



Case Report

Importance of clinical history in the diagnosis of psittacosis: A case report



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ABSTRACT

Introduction: Psittacosis, caused by the bacteria *Chlamydia psittaci*, is primarily a disease of birds that can be transmitted to humans. The clinical manifestations of the disease are wide, ranging from asymptomatic illness to fulminant psittacosis with multi-organ failure. The organism gets attached to the upper respiratory mucosa after inhalation and the majority remain asymptomatic. However, some people may develop symptoms of atypical pneumonia.

Case presentation: Psittacosis usually presents with sudden onset fever with chills and rigor, headache, and myalgia. Here we present a case of a 35 years old female with a history of close contact with parrots who presented to the ER with complaints of high-grade fever and headache for 2 weeks which started 2 days after her parrots died.

Discussion: The disease usually manifests as flu-like symptoms or pneumonia and is included in the differential diagnosis of community-acquired pneumonia. Investigations reveal neutrophilia, raised erythrocyte sedimentation rate, C-reactive protein, and elevated liver enzymes which were consistent with the findings of our patient. Chest X-ray showed ill-defined consolidation in the right middle and lower lobes which were inconclusive. Hence, a CT chest was done which revealed patchy ground glass opacities with surrounding consolidation giving a reverse halo sign. Due to her contact with birds and CT findings which were suggestive of psittacosis, she was started on doxycycline and her condition improved thereafter.

Conclusion: We highlight the importance of proper history taking and awareness on zoonotic diseases to the general public to prevent, diagnose and treat the disease effectively.

1. Introduction

Psittacosis, also known as ornithosis and parrot fever, is a zoonotic disease caused by *Chlamydia psittaci*, a bacterium that usually infects birds [1,2]. It is transmitted from birds to humans, and it results in many clinical manifestations, from subclinical or self-limiting, influenza-like illness to atypical pneumonia and also the fulminant psittacosis with multi-organ failure. Transmission is either by direct contact with the susceptible animals, avian nasal discharges, infectious avian fecal materials, and feather dust inhalation [3]. The word psittacosis was derived from the Greek word for parrot; however, the first description of the disease was in 1879 in the medical literature [4,5]. The pandemic of psittacosis in 1929 and 1930 affected around 800 people all over the world [6]. Psittacosis pneumonia has been approximated in one percent of cases among all reported community-acquired pneumonia (CAP) [7].

The major animals harboring *Chlamydia psittaci* include poultry, and pet birds such as parrots, cockatiels, macaws, and parakeets. Though the organism does harbor non-avian animals such as cattle, sheep, swine, etc., these have not transmitted disease in humans [8]. Following inhalation of bacteria from the secretions, fecal materials, or even feather dust, the organism attaches to the mucosal surface of the upper respiratory tracts. Although many can remain asymptomatic, in people with the manifestation of atypical pneumonia, it is assumed to be due to an autoimmune reaction with the involvement of the outer membrane proteins (OMP) [9]. Antibiotic therapy preferably tetracyclines are used for the management of the patient. We report a case of psittacosis in a 35-year-old female with a history of exposure to dead parrots managed by tablet doxycycline. This case report has been reported as per SCARE 2020 criteria [10].

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1.1. Case presentation

A 35-year-old female presented to Emergency Department with the complaint of fever for 2 weeks. The fever was intermittent type with the maximum recorded temperature to be 103-degree Fahrenheit (F), aggravated in the evening and relieved by medication. It was associated with chills, rigors, and headache. However, there was no history of cough, chest pain, shortness of breath, joint pain, or myalgia. She was a bird lover and had bought three parrots at once before the onset of her symptoms. Among them, two parrots had died. Following the death of the parrots, she gave a history of sleeping with the dead parrots in her bed overnight. After two days of the overnight exposure, she started having a fever. She was admitted in another center and treated with injection piperacillin-tazobactam for a week. As her fever didn't subside, she was transferred to our hospital. She did not have any significant past medical and surgical history. There were no similar complaints from other family members.

On examination, she was well built, and co-operative. Her blood pressure was 110/70 mm Hg, pulse rate was 100 per minute and temperature was 101.6-degrees F. On investigation, her complete blood count showed a total count of 11,000 with 80% neutrophils, and 36% lymphocytes. Her liver function test and renal function test were within normal limit. Her ESR was 12 and her CRP was 30. Her AST and ALT levels were 88 mg/dl and 76 mg/dl respectively (Table 1). Samples for blood culture, sputum AFB stain, and culture were also sent.

