

Indigenous knowledge of pastoralists on respiratory diseases of camels in northern Kenya



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ABSTRACT

The camel disease terminology of pastoralists in northern Kenya differentiates between two respiratory disease complexes of camels. Participatory epidemiology data were collected in 2011 in three camel keeping communities (Gabra, Garri, and Somali) and analysed to assess the validity of this differentiation. Further queries assessed recurrence of the disease in the same animal, most affected age group, relative frequency of occurrence, morbidity rates, mortality rates and response to antibiotic treatment. Based on matrix scoring the cardinal symptom nasal discharge was significantly correlated with Respiratory Disease Complex 1 (RDC1; Somali *Hergeb*, Gabra & Garri *Furri*) while cough was correlated with Respiratory Disease Complex 2 (RDC2; Somali *Dhuguta*, Gabra *Qufa*, Garri *Dhugud*). RDC1 appears to occur regularly every year and does not respond to antibiotic treatments while outbreaks of RDC2 are only observed at intervals of several years and treated cases do generally respond to antibiotics. While RDC1 is more severe in calves, RDC 2 is mostly associated with respiratory disease in adults. Elements of this differentiation appear to be in agreement with other authors who differentiate between camel influenza (PI3 virus) and bacterial camel pneumonia, respectively.

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1. Introduction

Camelus dromedarius is an essential livestock species distinctively adapted to hot and arid environments (Schwartz and Dioli, 1992). In the face of increased global warming and desertification, the camel would perhaps be the most favoured animal to develop (Ahmad et al., 2010). It produces more milk and for longer periods than any other livestock species, hence playing a central role in providing nutrition for the pastoralists living in the arid zones of East Africa (Farah et al., 2007). According to Schwartz and Dioli (1992), camel production provides significant contributions to national economies in Eastern Africa. In Kenya, the northern part of the country is the most important camel producing area constitut-

ing 95% of the total national population (Census, 2009). Kuria et al. (2011) describe camel rearing in this region as a highly rational adaptation of human life to a harsh environment. In spite of their enormous ability to thrive in this arid and semi-arid land, there are a number of constraints to the production of camels in this area. According to Dirie and Abdurahman (2003) even though camels are comparatively hardy and less susceptible to common diseases affecting other animals, they do contract many other diseases some of which are still unknown.

According to Bekele (1999) aetiological and epidemiological details for many camel diseases are not well documented. Outbreaks of mass respiratory disease in camels have been reported from Afghanistan, Ethiopia, Iran, Pakistan, Somalia and Sudan (Yigezu et al., 1997; Bekele, 1999; Roger et al., 2000; Alhendi, 2000; Younan and Bornstein, 2007; Kakar, 2011; Khan, 2012; Wernery and Kinne, 2012); causing and/or contributing agents include a.o. parainfluenza 3 virus, *Pasteurella multocida*, paramyxoviridae. Studies on the causes of respiratory diseases of camels in the East African region are still at a preliminary stage and the precise aetiological role of most pathogens identified in the res-

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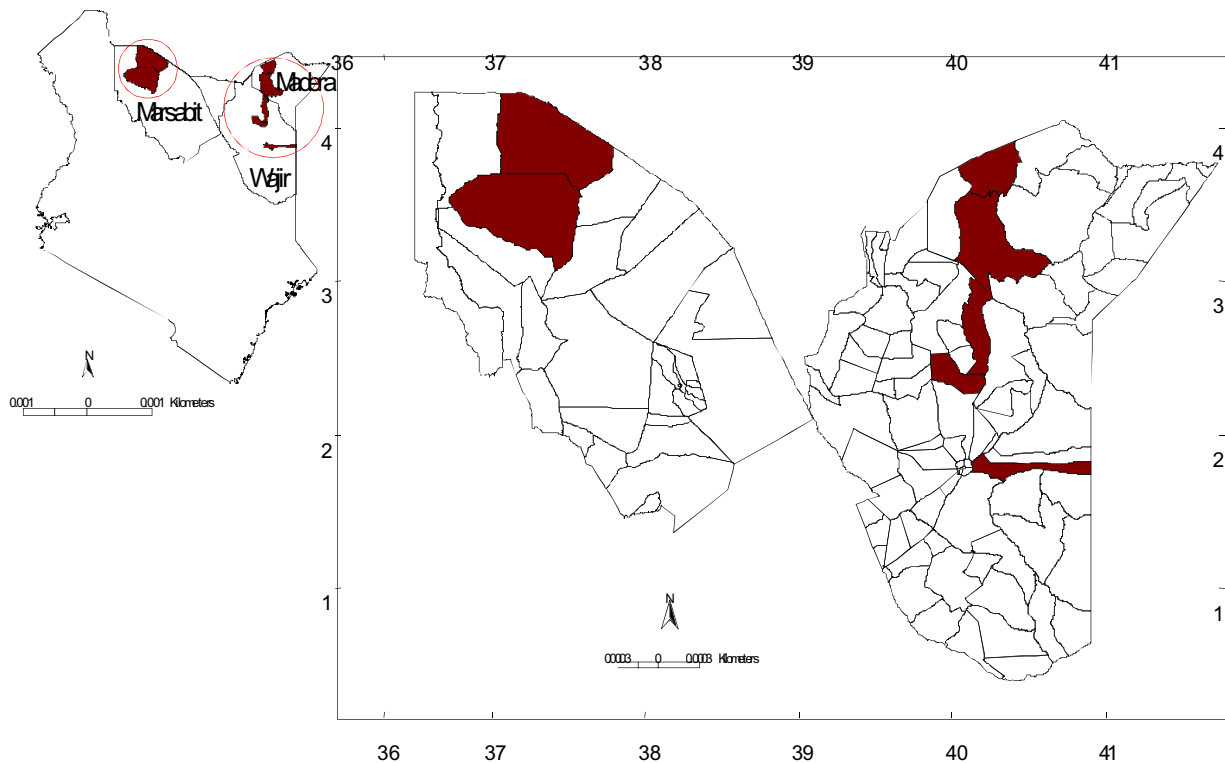


