

**RABIES IN STRAY DOG POPULATED COMMUNITY NEAR ILORIN,
KWARA STATE NIGERIA: A CASE REPORT**

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ABSTRACT

We report a case of rabies in an owned dog bitten by a stray dog in Ilorin, Nigeria. The dog presented deranged behaviour of biting animate and inanimate objects, hyper-salivation and subsequent paralysis of masticatory muscles and death within 12 hours of isolation. Fluorescent antibody technique confirmed the presence of rabies virus antigens in the smear made from the hippocampus of the dog. Further investigations from residents of the area revealed exposure of the dog and a goat to bite of a suspected rabid dog which subsequently ran into the forest. The control of rabies in Nigeria should be the responsibility of government and the public so that the disease can be eradicated by the year 2030 as targeted by the World Health Organization. Thus, government and professional bodies should take necessary steps in continuous education of the public on the epidemiology of the disease, especially the control of stray dog populations. Government should also provide vaccination for both humans and animals at low cost.

Keywords: Stray dog, Rabies, Public risk, Ilorin, Nigeria

INTRODUCTION

In Nigeria, many dogs in rural and semi-urban communities are not usually vaccinated against rabies in rural and semi urban communities. Human possession and closeness to dogs continue to increase with very few owners being well acquitted with the health risks involved in keeping unvaccinated dog in a rabies-endemic country like Nigeria [1]. Dogs have been reported the major source of human infection, contributing up to 99% of all human rabies transmission [2].

Early laboratory diagnosis of rabies is of great importance as delays could increase the number of case-contacts, cost of prevention and/or death. The terrific and severe signs of rabies in humans and animals make the disease popular amongst other neuropathogenic viral diseases. The development of clinical rabies in warm-blooded mammal is mostly irreversible or shows poor prognosis.

Rabies, a notifiable zoonotic disease, is usually fatal in clinically infected humans and animals. Pre-exposure and post-exposure rabies vaccinations are available, although access to them might be difficult in middle and low- income earning countries like Nigeria [3,4].The virus possesses a negative sense single stranded RNA (ssRNA) genome. This bullet shaped virus belongs to the virus family *Rhabdoviridae*, genus *Lyssavirus*. The virus is said to be worldwide in distribution and endemic in Nigeria.

The well-known form of the disease is the furious (encephalitic) form. Here, the animal shows abnormal signs manifested as derangement in behaviour. However, the dumb form poses higher risk as an infected dog may still behave normal with some negligible signs of inactiveness (as is sometimes seen in the bat) [5].

There is need to match control measures such as ban on dogs roaming the streets or communities and public education and awareness including the routine vaccination of dogs and at risk humans with anti-rabies vaccines. Thus, government and professional bodies should take necessary steps to continuously educate the public on the epidemiology of the disease, especially the control of stray dog populations in other to meet the WHO target to eradicate rabies by the year 2030.

MATERIALS AND METHODS

Case history

A four months old female Alsatian dog, with clinic number SAC/02/28/06/17 was presented to the Small Animal Unit of the Veterinary Teaching Hospital, University of Ilorin on 20th August, 2017. The primary complaint was that the puppy had become unnecessarily aggressive towards handlers and was noticed biting its chain, feeding trough and other inanimate objects around in addition to the excessive salivation. Vaccination history revealed that the dog had received a shot of DHLPP at 8 week old but was not vaccinated against rabies. The dog was reported to have additional 2 co-habit dogs which were of Nigerian indigenous breed but were not showing any abnormal signs as seen in the case presented.

Based on the clinical signs, and evidence of derangement, a tentative diagnosis of rabies was made. The puppy was then quarantined for observation in the isolation kennel of the Veterinary Teaching Hospital. Adequate food and water were provided to the dog. The dog was found dead in the isolation kennel the following morning (within 12 hours) and food was found in the mouth.

Owing to the nature of the virus, the dog owner, and other human contacts especially children were referred to the hospital for rabies risk evaluation and post exposure vaccination. Two other in-contact dogs were isolated and later euthenized following confirmatory diagnosis of rabies using the FAT test techniques.

Case study location and Interview

The case presented at the hospital was from Eletate.koyangan, a semi-urban community of Moro Local Government Area of Kwara State but a suburb of Ilorin the capital of the State. The community members were interviewed to confirm the history of presence of many stray dogs, dog bites and deranged behaviour in many dogs within the community.

Post mortem examination and Histopathology.

A postmortem examination was carried out on the dead dog. Subsequently the hippocampus was removed from the brain and preserved in alcohol with glycerol before sending to the Rabies Laboratory at the National Veterinary Research Institute (NVRI) Vom, Nigeria for confirmatory diagnosis. Additional brain sample was fixed in 10% buffered formalin for histopathology examination. Tissues in buffered formalin were processed. Briefly, 5µm paraffin- wax sections of organs were de-waxed and stained with

hematoxylin-eosin (H&E), mounted on charged microscope slides and observed under a Carl Zeiss light microscope for histopathological changes.

