DETECTION OF *BRUCELLA MELITENSI S* AND *CHLAMYDOPHILA ABORTUS* ANTIBODIES IN ABORTING SHEEP IN THE KARS PROVINCE OF TURKEY

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Abstract

A total of 167 blood samples from aborting sheep were collected from nine different villages and the serum samples were tested for the presence of *Brucella melitensis* antibodies by a serum agglutination test and *Chlamyphila abortus* antibodies by ELISA. Seventy-one (40.11%) and nine (5.38%) serum samples were found to be positive for *B. melitensis* and *C. abortus*, respectively. These results may indicate that both pathogens are the major infectious agents responsible for abortions in sheep in the Kars province.

Key words: sheep, *Brucella melitensis*, *Chlamyphila abortus*, antibodies, Turkey.

Ovine brucellosis, caused by *Brucella melitensis*, is manifested by abortion, placentitis, and mastitis in sheep and orchitis in rams (3, 12, 15). The public’s health along with the economic impact of brucellosis remains of particular concern in developing countries throughout Africa, West Asia, and some parts of Latin America. It is due to danger that infected animals constitute a source of transmission of this severe zoonosis to humans, as well as to the economic losses associated with the disease in animals and the serious constraints of the improvement of animal husbandry and genetic resources in the affected areas (5). Brucellosis is the primary cause of abortion in sheep raised in Turkey. The prevalence of brucellosis was found to be 37.1% among sheep population in the country (11, 14, 17, 18).

Another serious disease characterised by abortion, placentitis, and decreased fertility is ovine enzootic abortion (OEA), caused by *Chlamyphila abortus* (*Chlamidia psittaci* serotype 1) (6, 7, 16). This disease, common in Europe, North America, and some parts of Africa, is a zoonosis; and therefore, the agent must be dealt with great care and adequate microbiological precautions and laboratory equipment. The ELISA kits are commercially available for the detection of *Chlamyphila abortus* antibodies in animals and this assay is more sensitive and specific as compared to complement fixation test (CFT) (19). The studies from Turkey showed that OEA is relatively less common than brucellosis; however, it causes significant economic losses in this country (4, 8).

The present study aimed to determine the prevalence of brucellosis and OEA among aborting sheep in province of Kars by using serological methods.

Material and Methods

Serum samples. A total of 167 blood serum samples collected from aborting sheep were used. The sheep population was from 9 villages in Central Kars and surrounding areas in Kars province. The sera were stored at –20ºC until tested.

Serum agglutination test (SAT) for brucellosis. The SAT Brucella antigen was obtained from Pendik Veterinary Control and Research Institute, Istanbul, Turkey. The assay was performed as described by Alton et al. (2). Briefly, 0.5 ml of Brucella SAT antigen was added to 0.5 ml of each serum sample, diluted serially from 1:5 to 1:640 in physiological saline solution, and mixed thoroughly. The mixtures were incubated at 37ºC overnight. The agglutination ++ and stronger, observed in sera at dilution 1:20 and higher, was considered to be positive.

ELISA for ovine enzootic abortion. ELISA kit was obtained from Cypress Diagnostics Langdorp, Belgium, and the assay was performed according to manufacturer’s instructions. Briefly, appropriately diluted serum samples with positive and negative control sera were put into the wells of ELISA plate coated with *C. abortus* antigen and incubated at 37ºC for 20 min. The plate was washed with washing solution of the kit and peroxidase conjugated anti-sheep IgG secondary antibody was added to each well. After incubation at 37ºC for 20 min, the plate was washed three times. The substrate was added to each well and incubated for 10 min. The reaction was stopped with stop solution and
the plate was read in ELISA reader (Metertech Σ 960) at 450 nm wavelength filter.

**Results**

Seventy-one (40.1%) serum samples from sheep with a history of abortion were found to be positive for brucellosis in the SAT, at the titre varying between 20 and 1280, and only 9 (5.4%) serum samples were positive for OEA in the ELISA.

**Discussion**

*Brucella melitensis* infection and OEA are leading causes of ovine abortions in many different geographical areas. Brucellosis is an important zoonosis in the world and has an economic impact on the livestock industry. Ovine and caprine brucellosis, caused by the mentioned microorganisms, are still endemic in countries of the Mediterranean basin, the Middle East, Central Asia, and Latin America (1). OEA is also distributed worldwide and *C. abortus* is the main causative agent of small ruminant abortion in numerous countries, such as Spain, France, and United Kingdom (7). It was also reported from other countries in the continents of America, Asia, and Australia (8).

Turkey has a wide geographical variety and live relations with many neighbouring countries in the terms of animal movements. The independent serological studies from Turkey revealed that the prevalence of brucellosis in sheep was found to be as high as 37.1%. OEA prevalence was reported with a lower percentage compared to that of brucellosis. A serological study from Karaman and Kucuklayan (13) in the period of 1993-1997 in the Region of Central Turkey showed that 15.6% and 1.8% of aborting sheep were found positive for brucellosis and OEA, respectively. Guler et al. (10) reported the 17.6% brucellosis and 1.35% OEA in aborting sheep, 71 (40.1%) and 9 (5.4%) out of 167 samples positive for OEA by CFT with the titres between 20 and 1280, and only 9 (5.4%) serum samples were positive for OEA. The results indicate that the prevalence is higher compared with the other parts of Turkey and that for OEA the difference is significant. The etiological profile of ovine abortion in the Kars Region should be investigated in further studies in aborting sheep considering other diseases causing abortion (campylobacteriosis, salmonellosis, leptospirosis, listeriosis, bluetongue, border disease, toxoplasmosis, etc.).

The results of the present study may show that brucellosis and less commonly occurring OEA, are two important diseases in aetiology of ovine abortions with a higher prevalence in this region compared with other areas of Turkey. Abortions are common in the Kars Region causing significant economic loss in livestock. The results of this study may reveal that the eradication programme, or at least control measures and education of farmers, need to be improved to prevent the mentioned diseases.

**References**


