



Investigation of Seroprevalence of Maedi-Visna and Caprine Arthritis Encephalitis in Sheep and Goats in Siirt Province

Özgür Yaşar ÇELİK¹, Gülşah AKGÜL¹, Kıvanç İRAK²

1. Siirt University, Faculty of Veterinary Medicine, Department of Internal Medicine, Siirt, TURKEY.
2. Siirt University, Faculty of Veterinary Medicine, Department of Biochemistry, Siirt, TURKEY.

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Abstract: Maedi-visna (MV) and Caprine Arthritis-Encephalitis (CAE) are economically important viral diseases that infect sheep and goats. The aim of this study is to determine the seroprevalence of MVV and CAEV on sheep and goats raised in Siirt region by using the ELISA method. Blood samples were collected to non-anticoagulant tubes from the jugular veins of a population of 465 small ruminants consisting of 182 sheep and 283 goats selected from different districts of Siirt Province. The samples were centrifuged for 10 minutes at 3000 rpm and the serum were transferred to Eppendorf tubes, which were stored at -20°C until further analysis. Commercial kits (IDEXX MVV / CAEV p28 Ab screening, IDEXX, USA) were used for the detection of Anti-MVV/CAEV antibodies. All samples were found to be seronegative in terms of Anti-MVV/CAEV antibodies. As a result of this study conducted in the Siirt province, MVV and CAEV infections were not detected in the studied population. Given that the infections exist with varying seroprevalence levels in different regions of Turkey, however, it might be worthwhile to investigate the infection status in Siirt province by including larger herds in future studies.

Keywords: Caprine arthritis encephalitis, ELISA, Maedi-visna, Sheep-Goat, Siirt.

Siirt İli Koyun ve Keçilerinde Maedi-Visna ve Caprine Arthritis Encephalitis Seroprevalansının Araştırılması

Öz: Maedi-visna (MV) ve Caprine Arthritis-Encephalitis (CAE) koyun ve keçileri etkileyen, önemli ekonomik kayıplara neden olan viral bir hastalıktır. Bu çalışmanın amacı Siirt ilinde yetiştirilen koyun ve keçilerde Maedi-visna ve Caprine Arthritis-Encephalitis seroprevalansının ELISA yöntemiyle belirlemektir. Çalışmanın materyalini Siirt ilinin farklı lokalitelerinde yetiştirilen 182 koyun ve 283 keçi olmak üzere toplam 465 küçük ruminant oluşturdu. Hayvanların vena jugularisinden anticoagulanız tüplere alınan kan örnekleri 3000 devirde 10 dakika santrifüj edildikten sonra ependorf tüplerine aktarıldı ve analiz yapılıncaya kadar -20 oC de muhafaza edildi. Anti-MVV/CAEV antikorlarının tespiti için ticari kit (IDEXX MVV / CAEV p28 Ab screening, IDEXX, USA) kullanıldı. Yapılan çalışma sonucunda tüm örneklerin Anti-MVV/CAEV antikorları yönünden seronegative olduğu tespit edildi. Sonuç olarak, gerçekleştirilen bu çalışma sonucunda Siirt ili sınırları içerisinde MVV ve CAEV enfeksiyonuna rastlanılmamıştır. Ancak Türkiye'nin farklı yerlerinde değişen seroprevalanslarda enfeksiyonun varlığının bildirilmesi Siirt ilinde daha geniş sürüleri içine alacak şekilde hatalığın durumunun araştırılmasında fayda olacağını düşündürmektedir.

Anahtar Kelimeler: Caprine arthritis encephalitis, ELISA, Koyun-Keçi, Maedi-visna, Siirt.

✉ Özgür Yaşar ÇELİK

Siirt University, Faculty of Veterinary Medicine Department of Internal Medicine, Siirt, TURKEY.
e-mail: oyc@siirt.edu.tr

INTRODUCTION

Maedi-visna (MV) and Caprine Arthritis-Encephalitis (CAE) are economically important viral diseases that infect sheep and goats. While maedi-visna virus (MVV) is from the lentivirus genus of retroviridae family and infects sheep, caprine arthritis-encephalitis virus (CAEV) causes infection in goats. These diseases are formed by lentiviruses called Small Ruminant Lentiviruses (SRLV). The lentiviral diseases cause significant economic losses in sheep and goats raising animal husbandry establishments. MVV in sheep and CAEV in goats stay persistent throughout the lifetime despite the humoral and cellular immune response being present (1-4). Studies in recent years have classified SRLV group viruses in 5 genotypes, as A, B, C, D and E genotypes. Genotype A has been divided into sub types from A1 to A13 and it includes classic MVV and other SRLV variants. Genotype B (sub types are B1, B2, and B3) includes classic CAEV strains (3). It is reported that the disease can also be transmitted to other animals via milk and colostrum (5,6).

