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High seroprevalence of bluetongue virus antibodies in goats in southeast Iran

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PEER REVIEW

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Comments

This work is interesting and contains novel data. This work can be future referenced in the field of veterinary science and tropical medicine. Its eminent finding is the seroprevalence from the area with limited data.
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ABSTRACT

Objective: To describe the seroprevalence rate of bluetongue virus (BTV) in goat flocks in southeast of Iran.

Methods: The blood samples were collected randomly from herds of southeast of Iran. A total of 93 sera samples were collected between 2011 and 2012. Antibodies to BTV in sera were detected by using a commercial competitive ELISA 3 according to manufacturer's instructions.

Results: The seroprevalence rates were 67.7% for goats. Within a herd, prevalence of BTV seropositive animals ranged from 33.3% to 100.0%. All goat flocks were positive to BTV antibodies.

Conclusions: This study describes a high seroprevalence rate of BTV in goat flocks in southeast of Iran for the first time.

KEYWORDS

Seroprevalence, Bluetongue virus, Goat, Iran

1. Introduction

Bluetongue is an Office International Epizooties (OIE) list A arthropod-borne viral disease caused by the bluetongue virus (BTV)[1]. List A diseases are those diseases which can spread rapidly and that have a considerable impact on the health of livestock[2]. The virus is infectious but non-contagious, affecting domesticated and wild ruminants[1]. The disease is not contagious and is transmitted biologically by certain species of Culicoides[3]. Infection occurs in a number of animals but significant disease occurs only in sheep. Cattle are the

major reservoir host for sheep. Under natural conditions infection occurs in sheep and cattle, but rarely occurs in goats[4]. Adults either lose their fleece from a break in the growth of the staple or develop a weakness (tender wool) that causes breaks in processing and markedly reduces the value of the fleece. Pregnant ewes commonly abort. There is a severe loss convalescence is prolonged, particularly in lambs. The loss from clinical disease and from reduced wool quality and suboptimal production following infection in sheep are significant[5]. In cattle the infections are usually inapparent and evidence of clinical disease is seldomly observed. However, indirect

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losses associated with loss of body weight and condition, drop in milk production and poor subsequent reproductive performance were thought to have greater economic effect than occasional overt disease[6]. Mortality varies with the serotype but can be significant and it is estimated that the incursion of the disease in Europe since 1998 has caused sheep death of over 1 million[7]. Various techniques have been used to detect antibodies against BTV. These include agar gel immunodiffusion, hemagglutination–inhibition, complement fixation and ELISA, which are serogroup specific and serum neutralization, which is serotype specific. Although all these assays are available, only agar gel immunodiffusion and competitive–ELISA are recommended as prescribed tests for international trade in the OIE Manual of Standards for Diagnostic Tests and Vaccines[1]. The incursive disease has occurred in Portugal, Spain and Reece but until very recently bluetongue was not considered an endemic[8]. To the best of our knowledge, no report has been published on bluetongue disease of goat flocks of southeast of Iran. The objective of this study was to describe the seroprevalence rate of BTV in goat flocks in southeast of Iran.

2. Materials and methods

2.1. Sample preparation

The blood samples were collected randomly from goat flocks of southeast of Iran. A total of 93 sera samples were collected between 2011 and 2012. Blood was collected into sterile tubes by jugular vein puncture.

2.2. Detection of antibodies

Blood samples were centrifuged, and sera were gathered and stored at -20°C . Antibodies to BTV in sera were detected by using a commercial competitive ELISA (Institute Pourquier, Montpellier, France) according to manufacturer's instructions.

3. Results

The seroprevalence rates were 67.7% for goats. Within a herd, prevalence of BTV seropositive animals ranged from 33.3% to 100.0%. All goat flocks (100%) were positive to BTV antibodies. Number of herds, samples, positive samples and seroprevalence rate in each herd were presented in Table 1.

Table 1

Number of herds, samples, positive samples and seroprevalence rate in each herd.

Number of herd	Number of samples	Number of positive samples	Seroprevalence rate (%)
1	17	9	52.9
2	16	12	75.0
3	14	11	78.5
4	8	7	87.5
5	8	7	87.5
6	8	4	50.0
7	8	3	37.5
8	6	2	33.3
9	4	4	100.0
10	4	4	100.0
Summation	93	63	67.7

4. Discussion

In present study the apparent seroprevalence rate was 67.7% for goats. The first evidence of bluetongue disease in 10 pregnant camels from Southeast Iran was reported by Mahdavi *et al.* in 2006[9]. Two serological investigations of BTV in cattle and sheep of Southeast Iran were done and the seroprevalence rates were 2.13% and 6.57% respectively[10,11]. A seroprevalence (34.7%) of BTV seropositivity was reported in sheep flocks in West Azerbaijan, Iran. They presented that 172 of 184 flocks included BTV seropositive sheep (93.5%)[12]. All goat flocks (100%) were positive to BTV antibodies in the present study. Seroprevalence of BTV among goats in Nagpur district of Vidarbha region was 27.95%[13]. The prevalence of BTV antibodies in goats in coastal saline area of West Bengal, India was 47%[14]. High seroprevalence of BTV antibodies in sheep (54.1%), goats (53.3%), cattle (44.8%) and camel (25.7%) in different districts of Saudi Arabia was reported[15]. Higher prevalence of bluetongue in goats (58.01%) has also been reported[16]. The highest previous reported rate of seroprevalence, was 66.95% in goats of West Bengal, India[17].

BTV seropositive reactions were obtained in 184 (48.4%) out of 380 tested sera, and in 89.5% (34/38) of the sheep flocks in North West Frontier Province, Pakistan. In the 34 seropositive flocks, the prevalence ranged from 12.5% to 100% (median=47)[18]. BTV seropositivity rates in sheep were detected as 29.5% in southeastern Turkey[19]. Our results revealed high seroprevalence (67.7%) of BTV infection which was comparable to that has been described amongst ruminants.

BTV is currently recognized to infect domestic ruminants on the continents of the Africa, Asia, North America and

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