Familial outbreak of psittacosis as the first *Chlamydia psittaci* infection reported from Turkey

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ÖZET

Aile içi psitakoz: Türkiye'den bildirilen ilk Chlamydia psittaci infeksiyonu

Psitakoz, papağan hastalığı ve kuş hastalığı olarak da bilinen, insanlara infekte olmuş kanarya, güvercin veya papağan gibi kuşların kurumuş salgılarından bulaşan bir hastalıktır. Bu tanı özellikle akla getirilip özel testlerle araştırılmazsa spesifik tanı konulmadan atipik pnömoni tanısı ile takip ve tedavi edilir. Evlerinde iki adet papağan besleyen bir anne ve Friedreich ataksisi olan oğlunda psitakoz tespit ettik. Hastalarda pnömoniye ek olarak santral sinir sistemi ve karaciğer tutulumu da saptandı. Ülkemizden daha önce yayınlanan psitakoz olgusu olmaması nedeniyle anneyi ve oğlunu ülkemizden kanıtlanmış ilk psitakoz olguları olarak sunmayı uygun bulduk.

Anahtar Kelimeler: *Chlamydia psittaci, psitakoz, aile içi infeksiyon, pnömoni, hepatit.*

SUMMARY

Familial outbreak of psittacosis as the first Chlamydia psittaci infection reported from Turkey

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Psittacosis, also known as parrot disease, parrot fever and ornithosis, can be transmitted to humans by inhaling dried excreta of infected birds like canaries, parakeets, parrots, pigeons and turkeys. Unless it is specifically thought of and investi-

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gated, the diagnosis of psittacosis can easily be missed and without identifying the exact etiology, the disease is usually treated as atypical pneumonia. We diagnosed psittacosis in a mother and her son with Friedreich ataxia, who took care of two parrots in their house. In addition to pneumonia, central nervous system and liver involvement were also identified in those patients. Since there was no any other case of psittacosis reported from Turkey, we thought to be important to report this mother and her son as first cases from Turkey.

Key Words: *Chlamydia psittaci, psittacosis, familial outbreak, pneumonia, hepatitis.*

Psittacosis, also known as parrot disease, parrot fever and ornithosis, can be transmitted to humans by inhaling dried excreta of infected birds like canaries, parakeets, parrots, pigeons and turkeys (1-3). It is a rare zoonotic infection and its clinical presentation is that of a severe atypical pneumonia. In United States of America (USA) 831 cases were reported between the years 1987 and 1996 (4). Unless it is specifically thought of and investigated, the diagnosis of psittacosis can easily be missed and without identifying the exact etiology, the disease is usually treated as atypical pneumonia (5). In the literature, in addition to single sporadic cases, there were also multiple cases from the same family who were infected from the same source and reported as outbreaks (6-9).

We diagnosed psittacosis in a mother and her son with Friedreich ataxia, who took care of two parrots in their house. In addition to pneumonia, central nervous system (CNS) and liver involvement were also identified in those patients. Since there was no any other case of psittacosis reported from Turkey, we thought to be important to report this mother and her son as first cases from Turkey.

