



Original Research Article

Border disease of sheep and goats in Saudi Arabia

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ABSTRACT

Border diseases is one of viral diseases that affect sheep and goats causing economic losses worldwide. The present study was intended to explore the existence of border disease infection in sheep and goats in two regions at the north of Saudi Arabia. Collected serum samples were 624 from 155 sheep and 217 goats in Hail and 144 sheep and 108 goats in Rafha regions at the north of Saudi Arabia. Antibodies against pestivirus were examined in collected sera using competitive ELISA. Overall found pestivirus antibodies were 18.4%. Sheep showed the highest sero-prevalence (20.7%). Within localities highest seroprevalence was seen in Rafha region. Obtained results points to the circulation of border disease infection in sheep and goats in the northern part of Saudi Arabia.

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1. Introduction

Border disease virus (BDV) is one of viral diseases which affect the animal production. BDV, bovine viral diarrhoea virus (BVDV) and classical swine fever virus (CSFV) are classified in the family Flaviviridae.¹

BVDV can infect sheep and goats; border disease is known to affect sheep and goat production negatively by losses due to stillbirth, weak offspring.² Border disease is existing all over the world, Antibodies were reported in different countries; In Iraq, 47% of sheep and 16% of goats tested positive.³ In Turkey 68% of tested sheep were positive.⁴ Existence of BDV or BVDV antibodies with variable prevalence rates were documented, in India,⁵ Sudan,⁶ Austria⁷ Serbia.⁸

In Saudi Arabia very scarce work was undertaken to investigate the existence of BVDV and/or BDV in sheep and goats. Antibodies against BDV and/or BVDV were detected in sheep and goats, in Al-Ahsa region 24% of sheep and 3% of goats were found to be positive for BDV

antibodies.⁹ more recent study reported the presence of pestivirus antibodies in cattle sera in north, east, west and central regions of Saudi Arabia.¹⁰

This study was carried out to explore the presence of antibodies against pestivirus in sheep and goats in the northern region of Saudi Arabia.

2. Materials and Methods

2.1. Study area

Two regions in the north of Saudi Arabia were selected for the study, Hail and Rafha (Figure 1).

2.2. Collection of samples

Serum samples (n = 624) were collected from sheep (n = 155) and goats (n = 217) in Hail and sheep (n = 144) and goats (n = 108) in Rafha. Sera were collected randomly from clinically healthy animals in the slaughterhouses and some farms. Blood from jugular vein was drawn, centrifuged and sera were kept at -20° C till tested.

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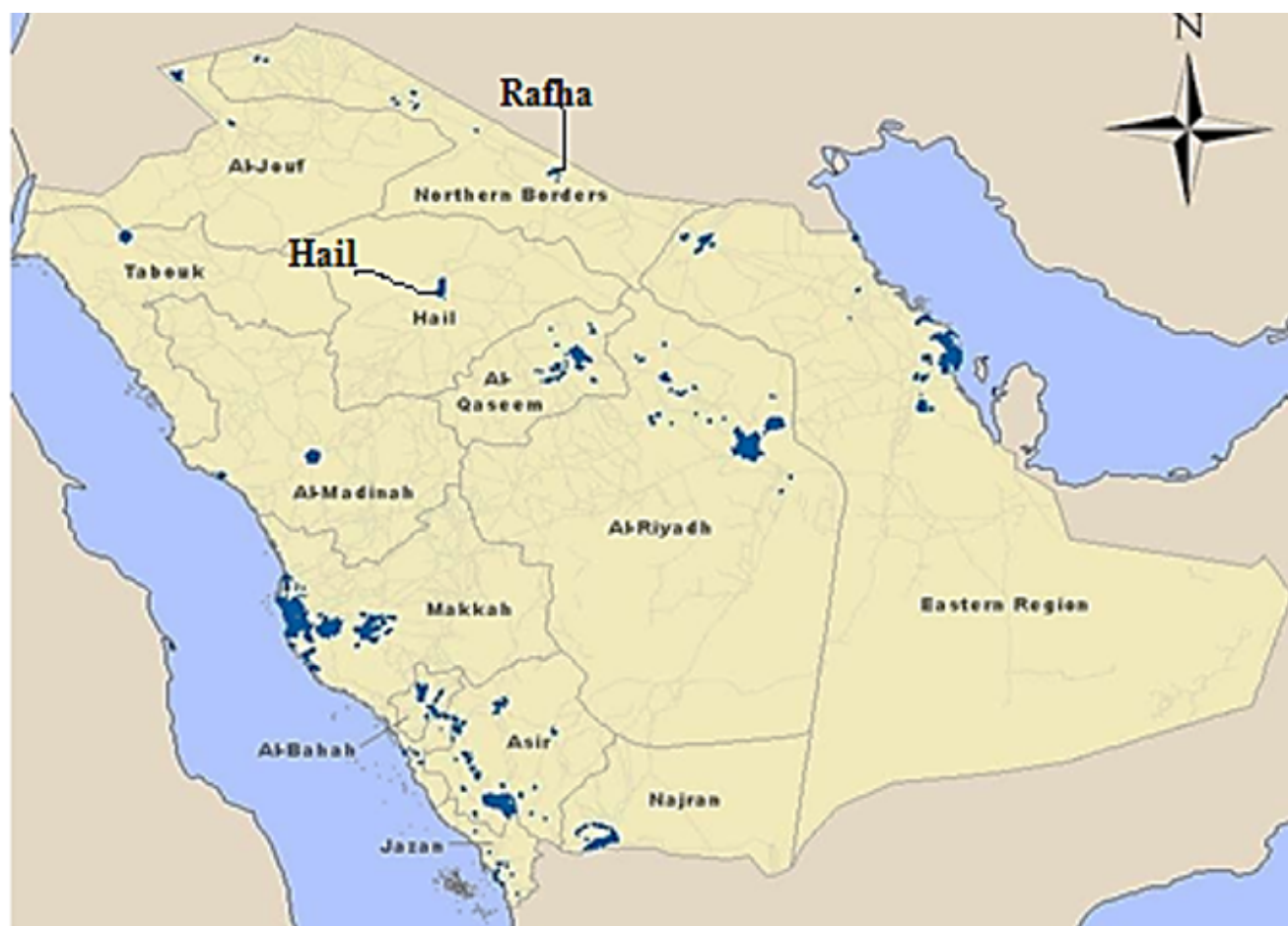


