Serological evidence of Rift Valley fever infection and risk factors among one-humped camels (Camelus dromedarius) in Northern Nigeria (lay summary)

Nicholas Outa

AfricArXiv

Published on: Apr 06, 2023
URL: https://africarxiv.pubpub.org/pub/lt1gzm9w
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Strict borders needed to control Rift Valley fever in Nigerian camels

Rift Valley fever (RVF) can devastate the health and economies of Nigerians that rely on camels. Researchers mapped the prevalence of this disease in the region, and they say moving the animals across borders presents the greatest risk of spread.

One-humped camels are important economic livestock species in Africa used for traction, transportation, and food, but like humans and other animals, they are vulnerable to RVF, the deadly viral haemorrhagic fever.

Regional and international trade that spreads the disease has resulted in severe economic and public health catastrophes in camels in Nigeria. Unfortunately, surveillance for RVF in most African countries is limited, and outbreaks may go unnoticed and therefore misdiagnosed and under-reported.

In fact, Nigeria has not reported a general outbreak of Rift Valley fever, despite the virus being detected in serum samples in various animal species. It has however not been detected in camels yet; this study thus set out to map the prevalence of the RVF virus in one-humped camels in Nigeria, and to identify the risk factors associated with the disease.

Researchers conducted a cross-sectional study in seven local government areas of Jigawa and Katsina States. They collected serum samples from camels and tested them for antibodies that indicate the presence of RVF.

They found that anti-RVF antibodies were present in 19.9% of camels in two northern states of Nigeria. These states share a boundary with the Niger Republic, which recently reported an outbreak.

The study found that older camels, aged 6 to 10 years, had the highest prevalence, with 20.9% having anti-RVF antibodies present in their serum samples.

The researchers showed that camels in the Sule Tankar-kar are 2.47 times more likely to be infected with RVF than not, with a prevalence of 33%. The study found that the highest risk factor is the increased movement of camels from Nigeria to neighbouring countries and back to Nigeria.

These numbers are lower than those of previous surveys in other countries, such as Niger Republic (47.5%), Mauritania (45%), and Tanzania (38.5%).

Nevertheless, the researchers say Nigeria should consider setting up quarantine units at its borders so that animals coming from neighbouring countries can be screened for transboundary infectious diseases like RVF.
Abstract

Background

Rift Valley fever (RVF) is a zoonotic disease that has become emerging and re-emerging in some regions of the world, infecting livestock and humans. One-humped camels are important economic livestock species in Africa used for traction, transportation, and food. Regional and international trade has continued to increase the risk of this disease, spreading widely and causing severe economic and public health catastrophes in affected regions. In spite of these risks, there is a dearth of information about the status of RVF in camels in Nigeria. This study was carried out to determine the prevalence of the RVF virus in one-humped camels in Nigeria and identify the risk factors associated with the disease.

Methods

A cross-sectional study with simple random sampling was carried out in seven local government areas of Jigawa and Katsina States. The sera from camels were tested for anti-RVFV IgG. Camel owners were administered a structured questionnaire to ascertain their knowledge, attitude, and practice.

Results

An overall prevalence of 19.9% (95% CI; 17.07-22.90) was recorded. Based on age groups, the highest prevalence of 20.9% (95% CI; 17.00-25.31) was obtained among older camels (6-10 years), while female camels recorded a high prevalence of 20.4% (95%CI; 15.71-25.80). Sule Tankar-kar recorded the highest prevalence with 33% (95%CI; 1.31-4.72, p= 0.007) and OR 2.47 in Jigawa State while Mai’adua had 24.7% (95%CI; 0.97-2.73, p=0.030) with OR 1.62 in Katsina State respectively. From the risk map, local government areas bordering Niger Republic were at a high risk of RVF. Only high rainfall was not significantly linked with RVF occurrence among nomadic camel pastoralists (95%CI 0.93-5.20; p=0.070).

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