CASE REPORTS

Case 1

Forty-eight years old female patient was admitted to Atatürk Chest Disease Center's emergency room because of dyspnea, cough, yellow colored sputum production, fever of 39°C, chills and dry mouth of one-week duration. Although her doctor began a course of treatment with cefuroxime axetil five days ago, her clinical status had been deteriorated from day to day. She has been living with her husband and two children and they bought two parrots one month ago. When her complaints started they thought that those parrots were sick and they let them free to the nature. Seven years ago she was operated from a cyst in her breast. Friedreich ataxia is present in one of her kids (Case 2) and in kids of her uncle and aunt. As she was first examined in the emergency room, she had a fever of 37.4°C, pulse rate of 110/minute and respiratory rate of 28/minute. Fine inspiratory crackles were heard especially from the auscultation of the anterior part of the left lung. Blood gas analysis was performed while the patient was breathing room air and partial arterial oxygen pressure (PaO_2) was measured as 52 mmHg and partial arterial carbondioxide pressure ($PaCO_2$) as 30.2 mmHg. In complete blood count (CBC) analysis hemoglobin level was found as 11.3 mg/dL, hematocrit as 35.3%, WBC count as 6040/mm^3 and platelet count as 302.000/mm^3. Erythrocyte sedimentation rate (ESR) was measured as 70 mm/hour. In serum biochemical analysis AST was found increased as 94, ALT as 112 and GGT as 168. Except those, other parameters of biochemical analysis were found as normal. In the chest radiograph diffuse alveolar infiltration and ground glass opacities were observed in the left lung (Figure 1). As compared with the radiograph obtained seven days earlier, remarkable progression was noticed. Splenomegaly was observed in abdominal ultrasonography. Nothing was grown up from blood and sputum cultures. With the diagnosis of *Chlamydia psittaci* pneumonia we started the treatment of parenteral clarithromycine of 1000 mg/day, oral rifampicin of 600 mg/day and nasal O_2 of 2 L/minute. Two days after the initiation of the treatment, her fever had go down. At the 7th

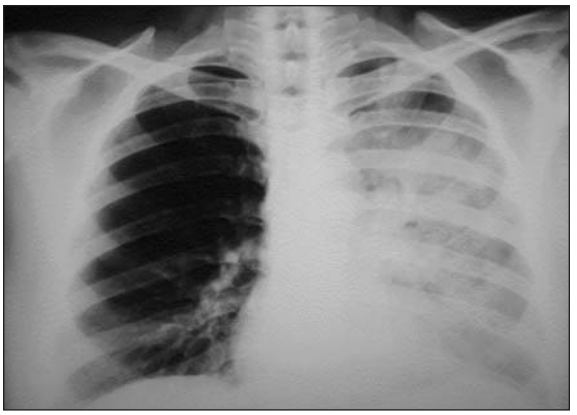

Figure 1. Case 1, chest X-ray: Diffuse alveolar infiltration and ground glass opacities in the left lung.

day of the treatment we changed the clarithromycine from parenteral to oral route and continued with the same dose as 1000 mg/day for 21 days. The chest radiography, obtained at the end of the treatment, showed us that all the pathological images were resolved (Figure 2). Blood gas analysis turned out to be completely normal. The high transaminase enzyme levels also turned out to be normal in one-week after the cessation of treatment. In the beginning of the treatment course, the patient had started to drink more water and to urinate more. She was taking 12 L of fluids and excreting 10 L of urine daily. She was diagnosed as psychogenic polydipsia. Without any other medication with the treatment of psittacosis, this finding resolved spontaneously.

Figure 2. Case 1, chest X-ray: Resolution of radiological findings after treatment.

Case 2

Nineteen years old male patient was admitted to Atatürk Chest Disease Center together with his mother because of dyspnea, cough, yellow colored sputum production and fever of 39°C of three days duration. He was also living in the same house together with those parrots for one month. Although ceftriaxone 2 g/day was started for two days, his clinical status got worse. He was diagnosed as Friedreich ataxia when he was nine years old. Because of Friedreich ataxia his speech could hardly be understood before, but it worsened in the last three days. His oral intake had diminished for two days. As he was first examined in the emergency room it was found that he had a fever of 39.5°C, pulse rate of 92/minute and respiratory rate of 28/minute. He had dry mouth and tongue. He had a thoracic deformity of kyphoscoliosis. In the auscultation of the lungs, inspiratory crackles were heard especially in the anterior of the right lung. Deformities of extremities due to Friedreich ataxia were also observed. In the blood gas analysis that was measured while breathing room air, PaO_2 was measured as 72 mmHg, $PaCO_2$ as 28 mmHg. In CBC analysis Hb was found as 14 mg/dL, Hct as 41.2%, WBC as 5410/mm^3, thrombocyte count as 348.000/mm^3 and ESR as 35 mm/hour. In serum biochemical analysis except the liver function tests, that were measured as increased i.e. AST= 79, ALT= 78, GGT= 82, the other parameters were found as normal. In the chest radiography in addition to pathologies due to thoracic deformity, diffuse alveolar pattern was observed in the right lung (Figure 3). Nothing was grown up in blood and sputum cultures. In the abdominal ultrasonography, a mild degree of splenomegaly was found. We started parenteral clarithromycine of 1000 mg/day and oral rifampicin of 600 mg/day together with intravenous fluid supplement. Two days after the initiation of the treatment his fever had go down and we changed 1000 mg/day clarithromycine from parenteral to oral route at the 7^{th} day and stopped the medications at the 21^{st} day. At the 15^{th} day of the treatment his liver

