

Notes from the Field

A Case of Psittacosis — Qingdao City, Shandong Province, China, May 2023

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A case of psittacosis was identified in Qingdao City, Shandong Province on May 4, 2023. The patient, a 69-year-old retired male, was admitted to a medical facility on April 22, 2023. His symptoms, which had persisted for two days prior to his admission, included a fever (reaching 38.4 °C at its peak), an escalating cough, and wheezing, none of which had been previously treated. Upon admission, the patient was placed on continuous low-flow oxygen, administered piperacillin/tazobactam as antibacterial therapy from April 22 to May 1, given ambroxol hydrochloride injections as an expectorant from April 22 to April 27, and provided panting and hydrocortisone as spasmolytic and anti-inflammatory treatment. He maintains a flock of carrier pigeons year-round, which he regularly releases.

On April 23, sputum samples from the patient were processed using 198 targeted next-generation sequencing (NGS) tests for respiratory pathogens. These tests detected *Chlamydia psittaci* (*C.psittaci*), with two reads number exceeding 500. As illustrated in Figure 1, the results corresponded to the CP3 strain (1). The Shandong Provincial Center for Disease Control and Prevention subsequently confirmed the presence of *C. psittaci* in these samples using metagenomic NGS. Following these results on April 24, oral doxycycline was incorporated into the patient's treatment regimen, leading to an improvement in his condition. The patient was discharged on May 3. Meanwhile, fecal samples from the pigeons were collected for real-time polymerase chain reaction analysis, which returned positive results. It is noteworthy that the patient's family members, who had no close contacts with the pigeons, remained healthy and did not exhibit any signs of illness.

Psittacosis, a zoonotic disease attributable to *C. psittaci*, impacts humans, birds, and diverse animal populations (2). Some instances of psittacosis can exacerbate rapidly, leading to fatalities if the treatment is not administered promptly. Prominent reservoirs of

infection encompass birds, especially parrots, seagulls, and pigeons. *C. psittaci* is categorized into nine distinct genotypes, reliant on the sequences of the outer membrane protein A gene (3). The disease mainly transmits to humans when they inhale bacteria present in bird feces or secretions during close contact, while direct transmission from human to human is uncommon. Despite its rarity (4), fewer than 10 cases of psittacosis have been reported annually in the US since 2010 (5). In China, most psittacosis cases are sporadic, with a small number of clusters reported in recent years (6–7). However, it is speculated by experts that there is significant underreporting and potential misdiagnosis of psittacosis (5), possibly owing to insufficient awareness about the disease and limited testing resources. In the present diagnostic case, NGS technology was deployed, factoring in the clinical manifestations and the patient's history of pigeon keeping.

This report denotes the inaugural case of psittacosis in Qingdao City, thereby necessitating an immediate call to action for implementing a prevention and control program within the region. This program must include systematic surveillance of pigeons, parrots, zoological gardens, and avian trading markets, with a particular focus on seagulls in Qingdao during the winter and spring seasons. Similarly, it is essential to promote awareness and education about psittacosis in the community.

Employment of multi-pathogen detection methodologies, including NGS, is recommended in scenarios of unexplained fevers. Clinicians need more training in the diagnosis and treatment of such conditions, as well as increased awareness of rare or newly emerging infectious diseases.

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A

Chlamydia psittaci WC, complete genomeSequence ID: [CP003796.1](#) Length: 1172265 Number of matches: 1Range 1: 684766 to 684866 [GenBank](#) [Graphics](#)

Score	Expect	Identities	Gaps	Strand
187 bits(101)	3e-43	101/101(100%)	0/101(0%)	Plus/Plus

Query 1 ATCGCACATTGCTTTAGAATGCACTCTACAAACCCATCCAAATATCACTCTTATAGGAGA 60
 |||
 Sbjct 684766 ATCGCACATTGCTTTAGAATGCACTCTACAAACCCATCCAAATATCACTCTTATAGGAGA 684825

Query 61 AGAAATCGCAGAAAAGAATGTGCCTCTAAATACGATAATCC 101
 |||
 Sbjct 684826 AGAAATCGCAGAAAAGAATGTGCCTCTAAATACGATAATCC 684866

B

Chlamydia psittaci CP3, complete genomeSequence ID: [CP003797.1](#) Length: 1168150 Number of matches: 1Range 1: 58905 to 59005 [GenBank](#) [Graphics](#)

Score	Expect	Identities	Gaps	Strand
187 bits(101)	3e-43	101/101(100%)	0/101(0%)	Plus/Minus

Query 1 GCAGCCTTCCTAGCCTTAAACATTTGGGATCGCTTCGACATTTTCTGCACCTTAGGGGCA 60
 |||
 Sbjct 59005 GCAGCCTTCCTAGCCTTAAACATTTGGGATCGCTTCGACATTTTCTGCACCTTAGGGGCA 58946

Query 61 TCCAATGGATACTTCAAATCAAGTTCGGCTGCATTCAACTT 101
 |||
 Sbjct 58945 TCCAATGGATACTTCAAATCAAGTTCGGCTGCATTCAACTT 58905

FIGURE 1. Comparatively favorable BLAST results gained from targeted next-generation sequencing, with read numbers surpassing 500; results pertain to a psittacosis case identified in Qingdao City, Shandong Province, 2023. The BLAST results are delineated for (A) the most abundant and (B) the second most abundant read counts.

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