

3 ZOO NOTIC DISEASES

a Rabies, Limpopo Province

Human rabies was confirmed as the cause of death in a 72-year-old male from Malamulele in the Vhembe District of Limpopo Province. The patient was bitten on his left hand by his neighbour's dog in November 2013; he was apparently trying to kill the dog because it had been unusually aggressive. The patient reportedly opted for traditional medicine intervention rather than rabies post-exposure prophylaxis (PEP) following the event. Three additional persons were reportedly bitten by the same dog, but had fortunately sought and received rabies PEP. The dog tested positive for rabies by rabies fluorescent antibody test on a brain specimen (Department of Agriculture, Forestry and Fisheries). The patient became ill on 17 January 2014, and was admitted with clinical signs of rabies on 22 January 2014. Rabies reverse transcription PCR testing on three saliva specimens was positive and confirmed the clinical diagnosis of rabies. The patient died on 26 January 2014.

In addition to this laboratory-confirmed case, a probable case of human rabies has also been reported from Limpopo Province. A 34-year-old male from the Thohoyandou area (Vhembe District) was bitten by a dog on 01 January 2014. The patient sustained a deep wound on his left middle finger, and presented the same day to a local healthcare facility where he received wound treatment and rabies vaccination was initiated. The patient received the complete four-dose course of rabies vaccine; however, he did not receive rabies immunoglobulin despite the injury clearly constituting a Category 3 exposure. The patient subsequently developed signs and symptoms suggestive of rabies, including headache, pain at the healed bite site, dizziness, vomiting, chest pain, and lethargy. During hospitalisation, the patient was noted to be confused, agitated, and hyperactive, and died a few days later on 03 February 2014. Two saliva specimens were submitted for rabies investigation but were tested negative on RT-PCR. Unfortunately, no additional specimens or post-mortem specimens were available for testing. This case was categorised as probable rabies based on the clinical presentation and the dog bite exposure history. Ante-mortem

laboratory investigation for rabies is not always definitive, especially (as in this case) when the patient has received rabies vaccination, since it may obscure the detection of rabies virus in peripheral specimens. The fluorescent antibody test performed on post-mortem brain specimen remains the gold standard for confirmation of rabies in all cases.

The two cases reported here are the only rabies cases documented for 2014 to date. Seven laboratory confirmed human rabies were recorded for 2013, originating from Limpopo Province (n=3), KwaZulu-Natal Province (n=1), Mpumalanga Province (n=1) and Free State Province (n=2). No human rabies cases had been reported from Limpopo Province for more than two decades until the province experienced an outbreak of rabies in dogs in 2005. A total of 30 human cases was recorded during this outbreak (21 confirmed, four probable and five suspected cases). Since then, an average of three laboratory-confirmed human rabies cases is reported from this province each year.

Bat exposures

On 13 January 2014 a juvenile bat was taken to a veterinary clinic in Kloof, KwaZulu-Natal Province. The animal had fallen from a tree at a private home in Pinetown. The bat was then cared for at the clinic. Two veterinary staff members were exposed to the bat, one of whom suffered a Category 3 bite wound on the lip. On 03 February 2014, the bat died and was submitted for laboratory testing. A brain specimen collected from the animal tested positive for lyssavirus antigen using the direct fluorescent antibody test. Subsequent PCR testing characterised the lyssavirus as Lagos bat virus. Both exposed staff members were previously immunised against rabies, and therefore received rabies booster vaccinations.

Rabies can be caused by infection with any member of the *Lyssavirus* genus. Currently, there are at least eleven formally acknowledged *Lyssavirus* species. The most important lyssavirus from a global public health perspective remains the classic

rabies virus, which occurs most commonly in the developing world and is usually associated with domestic dogs. Classic rabies virus has not been reported from any bat species in Africa (including South Africa), but is commonly found in insectivorous bats in the Americas.

Three rabies-related lyssaviruses have been reported from South Africa: Duvenhage virus, Mokola virus and Lagos bat virus. Duvenhage virus has been identified in three human rabies cases since 1970 (two from South Africa in 1970 and 2006 respectively, and one from Kenya in 2007). The epidemiology of the disease remains obscure, but it is most likely linked to an insectivorous bat host. Mokola virus has been reported from a variety of animals including dogs, cats and shrews in sub-Saharan Africa, but no human cases have been reported; the natural reservoir of this virus is unknown. Lagos bat virus is usually associated with fruit-eating bats, and in South Africa most bat cases have been detected in KwaZulu-Natal Province

(most likely due to a provincial bias in bat rabies surveillance activities). Nevertheless, bats are considered an uncommon source of rabies in South Africa.

Exposures to bats are considered category 3 exposures in all cases, regardless of whether there are visible injuries or not. Rabies immunoglobulin plus vaccination should be provided irrespective of the nature of the bat exposure.

Source: Centre for Emerging and Zoonotic Diseases and Division of Public Health Surveillance and Response, NICD-NHLS; Department of Agriculture, Forestry and Fisheries; Allerton Veterinary Laboratory, Pietermaritzburg, KwaZulu-Natal Province; Agriculture Research Council, Onderstepoort Veterinary Institute, Pretoria; Department of Microbiology and Plant Pathology, University of Pretoria