BRIEF COMMUNICATIONS AAEM

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WILD PIGEONS AND PHEASANTS – A SOURCE OF *CHLAMYDOPHILA PSITTACI* FOR HUMANS AND ANIMALS

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Abstract: The authors present results of serological examination in 275 pheasants (*Phaisanus colchicus*) and 273 pigeons (*Columba livia f. domestica*) for the presence of *Chlamydophila (Ch) psittaci* IgG antibodies. Using micromethod of complement fixation (CF) test with genus-specific antigen *Ch. psittaci* (Bioveta, Ivanovice na Hané, Czech Republic), the seropositivity in pheasants oscillated between 31.5-40.4 %. No clinical signs of chlamydiosis were detected in pheasants under study. The seropositivity in pigeons ranged between 33.1–85.1%. Total 77.1% positivity with maximal 1:1024 antibody titre was found in 83 pigeons caught in April 2000, while, in June 2000 positivity was 41.0% with maximum titre 1: 512. Similarly, in the year 2001 the seropositivity in the group of 74 pigeons trapped in April reached up to 85.1% with the highest titre 1:1024 and in the pigeons trapped in June positivity decreased to 33.3% with the titer 1:256. These results prove an acute form of chlamydiosis and suggest that pigeons in spring time are an especially significant source of chlamydiosis for the human and animal population.

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INTRODUCTION

Birds represent an important source of infection for many diseases for the human population as well as for other animal species. Pheasants can suffer by chlamydiosis, but up till now their role has not been sufficiently recorded. The occurrence of ornithosis in pheasants after contact with poultry was published by Crosse [2], while isolation of *Chlamydophila (Ch.) psittaci* from liver and other organs of pheasants and pawing poultry has been described by Bejleri and Berxholi [1]. But, these reports do not confirm transmission of chlamydia to humans. The most important source of chlamydial infection for other animal species and man are wild pigeons, which was confirmed in Slovakia by Pospíšil *et al.*, [10], Čisláková *et al.*, [3, 5]; in the Czech Republic by Pospíšil *et al.*, [11]; Vežník *et al.* [15], Vežník and Pospíšil [16]; in Italy by Dottori *et al.*, [6]; in Slovenia by Dovc *et al.*, [7] and in Croatia by Pavlak *et al.* [9].

Chlamydia are excreted into the environment by droppings, eye discharge and secretions from the of upper respiratory tract. They are transmitted to other animals mainly by inhalation of infectious dust, aerosol, and by direct contact. Contamination of feedstuffs and water, as well as subsequent infection of animals, is considered to be a more rare form of infection transmission. The present study is intended to contribute to the extension of

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Table 1. IgG antibodies to *Chlamydophila psittaci* in the farm breeded pheasants.

Trapping	Examined/Positive (Total = 275/103)	%	Titer level							
			1 : 8	1: 16	1: 32	1 : 64	1 : 128	1 : 256	1 : 512	1 : 1024
March 2000	73/23	31.5	-	4	9	7	4	3	-	-
June 200	62/24	38.8	13	22	11	8	2	2	1	-
March 2001	84/34	40.4	11	7	12	6	10	4	2	-
June 2001	56/22	39.2	6	3	9	8	2	3	-	-

Table 2. IgG antibodies to *Chlamydophila psittaci* in the wild pigeons

Trapping	Examined/Positive (Total = 273/168)	%	Titer level							
			1 : 8	1: 16	1: 32	1 : 64	1 : 128	1 : 256	1 : 512	1 : 1024
April 2000	83/64	77.1	16	14	16	15	8	11	8	6
June 200	56/23	41.0	13	22	7	6	3	4	3	-
April 2001	74/59	85.1	11	7	10	16	21	4	6	2
June 2001	60/22	33.3	6	3	9	8	2	3	-	-

information concerning the occurrence of antibodies to *Ch. psittaci* in pheasants and pigeons.

MATERIALS AND METHODS

Blood sera of 275 pheasants were collected from Rozhanovce farm belonging to the University of Veterinary Medicine in Košice, Slovak Republic. Samples were obtained in March and June 2000-2001 (Tab. 1). Pigeons (n = 273) were caught in farm buildings in Rozhanovce in April and June 2001 (Tab. 2). The village Rozhanovce is located ca 4–5 km in a straight line from Košice, where the concentration of wild pigeons is high.

Sera were examined by CF method (Manual of Standards 2000). Serum samples with antibodies titre 1:32 and higher were considered as positive. Genus-specific antigen *Chlamydia psittaci* was used for CF test (Bioveta Ivanovice na Hané, Czech Republic). Numbers of samples reacting in dilution 1:8 and 1:16 and numbers of anticomplementary sera are presented as additional data.

RESULTS

Seroposivity in pheasants was recorded between 31.5% - 40.4%. Maximum titers of antibodies (1:512) were recorded in June 2000 and March 2001 (Tab. 1).

