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Research Article

Monitoring of Caprine Arthritis Encephalitis in Albania: results from goats in Vithkuq, Korça region

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Abstract – Caprine arthritis encephalitis (CAE) stands as a persistent, non-zoonotic infection afflicting goats, attributed to the caprine arthritis encephalitis virus (CAEV). This pathogen engenders a chronic inflammatory disease in goats, thereby incurring substantial economic repercussions. Consequently, screening for this disease assumes great importance, and it needs to be extended to the entire population of goats in Albania.

The objective of this study is to furnish preliminary data regarding the prevalence of CAEV in goats in one randomly selected area, the village of Vithkuq, within the Korca region. Diagnostic confirmation of caprine arthritis-encephalitis virus (CAEV) infection was achieved through serological testing, employing the Maedi-Visna/CAEV Ab ELISA methodology, specifically designed for the detection of CAEV antibodies. Blood samples, extracted from goats randomly chosen in the same herd underwent analysis to discern CAEV infection through this serological approach. Among the goats subjected to testing, a noteworthy 42.8% returned positive results for CAEV. This compelling outcome, as unveiled through the serological survey conducted in this study, unequivocally establishes the presence of CAEV in Korca region.

Keywords – Caprine Arthritis Encephalitis, Goat, Albania, Seroprevalence.

I. INTRODUCTION

Caprine Arthritis Encephalitis (CAE) is an infectious disease impacting caprine species, principally goats. The etiological agent responsible for CAE is the Caprine Arthritis Encephalitis Virus (CAEV), belonging to the genus Lentivirus, family Retroviridae and exhibiting close phylogenetic affiliation with the Human Immunodeficiency Virus (HIV) [1]. For many years following the isolation in 1980 for CAEV [2], it has been recognized as a distinct pathogen infecting only goats [1], but most recent studies [1] had revealed that the viruses as CAE – affecting goats and MVV (maedi-visna virus) – affecting sheep, are classified together as small ruminant lentiviruses (SRLV), which are further split into five groups from A to E [3-4]. Furthermore, they are capable of crossing the interspecies barrier not only in experimental but also natural conditions [5, 6, 7, 8].

CAE primarily targets the immune system, articulatory structures, and mammary glands within the caprine population. The clinical presentation of CAE is heterogeneous, with some afflicted goats remaining asymptomatic. Nevertheless, prevalent clinical manifestations encompass arthritis, characterized by joint inflammation, encephalitis involving inflammation of the brain and spinal cord, mastitis characterized by mammary gland inflammation, and weight loss. Observable indications include lameness, impaired standing ability, alterations in behavior, and diminished milk production [9].

Transmission of CAE typically occurs through direct contact with infected animals, especially via the consumption of contaminated colostrum or milk [10].

Our investigation centers on the screening for Caprine Arthritis Encephalitis (CAE) across diverse regions of Albania. Notably, official data regarding the prevalence of this pathology in the goat population of Albania is currently unavailable. Moreover, genuine scientific inquiries into its incidence in various regions of the country are in their nascent stages [11, 12]. The present paper aims to contribute insights into the identification of CAE in a chosen region of the country, shedding light on a previously unexplored aspect of the disease's distribution in the Albanian goat population.

II. MATERIAL AND METHOD

The caprine blood samples are collected in Vithkuq, a village in the district of Korca, in southeast of Albania. One goat flock from 75 individuals was randomly selected from this study.

Peripheral blood from the jugular vein of 21 randomly selected adult goats (age > 2 years) was collected by venipuncture into 10 ml plane test tubes. The blood samples were centrifuged at 3000 rpm for 5 minutes and the sera was kept at -20°C until the analysis.

The diagnosis of caprine arthritis-encephalitis virus (CAEV) infection was obtained through serological testing using IDEXX Maedi-Visna/CAEV p28 Ab ELISA test kit. This kit is an indirect ELISA based on the use of an immunogenic peptide of a transmembrane protein (TM, ENV gene) and of the recombinant p28 protein which enters into the composition of the viral capsid (GAG gene).

The appearance of anti-p28 antibodies can occur slightly later than that of the anti-viral envelop protein antibodies. The use of this very stable protein allows the serological detection of a very wide spectrum of serological variants. The cut-off point was calculated according to the kit's instruction manual. Samples with S/P (sample-to-positive ratio) % $\geq$ 120 were considered positive, those with S/P % $\leq$ 110 were considered negative and those with S/P % > 110 and < 120 were considered as suspect.

III. RESULTS

Serum samples from animals collected from one randomly chosen goat flock in Vithkuq village, in the Korca region were tested for the presence of specific antibodies against SRLV using the ELISA method. Of 21tested animals, 9 were found positive, corresponding to an overall seroprevalence of 42.8 % (presented in Table 1).

Table 1. The serological results for CAE prevalence based on ELISA test results.

Animal specie	Herd size	No. of tested animals	No. of positive	Prevalence
Goat	75	21	9	42.8%

Caprine blood samples were collected in an area located in the Korca district in the southeastern region of Albania. This region is historically renowned for its significance in cultivating small ruminants (sheep and goats). According to the communication with veterinarian specialists in the region and recent scientific reports [12], there has been evidence of Caprine Arthritis Encephalitis (CAE) in goat populations in this zone in recent decades.

The findings of this study are consistent with those reported by [12], indicating a seroprevalence of 33.5% for Caprine Arthritis Encephalitis (CAE) in goats. This reported prevalence is slightly lower than the one (42.8%) presented in our study.

IV. DISCUSSION

Up to date, specific data on the presence of Caprine Arthritis Encephalitis (CAE) in all the Albanian goat populations from the official Albanian institutions is unavailable, as it has not been yet implemented any official program to control CAE [12]. However, there are ongoing and very recent scientific studies regarding this matter [11, 12], who's positive reported cases for CAE in small ruminants emphasize the importance of national control for CAE presence, that may vary across regions and over time.

Prophylactic measures for CAE encompass the screening and removal of infected animals, adherence to rigorous hygiene practices, segregation of infected individuals from their healthy counterparts, and the avoidance of utilizing milk or colostrum from infected goats for neonatal feeding.

Routine screening of goat herds for CAE is imperative to thwart the dissemination of the virus and uphold the general well-being of the herd. Suspected cases of CAE necessitate prompt veterinary consultation for accurate diagnosis and appropriate management.

V. CONCLUSION

The serological survey outlined in this study confirms the presence of the caprine arthritis encephalitis virus in goats in Vithkuq, Korça district, with a notable seroprevalence of 42.8%. This underscores the significance of implementing a comprehensive national control strategy for Caprine Arthritis Encephalitis (CAE) in goats, along with necessary measures to mitigate the adverse effects of this pathology on animal health and economic losses for breeders.

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