While in most animals the disease course is subclinical, incurable syndromes like dyspnea (maedi) or neurologic symptoms (visna) can be observed in some of them. The most significant symptoms of the disease are interstitial pneumonia, encephalitis, lymphadenopathy, arthritis, mastitis and chronic loss of weight (1,7-10).

While it was reported to have been observed in America first, in the following years CAEV was reported in France, Australia, Spain, Germany, England, Argentina, Iraq and Tunisia; while MVV was reported in Italy, China, Canada and Spain (10,11). Although no known effective medical treatment exists for the disease, supportive care and the use of antibiotics against secondary infection is recommended (3).

The aim of this study is to determine the seroprevalence of MVV and CAEV on sheep and goats raised in Siirt region by using the ELISA method.

MATERIALS and METHODS

Blood samples were collected to non-anticoagulant tubes from the jugular veins of a population of 465 small ruminants consisting of 182 sheep and 283 goats selected from different districts of Siirt province. The samples were centrifuged for 10 minutes at 3000 rpm and the sera were transferred to Eppendorf tubes, which were stored at -20 °C until further analysis. Commercial kits (IDEXX MVV / CAEV p28 Ab screening, IDEXX, USA) were used for the detection of Anti-MVV/CAEV antibodies.

The study was carried out with the ELISA method and in accordance with the suggestions of the producer company. The plates were measured at 450 nm to obtaining the optical density (OD) data, and the derived results were calculated in accordance with the procedures.

Ethical Approval

Ethical approval for this study was obtained from the Siirt University Local Ethics Committee for Animal Experiments. (Approval Number: 2017-21)

RESULTS

In order to determine the MVV and CAEV seroprevalence at sheep and goats in Siirt region, 465 small ruminants consisting of 182 sheep and 283 goats were examined with ELISA method, all of which were found to be seronegative in terms of Anti-MVV/CAEV antibodies.

DISCUSSION and CONCLUSION

MV and CAE have varying seroprevalence levels in different areas of the world, and it maybe possible to diagnose them based on the available clinical, pathological, and histopathological findings. Today, however, there are serological methods used that could reveal the presence of sub-clinical diseases, such as serum neutralization (SN), Agar Gel Immunodiffusion (AGID) and Enzyme-Linked Immunosorbent Assay (ELISA) tests (12,13).

Across the world, the seropositivity for disease is reported as 82% in Australia (6), 36.5% in Brazil (14), 73% in America (15), 4.3% in England (6), 49.5% Norway (16), 2% in Switzerland (17).

A study conducted on sheep and goats raised in Şanlıurfa region of Turkey (11), reports that CAEV seroprevalence was 6%, while MVV seroprevalence is 10%. In a study (18) conducted in Adana on Saanen goats, CAEV seroprevalence was reported as 2.66%. In another study in the same region (19), the seroprevalence of CAEV infection was reported to be 6.8%. There is also a study (20) that was carried out in eight provinces of Turkey, in which the researchers report that MVV seroprevalence was 2.6%. A study conducted in the Konya province reports MVV seroprevalence as 2.9% (13).

One noteworthy study in terms of the similarity of the results to our study is the one conducted in the Hatay region (21), in which the researchers report that they did not find out any seropositivity for MVV, while they determined CAEV seroprevalence as 1.03% (22). In another research (23) carried out in the vicinity of Afyonkarahisar province, the researchers found the MVV seroprevalence as 5.7%, while another study (24) in Kırıkkale, reports MVV and CAEV seroprevalences as 7.5% and 19.4% respectively. In the study that carried out on goats in different region of turkey, CAEV seroprevalence was stated as 1.9% (25).

As a result of this study conducted in the Siirt province, MVV and CAEV infections were not detected in the studied population. Given that infections exist with varying seroprevalence levels in different regions of Turkey, However, it might be worthwhile to investigate the infection status in Siirt province by including larger herds in future studies.

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