Then, a chest X ray was performed (Fig. 1) which showed ill-defined consolidation involving the right upper and middle zones. The provisional diagnosis of psittacosis was made. Another differential of community-acquired pneumonia was thought of. Subsequently, computed tomography (CT scan) was performed to confirm the diagnosis further (Fig. 2), which showed patchy ground glass opacities in the apical and posterior segments of the right upper lobe as well as postero-basal segment of the right lower lobe with surrounding dense consolidation giving reverse halo sign (atoll sign).

As the clinical history and CT findings were suggestive of psittacosis, she was started on tablet doxycycline 100 mg twice daily. A serological test for *Chlamydia psittaci* could not be sent due to the unavailability of tests. However, her condition improved rapidly within 48 hours of treatment. She was continued on tablet doxycycline for the next 2 weeks. Her follow-up X-ray was normal. She was completely asymptomatic after 2 weeks.

2. Discussion

As the most common forms of presentation of *C. psittaci* is flu-like illness and pneumonia, the actual incidence is currently unknown since the regular use of diagnostic tools for flu-like illness and CAPs is not in practice [7]. Clinically it manifests as sudden onset fever with rigors, sweats, and myalgia. Our patient presented with intermittent onset high-grade fever and headache. Headache is usually severe along with dry cough, dyspnea, chest pain, hemoptysis, and diarrhea [2]. However, no other symptoms were present in our patient. It mostly affects young or middle-aged adults and is usually preceded by recent exposure to a bird [2]. In our case, she was a middle-aged female with a history of exposure to dead parrots. Other less common manifestations

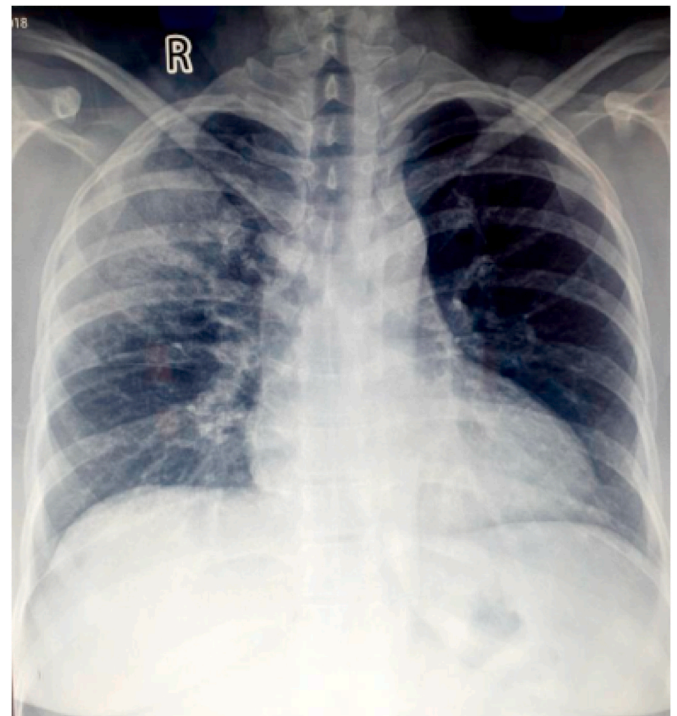


Fig. 1. Ill-defined consolidation is seen involving right upper and middle zones.

