Some Preliminary Result of Crimean-Congo Hemorrhagic Fever Virus among Cattle in Different Regions of Kosovo

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Abstract

The Crimean-Congo hemorrhagic fever Orthonairovirus (CCHFV) is a tick borne virus belonging to the genus *Orthonairovirus*, family Nairoviridae of RNA virus. Viral Zoonosis distributed in Africa, Asia, Mediterranean Europe within the ranges of tick belonging to the genus *Hyalomma, Rhipicephalus, Ixodes* (Avsic zupanac, T. 2007; Hodgstral H. 1977, Humolli, F. 2014, Levi,V.1972). It causes mild fever and viremia in cattle. Sheep and small mammals such as hares. Human become infected by contact with infected blood or other tissues of livestock or human patients or from tick bite. The aim of study was to examine the distribution of CCHFV infection among cattle in different district of Kosova. Thi investigation we carried out on 2014/15. Blood samples were taken from the juglar vein of 932 cattle in Kosovo. These sera were collected from nine different municipalities (Malisheve, Rahoveec, Suhareke, Kline, Drenas, Prizren, Peje, Gjakove, and Deçan). And were tested with serological test ELISA. Specific IgG antibody were detected in cattle from all samples areas and detected prevalence were substantial in district of municipality Malisheve with 43,63 % and Rahovec with 25,25%.the overall sereoprevalenc was 19,12 %, with major CCHFV rick in Malisheve and Rahovec.

Key words: Virus, CCHF, Cattle, ELISA, Epidemiology.

Introduction

The CCHF virus belong to genus *Orthonairovirus*, family Nairoviridae of RNA virus is a tick-born virus include 34 viruses, which are grouped in seven serogroup. CCHF virus circulates in nature in an enzootic tick-vertebrata-tick cycle. Tick genus Orthonairovirus are the main vector and reservoir of the virus. The geographic distribution of the virus closely linked to the distribution of tick and limited up to 43 grade N (latidude North) (2,3,6,7,10,11). Humann cases have been reported from more than 30 countries of Asia,Africa, south-Eastern Europe. In Europe human cases occur regularly in Albania, Bulgaria, Macedonia, Kosovo and Serbia (1,2,6).The first cases of CCHF in Kosovo were registered in 1954 in Nishor village, of Suhareke, tree of which were fatal (11). CCHFV usually circulates between asymptomatic animals and tick in an enzootic cycle. This virus has been found in at least species of tick, including seven genera of the family Ixodidae (hard tick). Members of the genus *Hyalomma* seem to be the principal vectors. Date, these tick have been found in regions of many countries in southeastern Europe. Ticks are not only relevant as vector but also play a role as natural reservoir, since the virus can be transmitted transtadially and trasovarially or by venereal route within the tick population. Another possible rout immature tick, of transmission from one tick to another is by co-feeding(3) .

The emergence of diseases, such as CCHF, which is transmitted by ticks in areas were the vector, domestic livestock are present, leads to endemic situation and is why it is assumed that eradication of such disease (5). The status, of CCHFV-specific antibody in the animal population of a region is a good indicator for the presence or absence of CCHFV in the respective area (4). Many species of mammals can transmit CCHFV to ticks when they are viremic. Small vertebrate such is hares and hedgehogs, which are infested by immature tick, may be particularly important as amplifying hosts. With a few exceptions, birds seem to be refractory to infection; however, they may act as mechanical vector by transporting infected tick. Migratory birds might spread the virus between distant geographic areas (6,7,8,9,10).

Material and Methods

This investigation was carried out in 9 municipality of Kosovo. Serum samples were taken from 932 cattle in municipality; Malisheve, Suharek, Rahovec, Drenas, Kline, Prizren, Peje, Gjakove and Deçan. Blood samples were conserved at -20°C and their serum separated by centrifugation with 3500 rpm in 10 minutes. All sera were tested with serological ELISA methods for identification specific antibody IgG of CCHFV, in FLI, Greifswald, Germany. The indirect ELISA was used for the detection of IgG antibodies in the serum samples. Briefly, the following ELISA protocol was used. A recombinant Nucleocapsid (N-) protein of CCHFV was used as antigen. It was added half of the wells of a 96-well microtiter plate, were it adhere to the plastic through charge interactions. A solution of skim milk was used for blocking all free binding sides and to reduce background reactions. Each serum samples was added to two wells without the N-protein. In case CCHFV-specific antibodies were in a serum sample, they bind to the N-protein. All unspecific antibodies were washed away. As a secondary antibody a peroxidase labelled bovine specific conjugate was added to each well. This conjugate formed antibody complexes with the CCHFV-specific antibodies of the serum sample. For the detection of this complex, a substrate for the peroxidase was added. The substrate changes color upon reaction with the enzyme and shows therewith, that CCHFVspecific antibodies are in the serum samples which have bound to the N-protein. The higher the concentration of the primary antibody present in the serum, the stronger the color change.
A spectrometer was used to give quantitative values for color strength.

Result and Discusion

The data of result of serological method ELISA ,investigated the serum from cattle from 9 different municipality of KOSOVA.This data indicated the presence of CCHFV-specific antibody IgG in all sample of serum from different municipality of Kosovo with rate of 43,65% in Malisheve, 25,25 % in Rahovec, 12,98% in Decan, 10,41% in Prizren, 10,20 %,Suhareke, 10,20 %, 10% Gjakove, 8% Kline, 6% Peje. These data strongly suggest the presence and circulation of CCHFV among cattle in all district investigated in of Kosovo. Malisheva is already known as a CCHFV hotspot for human infection and many outbreaks occurred in this municipality so far. This correlates well with high prevalence detected in cattle now. One explanation for this accumulation is the high number of tick in this area of the country (1).The result of our study clearly shows an overlap between the incidence rates of CCHF in the healthy human population and in animals. From an ecological point of view, the results are consistent with the vegetation, where the main occupation is farming and animal breeding. Hence the detection of CCHF antibodies in human or animal's cohorts should always be interpreted taking into account the presence or absence of human cases.

In Kosovo 19,21% of 932 bovines were antibody positive, while in Albania the corresponding national prevalence was much lower 4,74%, while in Macedonia was intermediate 7%.

Conclusions

The Crimean-Congo hemorrhagic fever Orthonairovirus (CCHFV) is a tick borne virus belonging to the genus *Orthonairovirus*, family Nairoviridae of RNA virus. Viral zoonosis distributed in Africa, Asia and Mediterranean Europe. Blood samples were taken from 932 cattle in Kosovo in different municipality and specific IgG antibody was detected in cattle from all samples areas. The overall sereoprevalenc was 19,12%. Detected prevalence were substantial in district of municipality Malisheve with 43,63 % and Rahovec with 25,25%.

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