Available online at www.sciencedirect.com
ScienceDirect
Veterinary Parasitology 143 (2007) 245–253
veterinary parasitology
www.elsevier.com/locate/vetpar

# An outbreak of East Coast Fever on the Comoros: A consequence of the import of immunised cattle from Tanzania?

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Received 4 April 2006; received in revised form 2 August 2006; accepted 9 August 2006

**Abstract**

In 2003 and 2004, a severe epidemic decimated the cattle population on Grand Comore, the largest island of the Union of Comoros. Fatalities started soon after the import of cattle from Tanzania. *Theileria parva* and its vector, *Rhipicephalus appendiculatus*, could be identified as the main culprits of the epidemic. Characterisation by multilocus genotyping revealed that the *T. parva* parasites isolated on the Comoros were identical to the components of the Muguga cocktail vaccine used in Tanzania to immunise cattle. Therefore, it is believed that East Coast Fever reached the Comoros while some of the imported livestock got infected in Tanzania by ticks of which the immature stadia fed on Muguga cocktail vaccinated animals. Since the Comorian government neither has the financial means nor the competent staff to pursue an adequate epidemiosurveillance, the danger exists that without external assistance and in a context of continuing globalisation more transboundary diseases will affect the Comorian livestock sector in the future.


*Keywords:* *Theileria parva*; Comoros; Molecular epidemiology; East Coast Fever; *Rhipicephalus appendiculatus*; Globalisation

## 1. Introduction

Increasing worldwide movement of commodities, animals and people is also responsible for the globalisation of pathogens. Early detection and a rapid response to the incursion of these pathogens are often crucial. In this respect the developed world possesses the necessary scientific and technical competence to stop or track the spread of these intruders. Moreover, the developed world has sufficient human and financial resources at its disposal to fight them. On the other hand, some of the poorest third world countries still lack even the most basic provisions to deal with this increased risk. As these countries have no appropriate veterinary legislation and no administrative or financial structures to set up prevention and control systems towards transboundary animal diseases, they are extremely vulnerable to the introduction of these often lethal diseases.

Moreover, due to the social role of livestock, the trade in live animals is still important with increased risk of spread of diseases or infected vectors compared to carcasses or processed foods. At the same time, new trade routes to these countries develop continuously

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0304-4017/$ – see front matter 
doi:10.1016/j.vetpar.2006.08.018

increasing the risk of importing diseases, which may be endemic in the exporting country but cause severe epidemics in the importing country. The use of ''live vaccines'' to immunise livestock in the exporting country can even worsen the threat by the development of ''healthy carriers'' of the disease. Consequently, in countries with weak veterinary services, poor legislation and no active disease surveillance transboundary animal diseases can pose a serious national security threat. This paper describes such an epidemic on the island of Grand Comore.

The ''Union of the Comoros'' is a federal republic made up of three autonomous islands (Grand Comore, Anjouan and Moheli), totalling 600,000 inhabitants of which more than 50% live on ''Grand Comore'', the largest island (Fig. 1). More than 80% of the population is working in the agricultural sector. Cattle are socially very important in Grand Comore and often fetch at special occasions (Les Grands Mariages) higher prices than the intrinsic value of meat. Nevertheless, most farmers consider livestock breeding as a secondary, yet profitable activity.

The exact number of cattle on Grand Comore is not known, but estimates range between 15,000 and 25,000 head. They are always tethered and essentially kept on the high plateau.

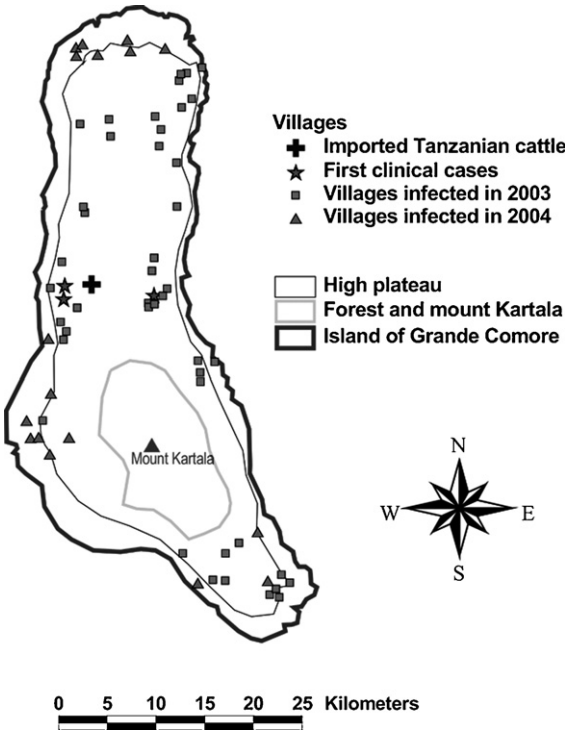


Fig. 1. The spread of theileriosis on Grand Comore from the end of 2002 until May 2004.

Veterinary services on the Comoros are provided by the ''Association of Animal Health Professionals'' (APSA). Members of APSA operate a central pharmacy and several small, poorly equipped private veterinary clinics all over the islands. These services are characterised by a motivated staff with poor management capacity, an irregular supply of veterinary drugs, insufficient transport facilities and inexistent diagnostic facilities.

In November 2002, abnormal high mortality of cattle was reported in the village of Bangahani. Treatment with antibiotics and anthelmintics had no effect on the outcome of the disease and by the end of March 2003 already more than 500 animals had succumbed. A common feature characterising all diseased animals was the sharing of grazing land on the high plateau of Haboho-Itsoundzou with a herd of 300 cattle, recently imported from Tanzania. These animals were introduced into the country without quarantine or any other preliminary veterinary control. Some of these imported animals fell ill after arrival and about 20 of these animals died or had to be culled. At this stage, the national authorities alerted the Emergency Prevention System (EMPRES) of FAO. Because of the urgency of the situation, FAO contacted the non-governmental organisation Comorian Association of Veterinary Technicians and Veterinary Assistants (ACTIV) to carry out a preliminary epidemiological investigation and an expert was sent to the Comoros in June 2003. Although the cause of the epizootic could not be identified at that time, a tentative diagnosis of theileriosis was made.

The objective of this paper is to investigate the cause and origin of the outbreak and to assess the risk of the disease spreading to the island of Anjouan. Hereto two follow-up missions were organised, respectively, in November 2003 by the Emergency Prevention System (EMPRES) of FAO and in May 2004 by the non-governmental organisation (NGO) ''Vétérinaires Sans Frontières'' (VSF).

## 2. Materials and methods

### *2.1. Tests carried out subsequent to the mission of November 2003*

The representative of EMPRES, Dr V. Martin, visited three villages (Moidja, Ngnadomboni and Mbeni), affected by the disease in November 2003. Twenty-one animals, of which eight presented clinical symptoms, were sampled and an autopsy was performed on three sick animals (two adults and a calf). Clinical symptoms consisted of poor general condition, hyperthermia