

Sero-prevalence of Rift Valley Fever (RVF) in Sheep and Goats in Greater Kapoeta Eastern Equatoria State South Sudan.

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Abstract: A sero-prevalence study on Rift Valley Fever (RVF) was conducted in sheep and goats in three Counties of Greater Kapoeta, Eastern Equatoria State, South Sudan. Of the 333 collected serum samples, three samples (0.9%) revealed RVF virus immunoglobulin (Ig) M antibodies in sheep only (1.1%) indicating a recent infection of RVF in the vicinity of Kapoeta. No IgG antibodies revealed in all samples on enzyme-linked immuno-sorbent assay (ELISA) indicating no previous exposure of the stock to RVF virus. This study is of paramount importance in formulating a control strategy against RVF among sheep, goats and cattle herds in South Sudan.

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Key words: Sero-prevalence; Rift Valley Fever; Sheep and Goats; Greater Kapoeta ; South Sudan

1. Introduction

Rift Valley fever (RVF) is one of the most important mosquito-borne viral zoonotic diseases of man, cattle, sheep and goats enzootic in sub-Saharan Africa and Egypt (Radostits et al., 2000). RVF virus is a member of the family Bunyaviridae, genus Phlebovirus. Review on the epidemiology of the disease has indicated its dissemination to the Arabian Peninsula including Saudi Arabia and Yemen in 2000 (Tamador et al., 2008). An outbreak of the disease occurred in Northeastern Kenya in 1997-1998 (Woods et al., 2002). Greater Kapoeta includes four Counties: Budi, Kapoeta North, South and East in which livestock have been estimated at 600,000 heads of cattle and considerable scores of sheep and goats. Cattle, sheep and goats are mainly owned by pastoral communities (Muchomba and Sharp, 2007). Until recently RVF is unknown to the livestock keepers in Greater Kapoeta, but reported cases of abortion among sheep and goats have provoked the situation.

The purpose of this study was to elucidate the prevalence of RVF in sheep and goats in Kapoeta North, South and East Counties using ELISA test.

2. Material and Methods

2.1 Description of the Study area

This study was conducted in three Counties of Greater Kapoeta: Kapoeta North, East and South (Fig.1). These Counties lie in semi-arid zones in Eastern Equatoria State South Sudan. Annual mean rainfall is less than 700 m.m in Kapoeta East County where the vegetation covers consist of thorny scrub and areas of open grassland. At the time of the study (July-September) rainfall was heavier than ever before in Greater Kapoeta. Most of the areas were

flooded including high lands of Kapoeta North County which have been almost free from mosquitoes.

2.2 Animals

A total of 333 livestock comprising of 270 Toposa sheep and 63 goats grazing naturally in the study areas were investigated.

2.3 Samples collection and Analysis

Blood samples were collected from jugular veins into clean dry plain vacutainer tubes. Three hundred and thirty three serum samples were separated by centrifugation at 4 °C and kept at – 20 °C. They were shipped to Kenya for serological test. All serum samples were assayed on RVF specific enzyme linked immuno-sorbent assay (ELISA).

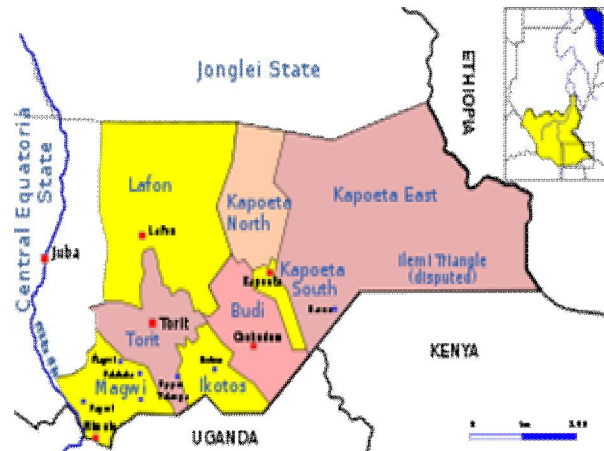


Figure.1. Map of Greater Kapoeta Counties, Eastern Equatoria State, South Sudan

3. Results

The sero-prevalence study conducted in Greater Kapoeta showed that three (3) serum samples of sheep out of 270 had anti RVF virus IgM antibodies on ELISA test computing a prevalence rate of 1.1%. The rest of the 330 serum samples including 267 and 63 drawn from sheep and goats ,respectively reveled no IgM antibody .The overall prevalence rate of the stock was 0.9 %. No anti RVF virus IgG antibodies were detected in all 333 serum samples as depicted in the table below.

Table shows the prevalence rate of Rift Valley fever in sheep and goats in Greater Kapoeta, Eastern Equatoria State South Sudan

Animal species	Serum samples tested on ELISA	Positive		Prevalence rate (%)
		IgM	IgG	
Sheep	270	3	0	1.1
Goats	63	0	0	0.0
Total	333	3	0	0.9

4. Discussions:

RFV is a highly fatal disease of public health implications .Apart from a suspected human case of the disease in 2007, no other case was recorded in Kapoeta North County. However, previous disease surveillance in Kapoeta had revealed 3 and one positive cases for aniti-RVF virus IgG antibody on ELISA from sheep and goats, respectively (unpublished data) .This may explain a long exposure-time to RVF disease and infection. The traditional cattle raiding/rustling amongst pastoralists and the rampant movements associated with mosquito infestations of the herds might be responsible for the spread of the disease and infection to other areas. It appeared the heavy rainfall in those areas might have provided a conducive microclimate to vectors proliferation. Epizootics of RVFV occur periodically after heavy rains that flood natural depressions in the grasslands of sub-Saharan Africa (Davies et al., 1985).

Conclusion

Continuous active and passive surveillance for RVF virus and launching vaccination programme against RVF in Kapoeta to create buffer zones are recommended. Control of mosquito populations during or after heavy rains should be realized to prevent animal and human infection. Further epidemiological studies are needed to determine the vectorial capacity of **culicine**-mosquitoes and the disease pattern in humans and animals in the study area.

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