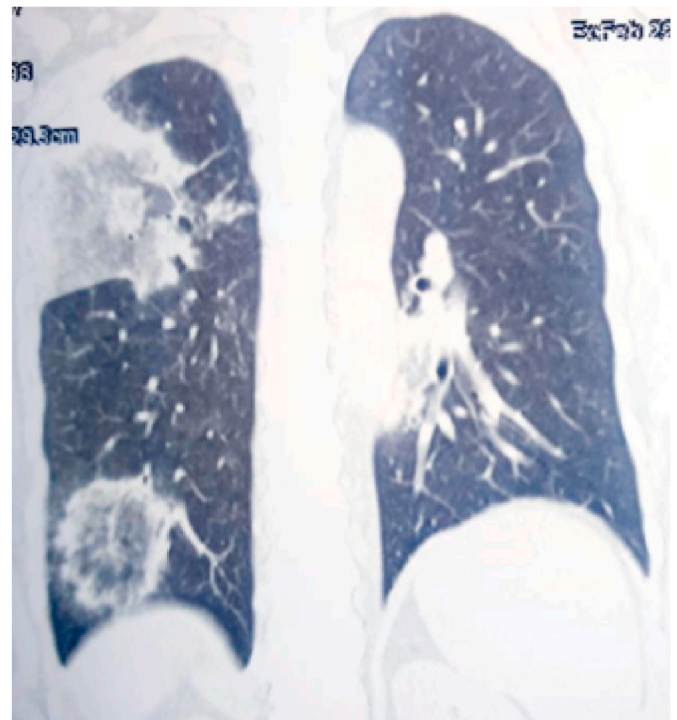


Fig. 2. Patchy ground glass opacities are seen in the apical and posterior segments of right upper lobe as well as postero-basal segment of right lower lobe with surrounding dense consolidation giving reverse halo sign (atoll sign).

Table 1

Blood investigations of the patient.

Investigations	Results
CBC	11,000
Neutrophils	80%
Lymphocytes	36%
AST	88
ALT	76
ESR	12
CRP	30

include altered mental status [11], endocarditis [12], acute tubular necrosis, reactive arthritis [13], disseminated intravascular coagulation [14], erythema nodosum [15], etc. However, no such manifestations were present in our patient. The incubation period ranges from five to 14 days but can be as long as 39 days [1]. Our patient had the occurrence of symptoms two days after exposure to the dead parrots.

Laboratory findings show raised erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) with mild elevation of liver enzyme (aspartate transaminase) which was similar to the findings of our patient [16]. Other lab findings include hyponatremia, mild elevation of serum creatinine, and blood urea nitrogen [17]. In our case, there were no other significant findings. Usually, a chest X-Ray shows a ground-glass-like shadow in the involved lobes. In our case, there was ill-defined consolidation involving the right upper and middle zones. Computed tomography (CT) is found to have higher sensitivity and may reveal nodular pulmonary infiltrates with surrounding ground-glass opacities. Similar finding to our patient's CT scan was seen in a case report by Haaba et al., where there was a bronchial wall thickening, air-space consolidation, and a reversed halo sign, characterized by a denser uniform shadow surrounding the central ground-glass opacity in the periphery of the left upper lobe of the lung [18].

Confirmatory diagnosis of psittacosis requires polymerase chain reaction (PCR)-based or serological confirmation testing [19]. We could not perform the serological test, as it was not available in both Nepal and India. In the absence of such a diagnostic facility, a detailed and more thorough history of patients in relation to their occupations or personal interest in birds can give us physicians with a vital clue to diagnosis [20]. In areas with no diagnostic facility as in our case, diagnosis mostly depends on the clinical assessments and exclusion of other possible disease conditions. The history taking was vital to correctly diagnosing the patient and providing the required treatment for our patient. Histopathology is not usually required, however alveolar-lining cells with intracytoplasmic inclusions are pathognomonic which signifies the elementary bodies of *C. psittaci* [21]. Although, the disease mostly recovers completely with proper treatment, endocarditis, pneumonia, hepatitis, and inflammation of the nerves are some of the complications [22]. Our patient completely recovered with tablet doxycycline prescribed for the duration of 2 weeks. The availability and cost-effectiveness of serological tests could be helpful in diagnosing the disease accurately and rapidly.

3. Conclusion

Despite being a condition, which is easily treatable with appropriate antibiotics, the physicians are likely to miss this condition as in this case. Psittacosis should be included as a differential in a patient presenting with community acquired pneumonia, with further detailing of any contact with birds be it occupationally or for personal interest. Along with occupational aspect of contact with bird, we would like to highlight the importance of awareness of zoonotic disease to the pet owners.

Ethical approval

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None.

Author contributions

Author 1: Led data collection, concept of study, contributed in writing the case information.

Author 2: Literature review, writing initial draft, revising, and editing the manuscript.

Author 3: Literature review and writing case information.

Author 4: Literature review, revising and editing the manuscript.

Author 5: Literature review, editing and submitting the manuscript.

All authors were involved in manuscript drafting and revising, and approved the final version.

Registration of research studies

1. Name of the registry: N/A.
2. Unique Identifying number or registration ID: N/A.
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): N/A.

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Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104695>.

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