The results of examinations in pigeons confirmed 77.1% seropositivity in April 2000, while in June 2000 it was 41.0%. The value of titres reached dilution 1:1024 in April and in June 1:512 (Tab. 2). In the year 2001, seropositivity in the group of pigeons trapped in April reached 85.1% and in June 33.3%. The highest titre 1:1024, was detected in April and in June reached 1:256.

DISCUSSION

Contact between wild pigeons and pheasants reared on a farm is usually indirect, particularly when pigeons or other wild birds are in search of food come across aviaries and contaminate feed-stuffs and environment.

Positive serological findings in 275 examined pheasants (Table.1) confirm the presence of *Ch. psittaci* in the population. We found the highest seropositivity in March 2001 (40.4%), followed by June 2001 (39.2%), which is probably connected with the spring selection of pheasants (selection of the most suitable individuals for laying aviaries and clearance of separated individuals). The role of pheasants as reservoir animals has not yet been sufficiently clarified [13]. Crosse [2] described an occurrence of ornithosis in pheasants after their contact with poultry, whereas, Bejleri and Berxholli [1], reported about an isolation of *Ch. psittaci* from the liver and other organs of pheasants. But these literature sources do not confirm transmission of chlamydia from pheasants to humans.

Seroprevalences in the group of pigeons caught in April 2000 and 2001 were different from the results obtained from the birds trapped in June 2000 and 2001. Sero-positivity confirms an acute course of chlamydiosis in 25 with 1:256 titre and in 12 individuals with titre 1:1024. Seropositivity value, which reached 77.1–80.5%, testifies high contamination of pigeons. These results are in accordance with reports mentioned by other authors (3, 6, 9, 11,14). We suggest that high positivity and detection of antibodies even in dilution 1:1024 is connected with the following facts. Pigeons spend their winter time in farm shades, where their concentration and contact is extremely high. Birds are weakened because of insufficient nutrition after the winter period, which can cause an activation of

the infectious process. The age of caught pigeons was various. In March and April there were new born and young pigeons, in which an acute form of disease with corresponding serologic response after infection by chlamydia can develop. Using the CF test Dottori *et al.* [6] confirmed 43.2% seroprevalence in a group of 287 pigeons, while, Pavlak *et al.* [9] detected 47.7% positivity in a group of 912 pigeons against *Ch. psittaci*. The highest positivity was detected in spring time (54.48%), compare to summer. Dovc *et al.* [7], using micro-immunoassay, detected IgG antibodies in 23.0% of 142 city pigeons. The titer of antibodies did not exceed 1 : 320.

Pigeons as an important source of Chlamydiosis for people were confirmed by Pospíšil *et al.* [10], when 18 persons from a group of 22 reconstruction workers at the St. Elisabeth Cathedral in the town of Košice caught an acute ornithosis. The source of infection was dust from dried faeces of pigeons. The flying range of pigeons is wide, and the high contamination of this bird species is the reason we consider them as a significant source of Chlamydiosis also for animals. According to Čisláková *et al.* [5], the seroprevalence of antibodies against *Ch. psittaci* in human population in the year 2000 was 3.7% (1,145 person tested) using CF test and 59.5% (42 person tested) using ELISA method. Pospíšil *et al.* [12] tested a set of 151 subjects consisting of 90 employes in animal husbandry, and 61 persons living in an area with a dense population of wild pigeons in which Chlamydia infection had been demonstrated in a previous study [11]. In the group of persons [13] without subjective troubles a total of 15.38% seropositivity was detected using CF test, and 30.77% of IgG positive level was detected using ELISA. In the group of persons (77) with subjective or objective troubles the positivity was 20.78% by CF test and 24.64% by ELISA. Because chlamydial infections many times cause diseases of the respiratory tract, the authors [12] tested a group of persons (40) with objective respiratory problems, with the following results – CF test 30.00% positive and ELISA 32.50% positive samples.

In the case of pheasants raised on a farm, pigeons can infect feedstuffs, water and the environment of aviaries by their excrements while direct contact is excluded. The certain role of small mammals in the spread of Chlamydiosis was also recorded. According to the findings of Čisláková *et al.* [4], IgG antibodies to *Chl. psittaci* were found in rodents which can contaminate the environment of aviaries and pheasant farms. In Slovakia in the year 1999, a total of 3 cases, and in 2000 a total of 11 cases of human ornithosis with clinical signs of atypical pneumonia and fever were officially confirmed [5].

CONCLUSION

The results of serological examinations confirmed the presence of chlamydial infection in pheasants, where the values of antibodies demonstrate an apparent course of the disease. High levels of antibodies in pigeons caught and examined in April 2000 and 2001 confirmed the acute course of chlamydiosis. Pigeons in this time can be a source of infection, not only for people, but also for pheasants and/or other species of birds and mammals.

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