Fig. 1: Localities of sheep and goat sera collected for pestivirus antibodies detection

3. Pestivirus antibodies detection using ELISA

Competitive enzymatic immunoassay (blocking ELISA) with pestivirus p80/p125 specific monoclonal antibodies peroxidase conjugate were used to examine collected sera. Kits (Ingezim pestivirus compac) were purchased from Immonologia Y Genetica Aplicada, S.A. C./ Hnos. Garcia Noblejas, 39 28037 – Madrid, Spain. The test was applied as instructed by the manufacturer.

4. Results

4.1. Pestivirus antibodies determination using ELISA in sheep and goat sera

Examined sera (372 from Hail, 252 from Rafha regions) showed antibodies to pestivirus in 115 (18.4%). Sheep showed the highest sero-prevalence (20.7%). Highest seropositivity was noticed in Rafha region (23.4%), the details are shown in Table 1.

5. Discussion

Pestivirus including BVDV and BDV are known as significant viral causes of infectious diseases affecting domestic animals leading to great economic losses.² Border disease in sheep and goats had been extensively reported around the world. In the present study antibodies to pestivirus were found in 18.4 % of 624 examined sheep and goat sera at the north of Saudi Arabia. Unlike a previous work in camel sera,¹¹ highest prevalence rate was found in Rafha which was not expected as Rafha is a small town with very scarce animal production facilities.

The detected pestivirus prevalence in sheep (21%) was similar to a previous report (23.7%) in the eastern region of the country⁹ as well as many countries. It was 23% in 22% in India⁵ 22% in Austria,¹² 18% in Japan,¹³ 19% in Turkey.¹⁴ Reported prevalence of pestivirus is variable in different countries. The detected prevalence in this study is higher than that presented in many reports, it was only 0.3% and 0.5% in Australia and Denmark,^{15,16} 5.6% in Ireland¹⁷ and USA¹⁸ and 7.3% in Turkey.¹⁹

Table 1: Examination of sheep and goat sera for Pestivirus antibodies using competitive ELISA

Region	Total examined		No. positive		No. Negative		Percentage positive		
	Sheep	Goat	Sheep	Goat	Sheep	Goat	Sheep	Goat	Total
Hail	155	217	20	36	135	181	12.9	16.6	15.1
Rafha	144	108	42	17	102	91	29.2	15.7	23.4
Total	299	325	62	53	237	272	20.7	16.3	18.4

However far higher prevalence of pestivirus in sheep were reported, 45% in Turkey,²⁰ 68% in Algeria¹ as well as in Turkey,²¹ 75% in Turkey.²² This discrepancy is most probably due to the management system, where in USA and Europe strict sanitary and hygienic measures are adopted.

The overall results showed that sheep had higher prevalence rate than goats which is in agreement with the picture reported in different countries, although prevalence in goats was slightly higher than in sheep in Hail region which is unusual and may be due to the collection of samples from highly infected flocks. Existence of antibodies to pestivirus or specifically BDV in sheep and goat sera was confirmed in different countries, in most of the reported cases sheep were found to be highly affected than goats. Pestivirus antibodies were found in% of sheep, 17% of goats in India,⁵ 18.7% in sheep, 6.5% in goats in Chile,²³ 64% in sheep, 18% in goats in Bulgaria,²⁴ 39% in sheep, 15% in goats in Sudan;⁶ 50% in sheep, 3% in goats in Turkey,²⁵ 13% in sheep, 12% in goats in Nigeria,²⁶ 47% in sheep, 16% in goats in Iraq.³

The results obtained in this study confirmed the high prevalence of pestivirus infection in small ruminants in the country, this raise the need for more detailed study to investigate the prevalence of this viral infection in different areas of the country. Such research beside the molecular characterization of the circulating virus is highly recommended to aid in the control measures of this economically important disease.

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8. Conflict of interest

There is no any conflicts of interest exist.

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