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Primary Cavitary Tuberculosis in Child Patient

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Abstract

Tuberculosis disease is generated by Mycobacterium tuberculosis bacillus.For many years, it has been threatening human health. In children, tuberculosis usually occurs in the form of hilar lymphadenopathy and parenchymal changes in the lung. Accompanying cavitary lesions are rare.A child patient who was diagnosed initially as lobar pneumonia but no improvement with antibiotic had the final diagnosis of primary cavitary tuberculosis.In this article, we presented the differential diagnosis and treatment of cavitary tuberculosis in a pediatric patient.

Keywords: Cavitary tuberculosis; Child patient; Pneumonia

Introduction

Morbid obesity is a health issue often necessitating surgical intervention [1]. In an observational cohort study, Nicolas et al. showed that weight-loss surgery significantly reduced mortality in morbidly obese patients [2]. Different options for surgical weight loss include gastric band, sleeve Tuberculosis (TB) is a disease that has been threatening human health for many years and still remains a problem in many countries of the World [1]. Children under five are particularly at risk.Children take TB bacilli from adults who produce bacilli, especially in their immediate environment [2]. In children, TB usually occurs in the form of hilar lymphadenopathy and parenchymal changes in the lung. Accompanying cavitary lesions are rare [3-5]. According to World Health Organization 2017 data; 1,010,000 children under the age of 15 are diagnosed with TB and about 194,000 children died [6]. A child patient who was diagnosed initially as lobar pneumonia but no improvement with antibiotic had the final diagnosis of primary cavitary tuberculosis. In this article, we presented the differential diagnosis and treatment of cavitary tuberculosis in a pediatric patient.

Case Report

A 4-year-old male patient was admitted with a 10-day history of fever and cough. The patient's general status was good, and there was a roncus in his respiratory examination. Other system examinations were normal. Her medical history and family history were unremarkable.Pneumonia in the right upper lobe was detected in the pasteroanterior (PA) chest X-ray (Figure 1).

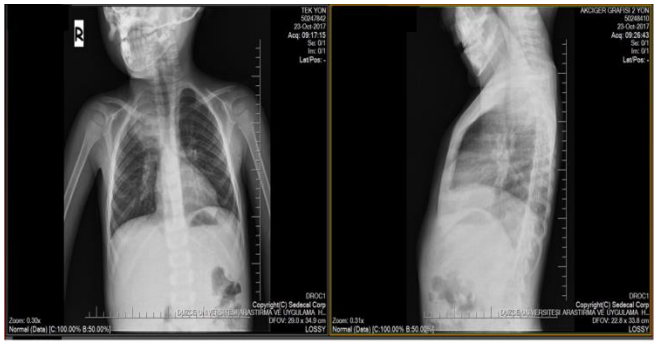

Figure 1: Posteroanterior and lateral chest X-ray taken at the time of admission.

Hemoglobin 10.2 g/dl, leukocyte 19400 /mm^3, neutrophil 15500/mm^3, monocyte 14200/mm^3 and C-Reactive Protein (CRP) were determined as 13.3 mg/dl. Aspartate transaminase, alanine transaminase,

urea, blood urea nitrogen and electrolytes were within normal limits. Ceftriaxone was given to the patient for the treatment of nonspecific pneumonia. The patient's complaints did not regress after a week, and there was no improvement in the chest X-ray. Sedimentation rate was 105 mm/h and CRP was 7.9 mg/dl. Clarithromycin was added to the patient's treatment.The patient's complaints did not regress during the second week, and there was no improvement in the chest X-ray and CRP was 1.47 mg/dl.Despite the non-specific treatment, the patient's complaints were not regressed. Contrast Computed Thorax Tomography (CT) was performed. In the right paratracheal, precarinal, subcarinal and right hilar regions, lymph nodes with short diameter of 7 mm were observed. At the axial course with atelectatic areas, a circular consolidated area containing approximately 5.5 × 5.2 cm hypodense areas was detected. A 1 cm diameter cavitation was observed in the consolidated superior area.There are sentriaciner micronodular views in the upper zone with iced glass density. As a result of these results, a preliminary diagnosis of primary cavitary TB was made (Figure 2).

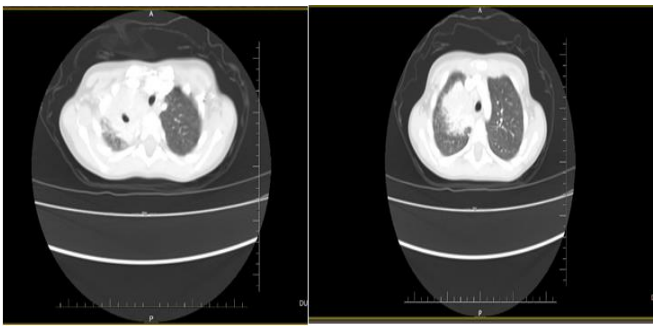

Figure 2: Cavitation formation and other findings in computed tomography.

