

Detection of *Chlamydomphila psittaci* in Asymptomatic Animals

With interest we read the article of Saito et al. that describes a severe case of chlamydiosis in humans (3). However, according to us two major points need to be clarified.

The taxonomy of chlamydiae has been illustrated in 1999 by Everett et al. (1), and such classification is accepted universally, as evidenced by a number of manuscripts published in recent years. Classification is based on differences in phenotype and biological properties and in the sequences of 16S and 23S rRNAs. Currently, within the family *Chlamydiaceae* two distinct genera are recognized, *Chlamydia* and *Chlamydomphila*. The genus *Chlamydia* includes three species, *Chlamydia muridarum*, *Chlamydia suis*, and *Chlamydia trachomatis*. The genus *Chlamydomphila* includes six species, namely *Chlamydomphila pneumoniae* (strains of human, marsupial, and amphibious origin), *Chlamydomphila caviae* (strains detected in guinea pigs), *Chlamydomphila felis* (feline strains), *Chlamydomphila pecorum* (nonabortive strains of ruminants), *Chlamydomphila abortus* (abortive strains of ruminants), and *Chlamydomphila psittaci* (avian strains). Accordingly, it seems inappropriate to use the designation *Chlamydomphila avium* instead of the well-established designation *Chlamydomphila psittaci*, as this could easily generate misunderstandings by physicians, veterinarians, and poultry workers or pet owners.

The authors give strength to the hypothesis that a person-to-person infection by *C. psittaci* occurred between the owners of a pet shop, because no dead birds were found at the time of the investigation in the shop. However, avian chlamydiosis in birds such as parrots or parakeets is often unapparent, and infected asymptomatic birds can act as carriers (4). The infection in most avian species is usually asymptomatic, but stress factors (such as animal trading or inappropriate handling of animals) may lead to the onset of chlamydia-associated clinical signs. Indeed, we have recently observed an outbreak of avian chlamydiosis in a pet shop in Southern Italy. Fifteen Fischer's lovebirds (*Agapornis fischeri*) imported recently (less than 2 weeks) developed severe clinical signs, including serous ocular and nasal discharge and excretion of yellow-green urates. The disease was observed initially in five Fischer's lovebirds and after 1 week in the other birds, all of which died within 2 weeks after the onset of the disease. Fecal samples of the animals were collected and analyzed by PCR and restriction endonuclease analysis, as described previously (2). The DNA of *C. psittaci* was detected in all of the samples. An additional 14 birds of different species were present in the pet shop, but they did not show any clinical signs of chlamydiosis. To assess the presence of asymptomatic infections, fecal samples of those animals were also collected and analyzed by PCR, and two red-rumped parrots (*Psephotus hematonotus*) were diagnosed as positive for *C. psittaci* DNA. Both of the red-rumped parrots shed *C. psittaci* for more than 2 weeks with their feces, but they did not develop the disease. Therefore, the fact that no dead birds were present in the shop of the elderly couple infected by chlamydiosis described by Saito et al. (3) does not rule out, according to us, the possibility that there were asymptomatic animals in the shop, as bacteriological or molecular investigations were not carried out. Also, it is well known that *C. psittaci* is highly resistant in drying feces of infected birds and, therefore, environmental contamination of the shop may have occurred a long time before the infection of the shop owners.

In conclusion, transmission of *C. psittaci* by infected animals should always be suspected in episodes or outbreaks of chlamydiosis in humans, regardless of the presence of clinical signs in the animals, and analysis by PCR of fecal samples collected from the birds' cages is an easy, helpful procedure to detect and assess the presence of animals that shed *C. psittaci* in the environment.

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Authors' Reply

We appreciate the comments by Greco et al. on our recent article (5) and would like to address their concerns.

A new classification of chlamydiae was proposed by Everett et al. (2) in 1999. Although Schachter et al. did not accept this proposal (6), classification based on differences in the sequences of 16S and 23S rRNAs has been reported in recent years (1, 4). According to those reports, chlamydiae have been classified into *Chlamydia muridarum*; *Chlamydia suis*; *Chlamydia trachomatis*; *Chlamydomphila pneumoniae*; *Chlamydomphila caviae*; *Chlamydomphila felis*; *Chlamydomphila pecorum*; *Chlamydomphila abortus*; and *Chlamydomphila psittaci*. Using the designation *Chlamydomphila psittaci* may be appropriate according to previous reports (1, 2, 4). We revised our usage to the term *Chlamydomphila avium* in accordance with the comments made by a reviewer during the revision process of the manuscript.

We have mentioned that one suspected route of infection is acquisition of infections from infected birds, while another is person-to-person transmission. We have not hypothesized that person-to-person infection by *Chlamydomphila psittaci* occurred between the owners of the pet shop, despite the fact that no dead birds were found at the onset of disease in the elderly couple.

As Greco et al. have pointed out, the possibility that asymptomatic animals were present in the shop cannot be ruled out, as bacteriological or molecular investigations were not performed. We have recognized that PCR analysis of fecal sam-

ples collected from birdcages is important. However, the patients did not consent to sampling of blood or droppings from birds to investigate the presence of *Chlamydophila avium*. Asymptomatic infected birds may well have been present in the shop, with the couple becoming infected from these birds.

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