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Seroprevalence of zoonotic diseases among farm animals in Kvemo Kartli (Georgia)

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Objective

The purpose of this research was to study the seroprevalence of zoonotic diseases among farm animals in the Kvemo Kartli region of Georgia.

Introduction

Zoonotic diseases are an important cause of human morbidity and mortality; around 75% of recently emerging human infectious diseases are zoonoses. Herein we report the first seroprevalence study to include a range of emerging or re-emerging zoonotic pathogens of economic concern (including: *Bacillus anthracis, Coxiella burnetii, Francisella* spp., *Brucella* spp., and Crimean-Congo hemorrhagic fever virus (CCHFV)) affecting domestic animals (e.g., cattle, sheep, goat, and dog) in Georgia.

Methods

Cattle (n=177) from Gardabani, Marneuli, and Tsalka (Kvemo Kartli region) were sampled for the study as were small ruminants and dogs (n=30). *Bacillus anthracis, Brucella* spp., CCHFV, and *C. burnetii* (Phase I) were detected using ELISA methods. *Francisella tularensis* was detected using a microscopic agglutination test (MAT).

Results

Of the cattle sampled, 11 were positive for *F. tularensis*, 39 were positive for *Brucella* spp., and seven were positive for *C. burnetii*. All samples were negative for CCHFV. Three goat samples were positive for *C. burnetii*, one goat sample and one dog sample were positive for *F. tularensis*.

Conclusions

Domestic animals serve as a source of disease that can spread to humans through vectors or direct contact. In Georgia, domestic animals were not previously studied for exposure to zoonotic diseases, with the exception of cattle, which were surveyed for brucellosis. In particular, the finding of *F. tularensis* seropositive animals is novel in Georgia, as this region was considered free of the pathogen. Screening studies of domestic/farm animals for zoonotic pathogens such as this can serve as a source of baseline data for regional risk assessments and to better inform One Health measures.

Keywords

Emerging diseases; Re-emerging diseases; Zoonotic diseases; Crimean-Congo hemorrhagic fever

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