Fig. 1. Map of Kenya showing the three study districts and study locations (in maroon colour).

Source: Ojwang, G. O, Chief Natural Resource Scientist, Department of Resource Surveys and Remote Sensing, Kenya, 2011.

piratory tract of camels is yet to be corroborated (Yigezu et al., 1997; Bekele, 1999; Younan and Bornstein, 2007; Bekele, 2008; Kebede and Gelaye, 2010; Wareth et al., 2014). In Ethiopia, which borders Kenya to the north, respiratory disease is considered an emerging disease in camel and a major threat to camel production (Bekele, 1999, 2008; Awol et al., 2011). Gross, histopathological and microbiological studies carried out on the lungs of camels in Ethiopia and Jordan highlight the occurrence of different types of pneumonia (Bekele, 2008; Al-Tarazi, 2001). The need to distinguish between different specific respiratory diseases in camels is further highlighted by recent findings on *Rhodococcus equi* in United Arab Emirates' camels (Kinne et al., 2011). A comprehensive overview of current knowledge on respiratory diseases in camels is provided by Wernery et al. (2014) who also stress the importance of pre-disposing factors such as stress due to transportation and movement, feeding resources and/or other concurrent infections. This study was conducted to gain insight into pastoralist's traditional clinical and epidemiological differentiation of respiratory diseases in camels in northern Kenya.

2. Materials and methods

2.1. Study area

Field work for the study was carried out from June to September 2011 in three neighbouring Districts in northern Kenya, namely Marsabit North, Mandera West and Wajir East. These districts are mainly inhabited by the Gabra, the Somali and the Garri pastoralists, respectively (Fig. 1).

2.2. Study design

The districts were purposively selected based on concentration of camels. The locations within the districts were also chosen

purposively based again on the concentration of camel herds and accessibility of the area. The informants in a specific location were selected by the village elders and the chief based on their knowledge of camel herding. A total of 11 informant groups consisting of 6–10 individuals were enrolled for the study. Four groups were selected from Marsabit North and Mandera West each, while three were selected from Wajir East. Our considerations regarding sample size – methodological guidelines for this research question lacking – were mainly guided by the attempt to use resources in terms of transport, knowledgeable individuals and logistics most efficiently within the given time for field work (limited by course curriculum and schedule).

As the study did not involve animal experiments nor being involved in human diseases ethical approval was not required.

2.3. Data collection and analysis

The research team composed of a researcher and a translator/guide received practical field training in Wajir East ahead of the participatory epidemiology (PE) exercise. A set of PE tools were selected and tested in the field during the training exercise. Based on the test, necessary adjustments were made before the tools were applied in the study.

The data were collected by participatory rural appraisal which included focused group discussion (FGD), semi-structured interviews, proportional piling and matrix scoring. These tools were adapted from Catley and Mariner (2002); Catley (2005); Swai and Neselle (2010); Kipronoh et al. (2011): After each exercise, the result was recorded in a note book. A total of 11 informant groups consisting of 6–10 individuals were involved in the study numbers being based on recommendations given by Catley (2005):

(i.) Identifying and priority ranking of camel diseases

Focused group discussion (FGD) was used to identify and rank the ten most important camel diseases in the area. The meeting

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