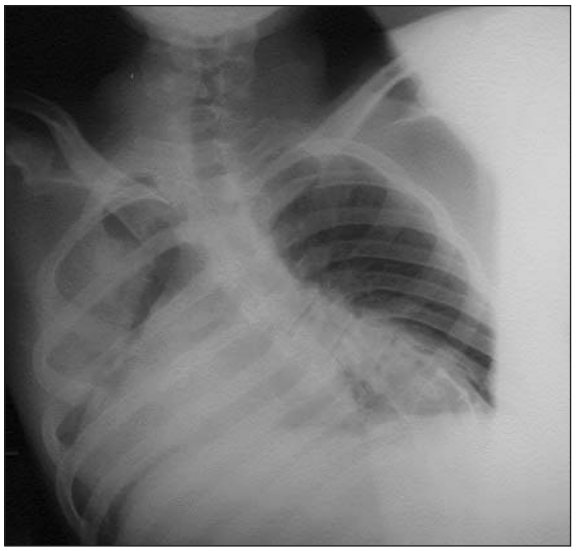

Figure 3. Case 2, chest X-ray: Thoracic deformity and diffuse alveolar pattern in the right lung.

transaminase levels turned out to be normal, besides his speech partially improved and turned out to the level before the disease. In the chest radiography obtained at the end of the treatment, resolution of all the pathological images was noticed (Figure 4).

The father and 26 years old daughter from the same family were also questioned and examined for psittacosis and their chest radiographs were obtained. Nothing pathological was identified. And in the following days no signs of lung infection were noticed.

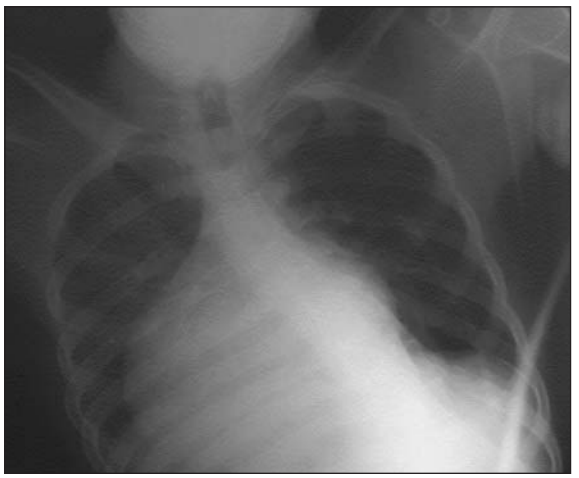

Figure 4. Case 2, chest X-ray: Resolution of radiological findings after treatment.

Serology

Blood samples were taken from two patients at the beginning of the treatment and at the 21st day. Anti-*C. psittaci* IgG levels were measured by microimmunofluorescence (MIF) antibody technique. In both patients' serum samples at least 4 fold increase in antibody titer had developed and specific diagnosis was made by the positive value found at 1/128 titer.

