Photo Quiz

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A 15-Year-Old Girl with Chronic Cough and a History of Asthma Treatment

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WHAT IS YOUR DIAGNOSIS?

A 15-year-old girl with wet coughing, occasional fever, nausea, and weight loss came to Masih Daneshvari Hospital. The patient has had dry coughing and wheezing in the last 2 years and was treated for asthma with short-acting beta-2 agonist and inhaler corticosteroids; however, coughs have not been treated completely. Moreover, overnight sweating, loss of appetite, and 10 kg weight loss have been added to the patient's symptoms since the previous year. On the admission day, the patient had a temperature of 38.2˚c, blood pressure of 95/65 mmHg, heart rate of 110 b/s, respiratory rate of 28, and O_2 saturation of 94% at room temperature. In the lung's auscultation, the respiratory sound was decreased on the right side and normal on the left side. The results of the patient's laboratory tests were as follows: WBC: 13200 (neutrophils: 79%, lymphocytes: 12%), Hemoglobin: 4.7, ESR: 76, ACE: 21, IgG: 13, IgA: 4, IgM: 1, IgE: 500, and Anti-HIV antibody: non-reactive; besides, the liver tests were normal. Radiology and CT scans are shown in the following (Figure 1 A,B).

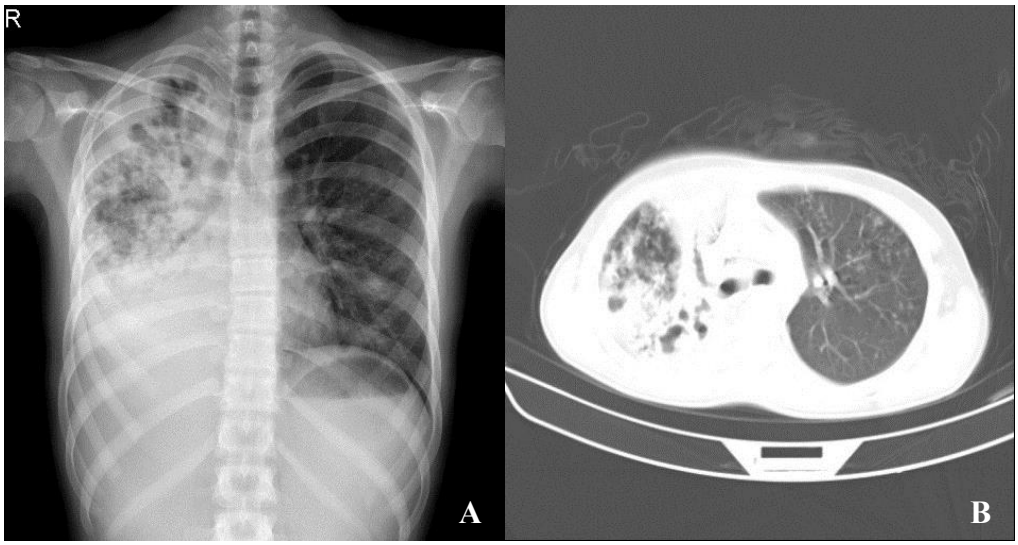

Figure 1. (A) Chest X-Ray, and (B) CT- Scan of the patient

Answer

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Pulmonary Tuberculosis

In the sputum smear test, it was seen that Acid-Fast Bacilli (AFB) was positive. In the polymerase chain reaction (PCR) of the sputum sample, *Mycobacterium tuberculosis* was observed. Other pathogens, such as fungi, bacteria, or viruses, were not seen in the sputum examination.

Following the diagnosis of pulmonary tuberculosis, the patient was treated with four-drug TB treatment. Due to hepatic complications, the treatment was discontinued. Considering the PCR-based drug sensitivity, treatment was performed with three medications (isoniazid, rifampicin, and pyrazinamide) in a step-by-step add-on therapy. Given the fever cessation and improved appetite and general condition, the patient was discharged after two weeks. Three-drug treatment continued for up to two months and two-drug treatment was performed for four months. In the third month assessment, the AFB smear was negative and the patient had a good weight gain.

Pediatric pulmonary tuberculosis (PPTB) remains a major cause of morbidity and mortality worldwide, particularly in developing countries (1). Today, it is the number one cause of death from bacterial infections worldwide (2). The immune response in the lungs is complex (3); the hallmark of pulmonary tuberculosis is enlargement of the regional hilar, mediastinal, or subcarinal lymph nodes (4). The most common process of radiological manifestation includes adenopathy followed by localized hyperinflation, and atelectasis of adjacent tissue which leads to collapse, consolidation, or segmental lesion. It affects most of the upper and middle lobes and upper left lobes (4).

In chronic pulmonary tuberculosis (in adults), fibronodular infiltrates in one or both upper lobe apices are most common, extensive pulmonary involvement leads to diffuse consolidation or cavitation (4). In addition, HRCT findings in pulmonary tuberculosis include three categories: 1- Primary pulmonary tuberculosis: consolidation in upper and lower lobes of the lung, adenopathy and non-specific nodules. 2- Reactivated tuberculosis: consolidation of upper lobes or upper segment of the lower lobe, cavity, centrilobular nodules or tree-in-bud and pleural effusion or increased pleural thickening. 3- Miliary tuberculosis: specific nodules smaller than 3 mm, and unspecified homogeneous distribution (5). Endobronchial tuberculosis is seen in 10 – 40 % of active pulmonary tuberculosis cases and can cause symptoms similar to asthma (6). In cases of chronic cough and drug resistance in asthma, bronchoscopy should be used for differential diagnosis (7).

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