

Rift Valley Fever - 1. Presentation and History



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Introduction

Introduction



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Objective and themes

Objective and themes



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Definition and origin



The **Rift Valley Fever (RVF)**, is a disease of **viral aetiology** affecting **humans, ruminants** and other species of **domestic and wild animals**.

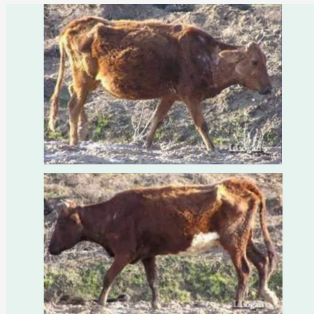
RVF is a **transmissible and contagious disease which is transmitted by several species of mosquitoes**. The mechanical transmission may occur through hematophagous insects.

It is characterised **in animals** by:

- abortions in pregnant females;
- stillbirths in sheep;
- bloody diarrhoea;
- high mortality rate in young animals (lambs and kids);



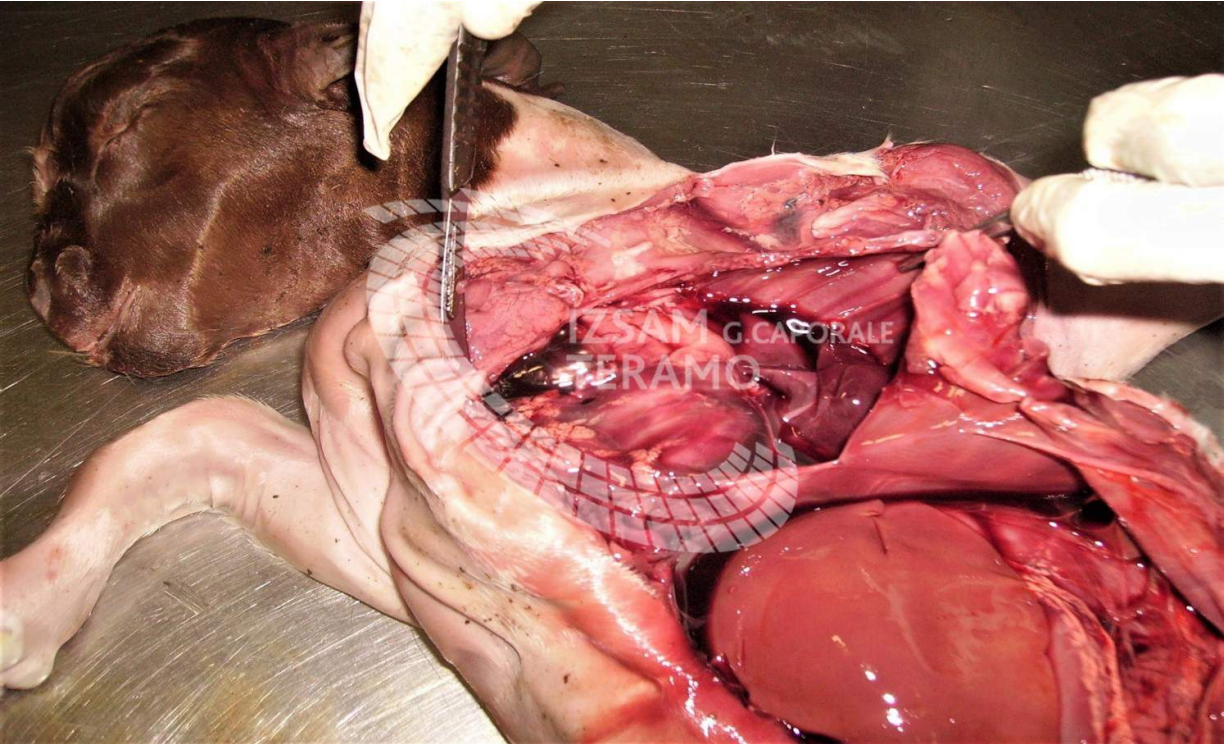
Ewes' aborted fetus.
Abortion may approach 100% and they are usually autolyzed.
Source:
<https://www.slideserve.com/hadar/rift-valley-fever>



Clinical signs in cattle:
anorexia and weakness.
Source:
<https://www.slideserve.com/hadar/rift-valley-fever>



