Case report

A patient with psittacosis from a pigeon: A reminder of the importance of detailed interviews and relative bradycardia

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A 43-year-old man was brought to our hospital with fever. The initial diagnosis was bacterial pneumonia, and ampicillin/sulbactam was administered. However, defervescence was not achieved, and relative bradycardia was observed. Detailed history-taking revealed that the patient had been involved in caring for a wild pigeon before hospitalization. We changed the antimicrobial therapy to minocycline and the patient’s condition improved. Chlamydia psittaci antibody was subsequently found to be increased four-fold, and psittacosis was diagnosed. This case acts a reminder to clinicians of the importance of both the history of exposure to any birds and vital signs, including relative bradycardia.

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Introduction

Chlamydia psittaci is an obligate intracellular gram-negative bacterium that causes psittacosis, an important human zoonosis, and is a member of the Chlamydiaceae family [1,2]. While psittacosis is a well-known disease, appropriately diagnosed cases are rare both in Japan and other countries [3]. Chlamydia psittaci is thought to account for approximately 1% of community-acquired pneumonias [4]. The clinical course of psittacosis can be severe if appropriate medical treatment is delayed [5–7]. We report here a case of Chlamydia psittaci infection where the keys to diagnosis were careful elicitation of the history and scrutiny of vital signs, including relative bradycardia.

Case report

Clinical presentation and management

A 43-year-old man was brought to our hospital by ambulance with a 3-day history of fever >40 °C and headache at night. The headache worsened with the fever, was accompanied by photosphobia and nausea, and was associated with a pain as if both eyes were being pushed into the skull. Furthermore, he coughed without the sputum. His symptoms did not improve over time, and he was brought to our hospital because he could not move by himself. He had no apparent past medical history or family history.

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Fig. 1. (A) Chest radiograph (posterior/anterior view). An infiltrative shadow is seen in the right diaphragm. (B) Chest radiograph (lateral, left/right view). Infiltrative shadow is seen dorsally.
Fig. 2. (A) and (B) Computed tomography (axial sections). The lower right lobe shows localized infiltrative shadows.
He denied a history of keeping pets at home. He said he had been living in an approximately 20-year-old reinforced concrete apartment and had not recently visited any hot springs.

On arrival at the emergency department, he was noted to be 171.0 cm tall and weighed 78.0 kg, with a Glasgow Coma Scale score of 15 (E4V5M6), body temperature of 39.8 °C, blood pressure of 118/72 mmHg, pulse rate of 86 beats/min (regular), respiratory rate of 16 breaths/min, and percutaneous oxygen saturation of 98% in room air. On physical examination, the conjunctivae were not anemic, and no icteric changes were observed. Signs of meningeal irritation, including cervical rigidity, were absent. Slight crepitation were audible on auscultation of the right back. No palpable surface lymph nodes, rash, or neck stiffness were evident.

Blood tests revealed an elevated white blood cell count with dominant neutrophils and C-reactive protein (CRP) level (Table 1). Chest radiography showed infiltrative shadows in the back on a lateral projection (Fig. 1-A, -B). Chest computed tomography (CT) showed consolidation in the right lower lobe (Fig. 2-A, -B). The initial diagnosis was bacterial pneumonia, and he was hospitalized for treatment.

Blood and sputum cultures were obtained before administration of antibiotics, and ampicillin/sulbactam (ABPC/SBT) was intravenous administered (every six hours) during hospitalization. However, no defervescence was observed in the 2 days after hospitalization. His body temperature was 40.0 °C, and the pulse rate of 82 beats/min on hospital day 2 reflected relative bradycardia. Given his relative bradycardia, mildly elevated white blood cell count and young age, we considered the possibility of atypical pneumonia and carefully elicited the patient’s history. This second interview revealed that he had been involved in caring for an injured pigeon at his home 2 weeks before hospitalization. In the interview on admission, the patient had answered “no” to the question about keeping pets. Based on this new information, we immediately changed ampicillin/sulbactam to minocycline (intravenous administration: every 12 h) on hospital day 2. Defervescence was observed in the next several days, and minocycline was administered for 14 days in total. His overall status improved, and he was discharged on hospital day 16. More than four-fold rise of anti-Chlamydomphila psittacci antibody titer from <1:4 on day 2 to 1:32 on day 16 by complement fixation method, psittacosis was diagnosed after discharge (Fig. 3). The results of the blood and sputum cultures were negative. Furthermore, other atypical pneumonias were negative. (Legionella urinary antigen, Mycoplasma blood antibody, Mycoplasma throat swab and Chlamydia pneumoniae blood antibody)

**Discussion**

*Chlamydomphila psittacci* is an obligate intracellular Gram-negative bacteria that causes psittacosis, an important human zoonosis, and is a member of the *Chlamydiaceae* family [1,2]. The number of reported cases of *Chlamydomphila psittacci* infection in Japan is small, with 12 cases reported in 2011, six in 2012, six in 2013, eight in 2014, five in 2015, six in 2016, and two in 2017 according to the National Institute of Infectious Diseases in Japan. Similarly, approximately 10 cases per year are reported in the United States [3].

Humans can contract psittacosis after inhaling *Chlamydomphila psittacci* aerosolized from secretions from birds, such as bird excrement or respiratory secretions on feathers [1]. Birds are the primary reservoir for *Chlamydomphila psittacci*, and pet birds (particularly psittacines such as parrots and parakeets) are considered the most common source of infection. *Chlamydomphila psittacci* infection affects at least 465 bird species, spanning 30 different orders, most prominently Psittacidae (cockatoos, parrots, parakeets, and lories) [8]. This case was caused by a pigeon. While the Columbiformes order (including pigeons) has been reported to be a reservoir for *Chlamydomphila psittacci* [9], the name of the disease, “psittacosis,” prevented us from considering less common origin species, such as pigeon, and led to a diagnostic pitfall. Furthermore, we had mistakenly considered the likelihood of psittacosis low after simply asking about having pets in the initial interview on admission. History of contact with animals within a month, including not only breeding pets, but also any contact with animals, birds, and insects is needed when obtaining a patient’s history. Relative bradycardia is a common sign in patients with psittacosis and other atypical pneumonias, such as Legionella and chlamydial pneumonias [10-12]. We took a detailed history again.
Conclusion
Psittacosis is a rare disease that shows characteristics in diagnosis, including relative bradycardia. Detailed history-taking may be needed again if the pneumonia remains unimproved following beta-lactam-based treatment. Because some patients can be severely affected with pneumonia, treatment should be initiated as soon as possible. In cases where bradycardia is present, prompt treatment is recommended as the disease may be severe without treatment.

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