹ The use of antibiotics against anaerobic agents is an important factor to enhance treatment success. In our case, an IV treatment of 3 weeks was administered after which an oral therapy of 2 weeks was suggested.

A response of 85-90% can be achieved for medical treatments delivered to persons with a pulmonary abscess.¹⁰ Drainage can be applied to cases not responding to antibiotics treatment. If no responses can be received, surgical methods such as segmentectomy or lobectomy can be resorted to.¹¹ As the temperature of our case did not fall in spite of the antibiotics treatment applied, drainage was carried out.

It should be considered that the reason may also be a pulmonary abscess in pneumonia cases that do not respond to treatment. If the abscess cannot be identified via pulmonary X-ray, a thoracic CT should be requested and it should be ensured that an antibiotics treatment, which can also be effective against anaerobes, be delivered for a long term.

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