ISWAVLD 2023

International Symposium of the World Association of Veterinary Laboratory Diagnosticians

29 JUNE-1 JULY 2023 Congress Centre Lyon

Towards the veterinary diagnostics of the future

Main topic : One Health

Brucellosis as a main cause of abortions among livestock in Armenia.

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Introduction: Livestock abortions are one of the factors which have an essential impact on animal husbandry. Abortions caused by infectious diseases are of particular concern with impacts on both animal and public health. This study aimed to investigate the bacterial and fungal infections responsible for abortions among livestock in Armenia.
Materials and Methods: The study was conducted from 2018-2022 on aborted fetuses or samples of fetuses collected following necropsy and sent to the Reference Laboratory for Especially Dangerous Pathogens (RLEDP) from Food Safety Inspection Body specialists in the field. Samples came from all 10 regions in Armenia. Samples were tested at RLEDP by classical microbiology of culturing and the biochemical test API20E for Enterobacter. Samples that were negative by classical microbiology and biochemical tests API20E were tested by polymerase chain reaction (PCR) for brucellosis. In all confirmed cases of brucellosis by PCR (aborted fetus), blood samples were collected from the mother of the aborted fetuses (not earlier than 30 days after the abortion) for serological diagnosis of brucellosis. The blood samples were tested by Rose Bengal test, Enzyme-linked immunosorbent assay (ELISA), and fluorescence polarization assay. A total of 168 (41 in 2018, 37 in 2019, 31 in 2020, 38 in 2021, 21 in 2022) samples (72 large ruminants and 96 small ruminants) of aborted fetuses and 129 (32 in 2018, 28 in 2019, 26 in 2020, 27 in 2021, 16 in 2022) blood samples (51 large ruminants and 78 small ruminants) from mothers of the aborted fetuses were investigated.
Results: Out of 168 samples investigated by classical microbiology, 33 were positive and we identified Aspergillus spp. in 28 (16.6%) samples, Salmonella spp. in 5 (2.9%). Of the 135 samples negative by classical microbiology, PCR results identified 129 samples that were positive for brucellosis. Out of 129 blood samples tested by serological tests for brucellosis, 124 (96%) gave positive results. Overall, 6 (3.5%) samples were undetermined by any assay. Brucellosis accounted for 77% of the aborted fetus samples.
Conclusions: Brucellosis is a major cause of abortion among large and small ruminants in Armenia. Fungal infections were also detected and should be considered when evaluating causes of abortion. There was a percentage of abortions which remain undiagnosed and further work is needed to identify if a viral infection is the cause. We recommend that all abortion cases are first tested for brucellosis then negative samples are further tested by classical microbiology methods. This will save time and will reduce the risks connected with further processing of brucellosis samples in the laboratory.