DISCUSSION

Although 831 cases were reported from USA in nine years, no any other case of psittacosis has been reported from Turkey before (4). *C. psittaci* pneumonia resembles to the disease caused by *Chlamydia pneumoniae*. Those two pneumonias cannot be differentiated from each other by clinical examination and routine laboratory tests (1). Regarding this, we have thought that our cases are first reported cases from Turkey since it is hard to diagnose psittacosis and the patients are usually treated as atypical pneumonia of *C. pneumoniae* without having the specific diagnosis.

Psittacosis is frequently seen in people who fed parrots in their house. But besides this since it can be seen in pet shop workers, in custom officers, in turkey-farmworkers and in veterinarians so it can be accepted as an occupational disease (5-12).

Diagnosis can be confirmed by one of three laboratory methods:

a. *C. psittaci* is cultured from respiratory secretions (*C. psittaci* culture is performed by few laboratories because of its technical difficulties),

b. Antibody against *C. psittaci* is increased by four fold or greater (to a reciprocal titer of greater than or equal to 32 between paired acute- and convalescent-phase serum specimens collected as two weeks apart) as demonstrated by complement fixation (CF) or MIF or

c. Immunoglobulin M antibody against *C. psittaci* is detected by MIF (to a reciprocal titer of greater than or equal to 16) (1,13).

Among the patients in whom psittacosis is suspected, it is important to question the exposure to birds. But another finding that is as important

as exposure to birds is splenomegaly. In cases of atypical pneumonias with splenomegaly, psittacosis should be thought of initially. We detected splenomegaly in both of our patients. Macular rash is another important finding for psittacosis although it is not frequently seen as splenomegaly. No macular rash was noticed in both of our patients (1).

There is no data indicating the importance of exposure period for the development of the disease. It seems logical that there is a positive correlation between the disease development and length of the exposure period. In our cases, disease developed in the mother and her son who spend almost all of their time at home; but not in the father and daughter who spend their daytime out of home.

Friedreich ataxia is a disease that affects the nervous system and causes unsteady movement, weakness in extremities. In those patients respiratory mechanics are also frequently disturbed (14). This condition can be a facilitating factor for the development of psittacosis.

C. psittaci can affect other organ systems other than the respiratory system. It can lead to endocarditis, myocarditis, hepatitis, arthritis, keratoconjunctivitis, and encephalitis (15,16).

CNS involvement can present with both neurological and psychiatric symptoms (17,18):

In both of our patients there were signs of CNS involvement. In case 2 increase in speech deformity with the disease and turning back level after treatment indicates the involvement of CNS.

In the literature no case of psittacosis together with Friedreich ataxia has been reported.

Psychogenic polydipsia is an uncommon clinical disorder characterized by excessive water drinking in the absence of a physiologic stimulus to drink. The most important test for the diagnosis of this disease is the water deprivation test. It is generally a condition that is seen in schizophrenics (19). In our patient although there is no underlying psychiatric problem, we observed that together with psittacosis and psychogenic polydipsia was developed and with the treatment of psittacosis it subsided off with out any specific treatment. Development of psychogenic polydipsia with *C. psittaci* infection may be due to CNS involvement of psittacosis. In the literature no any case of psychogenic polydipsia that develops together with psittacosis has been reported before.

Before antimicrobial agents were available 15-20% of persons with *C. psittaci* infection were reported to have died. However less than 1% of properly treated patients now die due to infection (1).

Chlamydias are intracellular microorganisms. They are not affected from beta-lactam antibiotics. In treatment tetracyclines, chloramphenicol and macrolides can be used. If microorganism leads to severe form of disease rifampicin should be added to treatment. There was a case reported as treated only with rifampicin but only rifampicin is not an advised treatment protocol (13,20,21). We treated our patients with macrolide and rifampicin combination.

In chlamydia infection, more than one organ system can be affected at the same time. High levels of serum AST, ALT indicates hepatitis (22). In both of our patients liver enzymes were found as increased and they turned out to be normal at the end of the 4th week of the initiation of the treatment.

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