The patient was admitted to the pediatric clinic for further follow-up and treatment.Gastric lavage sampling was performed. Acid-Fast Bacilli (AFB) smear was positive, culture and polymerase chain reaction negative.The induration was measured as 15 mm in the tuberculin skin test.Immunoglobulin A, G, M and E were within normal limits in immunological tests.The patient was started on isoniazid, rifampicin, pyrazinamide and ethambutol. Abdomen ultrasonography for screening was normal. Patient's chest radiographs showed improvement. On the 22nd day of his hospitalization, he was discharged after a significant improvement in his chest X-ray. TB treatment was discontinued during the 7th month of the treatment without any complication.

Discussion

Despite the advances in the treatment of TB disease, it is still an important public health problem in the world due to high mortality and morbidity rate. Especially in developing countries, the incidence in children is increasing [7]. TB bacillus, which usually cause the disease in the lung, can cause disease in all organs and tissues.In many infected children and adults, bacilli may remain unresponsive.The 5-15% of children who first encounter with TB bacillus are infected. Primary TB is the most common form of disease in children and is common in the 0-5 age group. The state of immunity in children, the presence of untreated human immunodeficiency virus (HIV) infection, and the fact that the child is under two years of age may lead to disease progressionor extra-pulmonary TB development [2]. The non-specificity of initial findings of lung TB in children, such as fever, cough, wheezing, anorexia, recurrent bronchiolitis, bronchopneumonia, make the differential diagnosis difficult [1,2]. Because of right upper lobe pneumonia in our case who had fever and cough, treatment for pneumonia was applied. However, due to the lack of clinical and radiological response to the treatment, primary cavitary TB was diagnosed.

It is important to detect AFBin the diagnosis of tuberculin skin test, repeated sputum or gastric fasting fluid in the diagnosis. In our case, AFB was detected in fasting gastric juice and induration in the tuberculin skin test was 15 mm. TB is difficult to diagnose in children. Therefore, the presence of history of contact with cases with adult TB, the presence of respiratory system symptoms that do not improve with empirical antibiotics, positive tuberculin skin test, and detection of lymphadenopathy in the chest radiography are considered as important clues for the diagnosis [3]. It was learned that there was no person with TB in the immediate vicinity of our case. Primary TB disease in children is the lung parenchyma (95%). Therefore, in all children with suspected TB disease, anterior-posterior and lateral chest radiographs should be taken and examined for primary focus and lymphadenopathy. In CT, parenchymal nodules and lymphadenopathies that cannot be observed in plain radiography can be detected. At the same time, cavitation is observed [7,8]. Pulmonary TB may persist with intrapulmonary (pneumonia, cavitary lesion, diffuse consolidation, bronchiectasis, atelectasis, endobronchial disease, pleuritis) or systemic dissemination [3]. Chest X-ray is still the main imaging modality in the diagnosis of TB.However, CT is also useful in detecting small parenchymal lesions, determining the extent of the disease, in demonstrating

endobronchial TB, indetecting lymphadenopathy, cavitation and the resulting bronchiectasis [1,3]. In our patient, consolidation, lymphadenopathy, atelectasis and cavitation were observed.In children with primary TB, the development of cavitary TB as in adults is rare. It is usually seen in children with immunodeficiency [2,5]. In our case, there was no immune deficiency. A patient with pulmonary TB can be contagious until diagnosed. Therefore, it is important to put the diagnosis as soon as possible and then start treatment. Although the infectivity of TB in children is low, the detection of active primary TB and cavitary lesion increases the risk of transmission. In addition, late initiation of treatment leads to disease progression [9-11]. TB should be kept in mind in resistant pneumonias that do not respond to antibiotic therapy. Tuberculin skintest is performed for the diagnosis and screening of TB. For the definitive diagnosis, AFB smear and culture test is performed from gastric lavage sampling in small children. In older children, AFB smear and culture test is performed in sputum. Computed tomography is important for the diagnosis of cavitary TB and TB sub-type. We think that pediatric patients with lober pneumonia and TB diagnosed, computed tomography should be performed because primary cavitary TB may be present. Patients with primary cavitary TB should be investigated for immunodeficiency, chronic diseases, and HIV infection. It should not be forgotten that primary cavitary TB may have developed spontaneously as in our patient.

Conclusion

TB is an important public health problem in developing countries. TB should be kept in mind in the differential diagnosis of resistant patients who do not respond to lung infection therapy. It was emphasized that TB can occur in children with different clinical and radiological findings and primary cavitation TB can be seen.

Conflict of Interest

None declared.

Funding

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