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Psittacosis in All Four Members of a Family in Nagasaki, Japan

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We report the occurrence of 4 cases of psittacosis in a single family residing in Nagasaki, Japan in 2005. The clinical features of the 4 cases were as follows.

Patient 1: 42 years old, male. The patient developed general malaise, fever (39-40°C), severe cough and sore throat on March 25, 2005. Chest X-ray examinations performed on March 27 showed signs compatible with pneumonia.

Patient 2: 34 years old, female. The patient developed fever (38-39°C) and headache, but no cough, on March 25. Chest X-ray examinations performed on March 27 showed signs compatible with pneumonia.

Patient 3: 72 years old, male. The patient developed fever (39°C) and cough on April 1. Chest X-ray examination showed signs compatible with pneumonia.

Patients 1, 2 and 3 recovered from the symptoms after intravenous or oral administration of minocycline for 2 weeks at the outpatient clinic.

Patient 4: 66 years old, female. The patient developed fever and cough on April 1, and was hospitalized. Chest X-ray examination showed signs compatible with pneumonia. She received infusion of hydrochloric acid cefotiam and clarithromycin, recovered and left the hospital on April 11.

Further study revealed the time course of these cases. Patient 1 purchased a Cockatiel parakeet (*Nymphicus hollandicus*) from a pet shop on March 4, 2005. The parakeet was mainly cared for by Patient 1, but also sometimes by Patient 2, who was the younger sister of Patient 1. The parakeet died on March 31. Because of the clinical symptoms in the family members, the corpse of the parakeet was dispatched to the Department of Virology 1, National Institute of Infectious Diseases, Tokyo, for laboratory examinations.

The corpse was dissected, and cloaca swabs and tissue samples from the liver, spleen, lung and intestinal tract were used for microbiological examinations. The feces collected from the bird cage, and the pharyngeal swab fluids from Patients 3 and 4 were used for further analyses. Specimens from Patients 1 and 2 were not available. PCR revealed the presence of the chlamydial gene in the cloaca swabs and the tissue samples from the liver, spleen, lung and feces of the parakeet (Cai Y., Kishimoto T. et al., in preparation). The PCR products were directly sequenced, and their sequences

were confirmed as *Chlamydophila psittaci* by BLAST analysis using the GenBank database (data not shown). *C. psittaci* was isolated from these samples, and confirmed using a commercial monoclonal antibody (Chlamydia FA; Denka Seiken Co., Tokyo, Japan) (1). The pharyngeal swabs from Patients 3 and 4, as well as the parakeet intestinal tract were negative for *Chlamydiae* by PCR and isolation.

Acute and convalescent serum samples from the patients were examined for antibodies shown to be representative of chlamydial strains, *C. psittaci* Budgerigar-No.1, *C. pneumoniae* AR-39, and *Chlamydia trachomatis* L2, by a micro-immunofluorescence test (Micro-IF) (1). Antibody titers to *C. psittaci* were elevated more than 4-fold in convalescent samples compared with acute ones for all 4 cases (Table 1). The results indicated that these patients were infected with *C. psittaci*. The results of microbiological tests of the bird specimens suggested that these four family members were infected with *C. psittaci* from the parakeet.

Local government officials found that there were no incidence among birds borne from January 1, 2005 to March 31, 2005 at the pet shop.

Occurrence of psittacosis in all the members of a family is a rare event. Furthermore, in this case, 2 of the 4 members did not help in caring for the parakeet. In these cases, it is assumed that the infection was caused by a high dose of *C. psittaci* excreted from the dying parakeet. This incidence indicates the importance of appropriate management of bird breeding, including regular health checks for all bred

Table 1. Serological results against *Chlamydophila psittaci* by Micro-IF

Patient No.	Immunoglobulin class	Time of blood sampling		
		1st	2nd	3rd
1	IgG	<16	256	1,024
	IgM	<8	16	16
2	IgG	<16	128	128
	IgM	<8	8	32
3	IgG	<16	64	128
	IgM	<8	16	32
4	IgG	16	64	NT
	IgM	<8	<8	NT

The second and third samples were collected about 2 weeks and about 1 month after the onset of symptoms, respectively. NT, not tested.

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birds. In order to prevent infection from breeding birds, it is important to maintain a clean environment and appropriate hygiene. This includes (i) hygienic disposal of bird feces, (ii) enforcement of hand-washing and gargling rules, (iii) adequate room ventilation, (iv) prevention of mouth-to-mouth feeding between birds and their pet owners, (v) medical examination of all pet owners who develop flu-like symptoms, and (vi) breeding in the outside of the room. We also need to maintain a system of administrative and laboratory correspondence for outbreaks, because it is predicted that health hazards by zoonotic pathogens will be increasing.

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REFERENCE

1. National Institute of Infectious Diseases and the Association of Public Health Laboratories for Microbiological Technology, Japan (2000): The Diagnostic Manual of Chlamydial Infection (in Japanese).