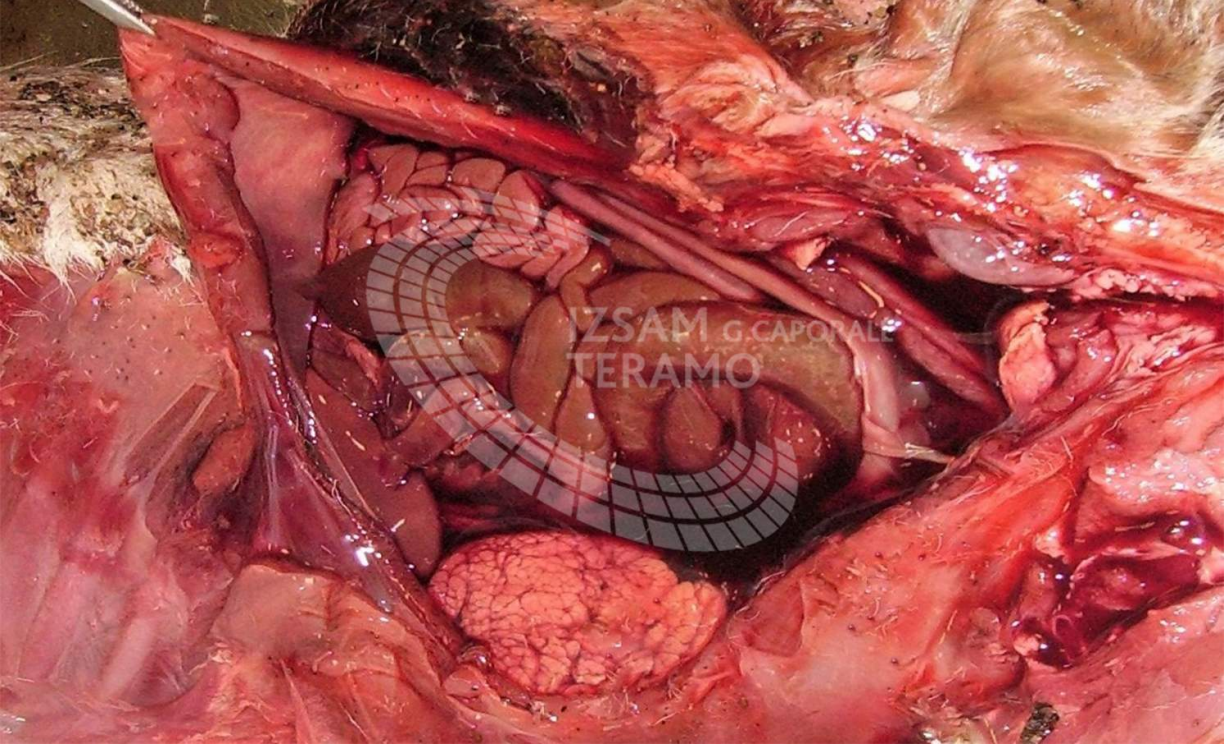
Goat - aborted foetus



Goat - aborted foetus



Sheep - aborted foetus



Sheep - aborted fetus

and in humans by:

- asymptomatic form;
- flu-like syndrome;
- high fever;
- retinitis;
- macular oedema leading permanent blindness;
- liver involvement;

- encephalitis with possible permanent sequelae;
- haemorrhagic fever.



© World Health Organization/ P. Formenty, 2007.

Hemorrhagic fever form: Initially evidence of severe liver impairment, such as jaundice; then signs of hemorrhage appear occurring 2 to 4 days after the onset of illness.

Source: <https://www.who.int/emergencies/diseases/rift-valley-fever/rvf-presentation.pdf?ua=1>

Clinical cases in humans are not frequent and often linked to other co-morbidities.


Elderlies, pregnant women and immuno-compromised people can be at risk of developing more serious

clinical symptoms. In people affected by co-morbidities the case-fatality rate can reach 1-2%.

Origin

RVF was described and isolated for the first time by **Daubney** in **1931**, in the **Great Rift Valley in Kenya** (from where it gets its name).

It is believed that the disease was present in **Africa** many years before its **discovery**.*

 * *The Bible contains a description of a plague (one of the ten plagues), clinically very similar to RVF, which broke out in Egypt.*

In **1949 Smithburn** obtained an **attenuation of a wild strain** of **RVF** virus (RVFV) in Kenya by means of **serial intracerebral passages** in infant mice and eventually made a **live attenuated vaccine** that is still used today.



The most significant **epizootics** took place:





Mauritania and Senegal

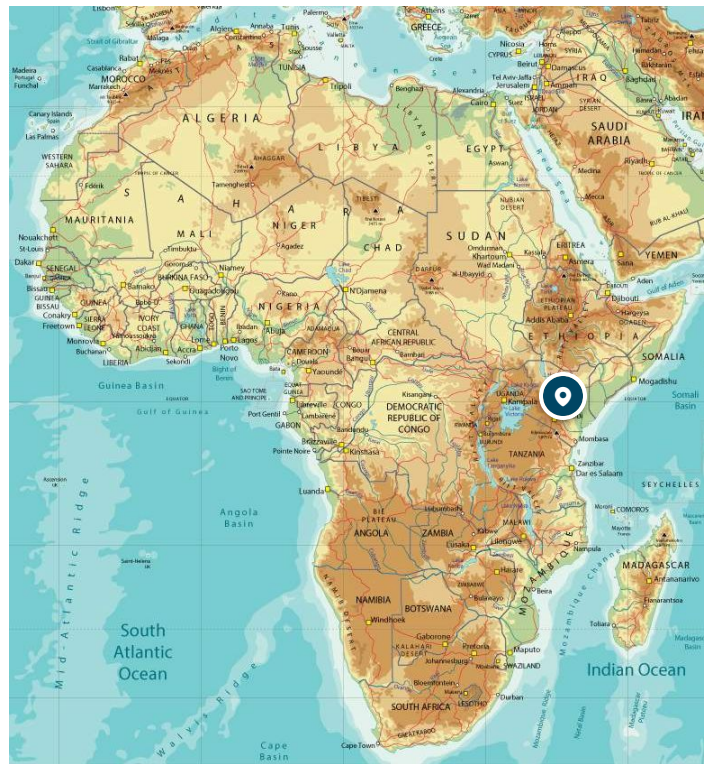
in 1987 following the construction of a **dam on the Senegal River** during which both humans (232 deaths) and animals (abortions in sheep and goats) were affected.

