

MIDDLE EAST RESPIRATORY SYNDROME (MERS) IN AN ADULT DROMEDARY CAMEL: SHORT COMMUNICATION

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ABSTRACT

MERS-CoV was isolated from nasal swabs for 10 days from an adult female camel which displayed clear nasal discharge from both nostrils. When MERS-CoV ELISA antibodies appeared in the camel's blood, the virus was no longer present in its nasal cavities.

Key words: Camel, MERS

Since the emergence of Middle East Respiratory Syndrome (MERS) in 2012 in Saudi Arabia, more than 2000 human cases have been reported worldwide with a case fatality of 30% (WHO, 2018). The causative agent of MERS has been confirmed to be a novel coronavirus (CoV) named MERS-CoV belonging to the lineage C of Betacoronavirus (Van Boheemen *et al*, 2012). Investigations have shown that the one-humped or dromedary camel (*Camelus dromedarius*) is so far the only reservoir of MERS-CoV (Alagaili *et al*, 2014; Wernery *et al*, 2015a, 2015b; Sabir *et al*, 2016), although we recently showed that the two-humped or Bactrian camel (*Camelus bactrianus*) in Dubai also possessed MERS-CoV antibodies (Lau *et al*, 2020). Adult dromedaries have almost 100% seropositivity against MERS-CoV while the virus is found mainly in dromedary calves (Wernery, 2014; Wernery *et al*, 2015a).

In this article a rare case of MERS-CoV infection in an adult female dromedary camel is reported.

Materials and Methods

One adult, more than 10-year-old breeding dromedary was presented with clear nasal discharge

from both nostrils, but otherwise healthy, eating and drinking well. It was in a group of 2 other dromedaries which showed no clinical signs. Nasal swabs were taken from both nostrils of all 3 dromedaries as well as blood from the jugular veins. The nasal swabs were collected in viral transport medium containing minimal essential medium (MEM) with antibiotics. The blood was centrifuged and sera were stored at -20°C until tested. Virus isolation was attempted on vero cells with bacterial filtered samples. The sera of the 3 dromedaries were tested with the Euroimmun® MERS-CoV antibody ELISA. All test procedures are laid down in the upcoming MERS-CoV chapter of the OIE manual (2022).

Results

Results of this investigation is summarised in Table 1.

MERS-CoV was isolated from camel 341 which showed nasal discharge, but not from camels 342 and 513 which displayed no nasal discharge. Ten days later MERS-CoV was not any longer present in the nose of camel 341.

Table 1. MERS-CoV investigations of 3 adult dromedary camels.

Camel ID	Day 0		Day 10		Day 20	
	Virus isolation	Antibody ELISA	Virus isolation	Antibody ELISA	Virus isolation	Antibody ELISA
341	Positive	negative	negative	negative	negative	positive
342	Negative	positive	negative	positive	negative	positive
513	Negative	positive	negative	positive	negative	positive

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ELISA antibodies were found in camels 342 and 513 from which no MERS-CoV was isolated. No antibodies against MERS-CoV were detected for 20 days in camel 341 from the day virus was isolated.

Discussion

It is rare to isolate MERS-CoV from adult dromedaries as most of them have neutralising antibodies (Wernery *et al*, 2017). In our case, dromedary 341 did not possess any ELISA antibodies and therefore shed MERS-CoV through its nose for 10 days. A similar result was found in camel calves. The virus was shed through the nose only for 8 days (Wernery, 2014). After MERS-CoV antibodies appeared, the virus disappeared as proven with camel 341 which displayed MERS-CoV ELISA antibodies 20 days after the virus was isolated for the first time.

In conclusion, dromedary adult camels which do not possess MERS-CoV antibody can get infected by the virus and may display nasal discharge. However, when antibodies appear, the virus is no longer isolated from the camel's nose.

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