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# An Eight-Year-Old Girl with Fever, Cough and Pulmonary Infiltration

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## WHAT IS YOUR DIAGNOSIS?

*A previously healthy 8-year-old girl was admitted to this hospital because of 3 weeks history of fever, weight loss and productive cough. Pleuritic chest pain and dyspnea had developed 5 days before the admission. She received oral antibiotics (cefexime) and later co-amoxiclav for 10 days out patiently without any improvement. There was no history of close contact with a tuberculosis patient. She had received all childhood immunizations. Past medical history was unremarkable. Her family had a hamster and two love birds and there was no history of animal scratches or bites. On physical examination, the patient appeared acutely ill with respiratory distress. Her temperature was 39.5°C, pulse rate 120/min, respiratory rate 25/min and blood pressure 85/60 mmHg. The growth chart was 10 percentile. Decreased breath sounds were noted over the upper segments of both lungs and coarse crackles at the bases of the lungs. The abdomen was soft and non tender with mild hepato-splenomegally and no finger clubbing was noted. The rest of physical exanimation was normal. Chest radiography showed bilateral nodular infiltrates all over the lungs (Figure 1). Laboratory tests showed white blood cell count 14000/mm3 with 80% polymorphonuclear cells, 14% band and Lymphocyte. Hemoglobin was 10.2 g/dl and platelet count was 190000/mm³. Sedimentation rate was 57 mm/h. Arterial blood gas analysis revealed hypoxemia with a $PaO_2$ 65 mmHg. Aspartate aminotransferase was 54 IU/L (5-40) and alanine aminotransferase was 105 IU/L (5-40). Gram stain and acid-fast stains smear of sputum were negative. Tuberculin skin test was negative. Three sets of blood culture were negative. LDH was markedly elevated. Angiotensin converting enzyme (ACE) was 90 IU (Normal: 8-22). Immunological lab tests consisting of IgE, IgG, IgM and IgA were within the normal limit and flocytometric analysis of peripheral blood for lymphocytes was normal. Therapy was started with intravenous ceftazidime, vancomycin and oxygen supplementation. During the next 3 days, fever and respiratory distress persisted and on the fourth day of hospitalization, her respiratory status worsened. A chest spiral CT scan demonstrated diffuse bilateral and symmetrical parenchymal nodules with superimposed multifocal alveolar consolidation mostly in upper lobes (Figure 2 A,B). The patient underwent bronchoscopy but due to severe hypoxemia, she was not able to tolerate bronchoscopy and trans-bronchial lung biopsy.* ***(Tanaffos 2008; 7(3): 81-82)***

Figure 1. Chest x-ray of patient


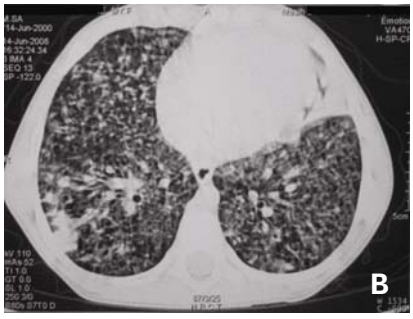


Figure 2 A,B. CT-scan of patient.

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## Diagnosis: Diffuse Pulmonary Tuberculosis

The clinical manifestation, radiological findings either chest x-ray or lung HRCT and more importantly, long-term exposure to love birds in association with absence of tuberculosis contact in the family were all suggestive for diagnosis of hypersensitivity pneumonitis (HP) in this case (1, 2). Also, according to radiological findings, other diagnoses such as sarcoidosis, immune deficiency disorders with pulmonary involvement and severe viral pneumonia including SARS and avian flu were also considered.

Although tuberculosis is a relatively common disorder in Iran, it was not a major possibility for this case based on the above mentioned findings.

The diagnosis of tuberculosis in children is difficult due to the absence of sputum and paucibacillary nature of disease in this age group (3).

Thus, a constellation of following criteria is suggested for diagnosis:

1) History of close contact
2) Clinical manifestation
3) Positive tuberculin test
4) Imaging findings compatible with tuberculosis
5) Positive smear or culture of sputum or gastric aspirate (4,5)

Generally, presence of three items among the five above mentioned findings is diagnostic for tuberculosis except for positive smear which is a strong indicator of tuberculosis (5).

In this case based on positive smear from gastric washing in the third time and regardless of negative sputum smears, anti-tuberculous treatment consisting of the standard four-drug regimen (isoniazid, rifampicin, pyrazinamid, and ethambutol) was initiated and the patient responded dramatically in terms of defervescence and amelioration of cough and respiratory distress. She was discharged after two weeks of treatment. Her chest-x ray showed significant improvement after two months. The result of sputum culture was positive for mycobacterium tuberculosis which confirmed the diagnosis. The interesting point of this case is the fact that tuberculosis must be considered in pediatric patients from endemic regions even if the clinical and radiological findings are atypical.

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