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Main topic : One Health

Zoonotic Chlamydiae from a One Health perspective: focus on diagnosis, cross-disciplinary communication and education

ALBIN S.¹, MARTI H.², IMKAMP F.³, HINIC V.³, BOREL N.²

¹ National Reference Centre for Poultry and Rabbit Diseases, Institute for Food Safety and Hygiene, Vetsuisse Faculty, University of Zurich, Zurich, Switzerland; ² Institute of Veterinary Pathology, Vetsuisse Faculty, University of Zurich, Zurich, Switzerland; ³ Institute of Medical Microbiology, University of Zurich, Zurich, Switzerland

Introduction

Four species of the intracellular bacteria Chlamydiae have a known zoonotic potential: Chlamydia (C.) psittaci (main hosts: birds), C. abortus (main hosts: sheep and goats), C. caviae (host: guinea pigs) and C. felis (host: cats) [1].

In birds, C. psittaci infection can be inapparent or range from mild to severe, acute to chronic disease, with intermittent shedding. C. abortus is a close phylogenetic relative of C. psittaci and causes rampant infectious abortion in sheep and goats, termed ovine enzootic abortion.

Recently, several new Chlamydia species have been described, such as C. avium in pigeons or C. buteonis in hawks and falcons, where the zoonotic potential is still unclear. Furthermore, well-known zoonotic species were found in new hosts, such as C. psittaci in horses [1,2].

Zoonotic C. psittaci infections can manifest in humans as atypical pneumonia, while C. abortus can cause respiratory disease or abortion in pregnant woman.

Methods

A fatal case of severe pneumonia due to C. psittaci and two cases of C. abortus infections in pregnant women were diagnosed thanks to inter-disciplinary communication between medical and veterinary microbiologists. Applied tests included a multiplex PCR panel for respiratory pathogens causing atypical pneumonia (medical laboratory), and species-specific real-time PCR and typing assays in veterinary Chlamydia reference laboratories [3,4].

Results

C. psittaci genotype A was retrieved from samples of the deceased patient as well as from a psittacine bird of his holding. C. abortus was detected in a throat swab from one pregnant woman suffering from pneumonia – where the pregnancy could be maintained – or in abortion material from another female patient. Both women had handled goat or sheep abortion material, which was not further investigated despite federal regulations concerning abortions of small ruminants.

Conclusions

In the three recently diagnosed zoonotic Chlamydia cases in Switzerland, a cross-disciplinary communication between medical microbiologists, physicians and veterinarians proved effective in diagnosis and education. Collaboration was also fruitful in updating the literature of zoonotic cases and of further mostly new Chlamydia species with so far unknown zoonotic potential. This included writing articles in international journals [3], but also in domestic medical [4] and veterinary journals [2].