Fluorescent antibody test (FAT)

The test was carried out as described by OIE [6]. A smear of the hippocampus was made on a glass slide and fixed using cold acetone. This slide was then flooded with antinucleocapsid monoclonal antibody and washed. Then, few drops of monoclonal antibody FITC-conjugate was added to the smear and later washed. The slide was viewed under Fluorescent microscope. The appearance of apple green fluorescence indicated presence of rabies 'negri bodies' (positive result).

RESULTS

The interviewed conducted among the community members and our observation showed that there were several stray dogs in the community. Also, the interview revealed that 4 days prior to presentation, a stray dog bit the puppy and two goats within the community before escaping into the nearby forest. On the third day post exposure, the bitten goats and puppy started showing derange behaviour. The goats were immediately euthanized and buried by the community while the owner of the puppy, who was not around during the incidence, was informed about the situation. Also, it was reported that bats were usually seen in the huge forest surrounding the community.

As the puppy was quarantined, the derange condition worsened as it continued to bite the iron chain, and feeding trough. The puppy ate intermittently and hypersalivation continued. The following morning (21/August/2017 in less than 20 hours), the puppy was found dead with food retained in the oral cavity. There was no visible gross lesion at post mortem examination, while histopathology revealed severe diffuse non-suppurative encephalitis with neuronal degeneration and lymphocytic infiltration. Fluorescent antibody test(FAT) carried out on the smear of hippocampus, revealed the presence of apple green fluorescence, thus indicating the presence of rabies virus antigen. Also, while waiting for FAT result, the remaining 2 co-habit dogs were brought to the teaching hospital and isolated as suspects. These dogs were euthanized after the case was confirmed as rabies.

DISCUSSION

Dogs remain the major source of rabies virus infections to humans, probably because of increasing closeness to humans. The role of wildlife such as bat, wolves, foxes, lion, skunk, monkeys as reservoirs have also been described [5].

It is known that dogs infected with rabies virus usually die less than 19 days post clinical signs [7,8,9]. Although the exact duration between the dog bite incidence and time of report cannot be ascertained, the death of the dog within 12 hours of quarantine suggest that the infection was at an advance stage and probably the dog must have been bitten close to the neck which may have accelerated access of the virus to the brain. The presence of food in the oral cavity in this puppy suggests paralysis of the masticatory muscles. This is consistence with earlier report of neuronal dysfunction and degeneration in rabies [10].

Although, there were no indications that the co-habit dogs were also either bitten by the stray dog or exposed to its saliva, their close contact to the suspect rabid dog qualified them for isolation and observation [11]. Also, the close relationship between dogs and their owners, place such owners at high risk by saliva and scratches [3,5]. A study by Aworl et al [12] revealed that children less than 15 years of age are the most vulnerable of all dog bite victims and are more likely to sustain bites unknowingly due to closeness to dogs and lack of awareness of the danger inherent therein. It is highly unfortunate that most dog owners and some high risk individuals and professionals (mainly veterinarians and animal handlers) in Nigeria do not routinely receive routine prophylactic anti-rabies vaccination [4]; probably as a result of negligence, ignorance or lack of proper education. As is common with most owners in the study area, the

owner of the rabid dog never bothered to give his pet any prophylactic anti-rabies vaccination or regularly take it to the hospital for routine veterinary evaluation.

Wild animals are known to be the major reservoir hosts of rabies virus in nature [13]. However, it cannot be determined what role the bats in the nearby forest may have played in the epidemiology of rabies in the community. Exposure of domesticated animals and man to rabies virus is expected to be more in rural settings especially where there is close contact between the domesticated and wild animals or continuous human encroachment into the wild.

There appears to be several dogs in the study area although most of them are rarely cared for but left to fend for themselves as stray dogs. Some of the dogs are used for hunting expeditions into the wild thus, increasing their exposure potential for rabies while in the wild. The index rabies virus source in this case which was reported to have escaped into the forest might even have bitten many other unidentified stray dogs as well as domestic and wild animals.

This case demands that the government stand up to the task of enforcing all laws and regulations on the control of stray dogs by impounding and euthanizing unclaimed dogs. Preventive measure in the form of pre-exposure rabies vaccination series, periodic rabies antibody check and recurrent sensitization workshops for high risk individuals such as veterinarians, veterinary clinical students and researcher, wildlife workers, and dog owners are also critical for zero human dog-mediated rabies [3,4,14].

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CONFLICT OF INTEREST

The authors declare no conflict of interest. No fund was received for this study.

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