RESEARCH OF TOXOPLASMA GONDII IN OSTRICHES (STRUTHIO CAMELUS) FROM BRAZILIAN SLAUGHTERHOUSE

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SUMMARY

Toxoplasmosis is one of the most widespread pathogens in the world, presenting high importance in production animals, like ostriches (Struthio camelus), and to human beings. This study was aimed to determine the prevalence of Toxoplasma gondii in ostriches from a Brazilian slaughterhouse. Serum samples of 344 ostriches slaughtered in a Brazilian slaughterhouse were researched for T. gondii antibodies by modified agglutination test (MAT), using 4 as cut-off titer. The brain of all seropositive and ten seronegative animals were bioassayed in outbreed mice for the research of the parasite. 38/344 (11.05%; CI95% 8.16-14.80%) animals presented T. gondii antibodies, with titers 4 (10, 26.31%), 8 (6, 15.79%), 16 (4, 10.53%), 32 (8, 21.05%), 64 (6, 15.79%) and 256 (4, 10.53%). No bioassay presented positive results for tachyzoites in peritoneal fluid or tissue cysts in brain tissue of the mice. The studied ostriches presented a homogeneous distribution of titers, and some of them with high titers, e.g. 64 and 256. T. gondii keep high titers for a long time in its hosts, characterizing a chronic infection. This fact is important when studying food animals, and slaughterhouse's process. Brain is a election site for T. gondii, but in this study this tissue did not present good results for this detection. The present study show the importance of ostriches in the epidemiological chain of toxoplasmosis in Brazil once these animals can be infected with this parasite, but the brain is not an important tissue for the multiplication of the parasite.

INTRODUCTION

Toxoplasma gondii is a parasitic protozoan distributed all over the world. It infects warmblooded vertebrate species, including mammals and birds, presenting high importance in production animals, like ostriches (Struthio camelus). Cats are the definitive hosts, shedding oocysts in their feces. Transmission occurs through the ingestion of contaminated food with sporulated oocysts, and raw or undercooked meat with tissue cysts; transplacental transmission of tachyzoites also occurs. T. gondii leads to abortion in several production animals and has high public health importance since it causes an opportunistic zoonosis in immunocompromised and HIV-positive patients. In addition, it is a significant cause of abortion and congenital diseases during pregnancy [5,8,9,12,16]. The frequency of toxoplasmosis in chicken is high, as well as the risk for human beings [15], but in ostriches (Struthio camelus) few is know about the prevalence of this infection. In breeders, cats can transit being the main sources of infection for ostriches. They eliminate oocysts in the place that the animals and their food are kept. Ostriches are breed in areas possibly contaminated with oocysts and can be infected by the ingestion of contaminated food and/or water [14].

This study was aimed to determine the prevalence of T. gondii antibodies and the isolation of the parasite in ostriches from a Brazilian slaughterhouse.

MATERIAL AND METHODS

The sample size was determined by using Epi Info 3.5.1 software [2]. A Brazilian expected prevalence of T. gondii antibodies in ostriches of 14.36% [4], 1% significance level (α), 99% confidence level and 5% error limit were used to get at least 326 serum samples. Serum samples of 344 ostriches slaughtered in a Brazilian slaughterhouse were researched for T. gondii antibodies by modified agglutination test (MAT), using 4 as cut-off titer [6]. Serum samples were serially 2-fold diluted from 1:4 in both tests in phosphate buffered solution (PBS), pH 7.2, 0.01M and endpoint titers were determined by means of serial dilution. A clear-cut button-shaped deposit of parasite suspension at the bottom of the well was interpreted as negative reaction and a complete carpet of agglutinated organisms was considered positive. The brain of all seropositive and ten seronegative animals were macerated, digested by pepsin-acid solution, and each brain samples was bioassayed in five outbreed mice, 30-days-old, for the research of the parasite [7]. The animals were kept in polypropylene boxes. Boxes were placed in an Alesco ventilated rack system (model ALE 99002-001, Brazil) during the experimental time (60 days p.i.).
RESULTS

In this study, 38/344 (11.05%; CI95% 8.16-14.80%) animals presented *T. gondii* antibodies, with titers 4 (10, 26.31%), 8 (6, 15.79%), 16 (4, 10.53%), 32 (8, 21.05%), 64 (6, 15.79%) and 256 (4, 10.53%). No bioassay presented positive results for the identification of tachyzoites in peritoneal fluid or tissue cysts in brain tissue of the mice. Most of them survived for the evaluation period (60 days p.i.).

DISSCUSSION

This study shows a similar prevalence to that found by Contente et al. [4] (28/196; 14.36%) in São Paulo State, Brazil, the unique study on ostriches in Brazil. In Rio Grande do Sul a similar study was carried out in rheas (*Rhea americana*) from commercial breeding facilities submitted to similar management. The authors reported prevalence equal to 8.10% as assessed by passive hemagglutination. Another study, in Canada, involving commercial breeding facilities in the state of São Paulo, Brazil. Braz. J. Vet. Res. Anim. Sci. 46 (3), 172-180.

Ostriches do not depend only on grains for their nutrition, but also on other sources of fiber. The diet of birds such as ostriches is mainly based on insects, other small invertebrates and forage plants. A large part of the water they need comes from plants [1,3].

CONCLUSIONS

Thus, the present study shows the importance of ostriches in the epidemiological chain of toxoplasmosis in Brazil once these animals can be infected with this parasite, but the brain is not an important tissue for the multiplication of the parasite.

REFERENCES