In Mauritania again in 2010-2012-2013 and 2015



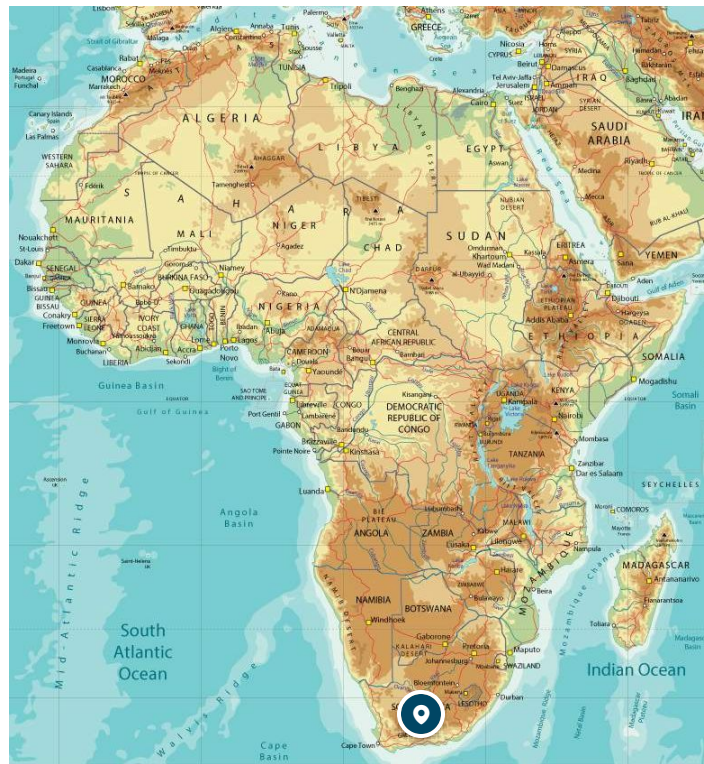
Saudi Arabia and Yemen

in 2000, the first time out of Africa



Kenya, Tanzania, Horn of Africa

in Kenya, Tanzania and the Horn of Africa in **1980** and **2007**, in **Kenya** recently in 2018 and between 2020 and 2021



South Africa

in 1950-1951, where **100,000 sheep** died and about **500,000 abortions** occurred, in 1974-1975 and in 2010-2011 (more than 14,000 animal cases and 278 human cases, of which 25 were fatal)



Egypt

during **1977-78** (the most serious epizootic epidemic of RVF ever recorded), in which between **18,000 to 200,000** people were infected and **600 died** (there was concurrent schistosomiasis in the population living along the Nile river), in 1993 and in 2003 (373 confirmed human cases and 112 deaths)

In the last years Western African Countries have experienced an almost constant emergence of RVF outbreaks, and concurrent human cases:

- **Mauritania** in 2010, 2012, 2013, 2015, 2018 and 2020;
- **Senegal** in 2013, 2014 and 2018;
- **Niger** in 2016;
- **Mali and Nigeria** in 2017;
- **Gambia** in 2018;


- **Mayotte** in 2018-2019;
 - **Chad** in 2019;
 - **Madagascar** 2008-2009, 2021.
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Human health and economic impact

RVF is classified as being one of the major **zoonoses** and it is an occupational **disease**.

Cases of **RVF** have mainly occurred in **laboratory personnel**, people working in abattoirs (slaughterers), **farm workers**.*

 *Animal workers were particularly affected during the epidemics in Egypt in 1977 and Mauritania in 1987.



Human infection is usually linked to the **inhalation of infected blood aerosol**, and exposure to aborted foetuses and infected animals (body fluids). Observation have indicated that **vertical transmission** may also be possible in human beings.

Humans can be infected also through the bite of infectious mosquitoes, but vectors alone cannot support the epidemic in human population, which has been always observed in concomitance with the disease in animals.

The disease leads to death **in 1-2% of cases in presence of concurrent diseases (malaria, HIV, etc.)**.

The appearance of the disease in an **epidemic form** is characterised by an **abortion storm in ruminants**.

The **loss of lambs** (including the perinatal phase) as well as the milk production's reduction or cessation in febrile lactating animals mainly have an impact on the economy.



Test your knowledge:

What is the case-fatality rate of RVF in humans if associated with other diseases?

1-2%

5%

10%

34%

90%

SUBMIT



Summary

Summary of the concepts presented



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