The Relationship Between Sudden camel Death and Peste des Petits ruminants in Goats in Mandera and Wajir Counties in Kenya. Code: CHh

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Introduction

Pestes des petits ruminants (PPR) is a trans-boundary disease of economic importance and is listed as a notifiable disease by the World Organization for Animal Health (OIE). It is a contagious viral epizootic disease of sheep, goats, gazelles and camels. In new epizootics, it causes acute disease in domestic sheep and goats characterized by fever, lesions in the mouth, diarrhea and pneumonia often leading to death of affected animal. PPR is a diseases that is currently targeted for eradication by FAO by the year 2030, as it is a danger to food security and international trade of livestock and livestock products. It is therefore very important to determine the presence of PPR virus infection in other hosts herded with sheep and goats as this will have implication on the eradication efforts. PPR has been reported to occur in camels in Sudan (Khalafalla et al 2010) and Iran (Zakian et al 2016) as sudden camel death where camels affected by PPR had fever, oral and ethyama like lesions, pneumonia and respiratory distress, lymphadenopathy, severe dehydration and inflammation of the skin and conjunctiva Sudden camel death has also been widely reported in Kenya, although the causative agent was not determined. Despite these reported clinical cases of PPR in camels, experimental infection has yet to reproduce the natural condition (Wohlsein and Singh 2015). In this study, camels and goats in four counties in North Eastern Kenya were examined and samples obtained from clinical cases

Material and methods

A total of 390 camels and 200 goats were examined in Marsabit, Isiolo, Wajir and Mandera counties through field visits, focus group discussions and blood and nasal discharge samples obtained for virus detection between February and March 2017. A total of 38 samples, 25 from camels and 11 from goats and sheep with suspiscious clinical signs of PPR were collected. Extraction of RNA was done using QIAamp DSP Virus Kit ® (QIAGEN GmbH, 40724 Hilden, Germany). Reverse transcription polymerase chain reaction was carried out in Gene Amp PCR System 9700 (Applied Biosystems, Carlsbad, USA). Samples that tested positive for PPR virus using the N gene primer set were sequenced. byInqaba Biotechnical Industries (Pty) Ltd in Pretoria, South Africa, The BLAST online tool was used to search in the GenBank for homologous gene sequences in the NCBI database with one of the sequences.

Results and discussion

PPR virus was confirmed from a goat in Wajir and a camel from Mandera (Fig I, II respectively). Each of these animals had emaciation, excessive nasal discharge, coughing, diarrhoea and poor hair coat. There were no oral lesions in either species. From 2007, sudden camel death was reported in most parts of North Eastern Kenya at the same time as explosive PPR outbreaks were reported in the same areas. In the current study, the clinical signs in camels and goats have since then evolved to mild signs that include diarrhea, excessive nasal discharge emaciation and coughing for both goats and camels. This study shows that although the two PPR viruses were both from lineage III, there were slight differences between the two viruses strains based on the comparative gene sequences of the two sequences obtained. There was a 60.29% of nucleotide identity between the PPRV isolate from goat in Wajir county compared to camel isolate in Mandera in Kenya in a 351bp nucleoprotein fragment (Fig III,IV,V). In previous studies, only
lineage IV had been isolated and not lineage III from in camels. It is possible that this virus reported in camels is a variant of the one isolated in goats and more samples need to be obtained to confirm this finding. Currently, experimental infection of camels has not yet produced infection but the process is on-going. This study highlights that there is a possible interaction of PPRV virus between small ruminants and camel population in Kenya. There is need for the evaluation of the camel as a possible host of the virus and its transmission potential. If confirmed, then camels will have to be considered as vaccination candidates if PPRV is to be eradicated globally.

References


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