

Case Report

A Report of Rabies in a Domestic Rabbit (*Oryctolagus cuniculus*) and its Public Health Implications

Sujatha Aparna¹, GS Ajith Kumar², Swapna Susan Abraham³, Mini Jose⁴

^{1,2}Veterinary Surgeon, ³Disease Investigation Officer, ⁴Chief Disease Investigation Officer, State Institute for Animal Diseases, Palode, Government of Kerala, India.

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Corresponding Author:

Sujatha Aparna, Veterinary Surgeon, State Institute for Animal Diseases, Palode, Government of Kerala, India.

E-mail Id:

aparnaharidas@yahoo.co.in

Orcid Id:

<https://orcid.org/0000-0003-0768-425X>

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A B S T R A C T

Rabbits have been categorised as low-risk animals for transmitting rabies. A case of a domestic rabbit (*Oryctolagus cuniculus*) with naturally acquired rabies infection that was diagnosed on postmortem using an Immunochromatographic test, Fluorescent Antibody Test, and RT-PCR has been reported here and its public health implications have been discussed. The report highlighted the importance of decision-making on the need of vaccinations in human exposure situations with these animals in endemic areas on a case-to-case basis.

Keywords: Rabies, Immunochromatography, Fluorescent Antibody Test, PEP

Introduction

Rodents such as hamsters, squirrels, rats, guinea pigs, rabbits etc. that are small in size, are generally not infected with rabies and are usually not considered to be responsible for its transmission.¹ They have been categorised as low-risk animals for transmitting rabies. Though all warm-blooded animals, especially mammals, may be infected with rabies, their ability to transmit it differs from one another. Incidental rabies infection has been reported even in unnatural hosts like birds.² Although rare, rabies has been reported in domestic rabbits too.³⁻⁶ Rabbits are frequently reared as pets all over the world. Hence it is becoming important to understand the risk of rabies in this species to avoid

potentially harmful interaction with their human owner. Their transmission potential needs to be investigated to develop formal treatment, prevention and control protocols.

A case of rabies infection in a domestic rabbit (*Oryctolagus cuniculus*) in Kerala, a southern state of India, which was diagnosed on post-mortem, is reported here. Its case history included an attack by a stray dog two weeks back leaving wounds on an ear and a leg. Canine rabies is endemic throughout the mainland of India and rabies is frequently reported in many species of animals in Kerala state as spillover infection. A perusal of the laboratory database of diagnostic laboratories of the Animal Husbandry Department, Kerala revealed four anecdotal cases of rabies

in rabbits recorded from 2015 to 2021.⁷ Hence it was decided to document this case to highlight the vulnerability of rabbits in rabies endemic areas and the exposure risk to humans.

Case Report

The carcass of a rabbit (Figure 1) that was bitten by a stray dog about 2 weeks back was presented for confirmation of rabies at the rabies diagnostic laboratory of the State Institute for Animal Diseases, Thiruvananthapuram, Kerala. There was a bite injury on the ear and one of its legs was amputated following the attack. The animal was under treatment at the Multispecialty Veterinary Hospital of the Animal Husbandry Department for the bite injury. The carcass was sent for post-mortem diagnosis of rabies as it had a clear history of dog bite two weeks back and Kerala is endemic for canine rabies. The animal didn't show any specific clinical symptoms other than lethargy and anorexia. History revealed that the animal was not vaccinated against rabies. Necropsy was conducted and brain tissue was collected. The brain tissue was subjected to a lateral flow Immuno-Chromatography Test (ICT) using a commercial kit (Bionote). Impression smears were prepared from the brain and subjected to Direct Fluorescent Antibody Test (DFAT) using the standard protocol.⁸ Portion of the sample was also subjected to RT-PCR targeting the N gene using the primers specified by OIE.⁹ Brain sample was found positive on ICT, FAT, and RT-PCR (Figures 2 and 3).

naturally in the case of lagomorphs is less however, it is known that rabbits have a high susceptibility to acquiring it experimentally, and are used in laboratories for research, vaccine production, and diagnostic testing. One probable reason for its rare occurrence in this species could be that they being fragile small animals, often succumb to rabid dog attacks and may not survive till clinical rabies develops. It is also likely that the disease may be going unnoticed and unreported in this species in endemic areas due lack of awareness and easily accessible laboratory facilities.



Figure 1. Carcass of the Rabbit Bitten by a Stray Dog.

Discussion

The reports suggest that rabies should be treated as a possible diagnosis in rabbits in endemic areas as they are commonly reared as pets bringing them in close contact with humans. Though the possibility of acquiring rabies infection

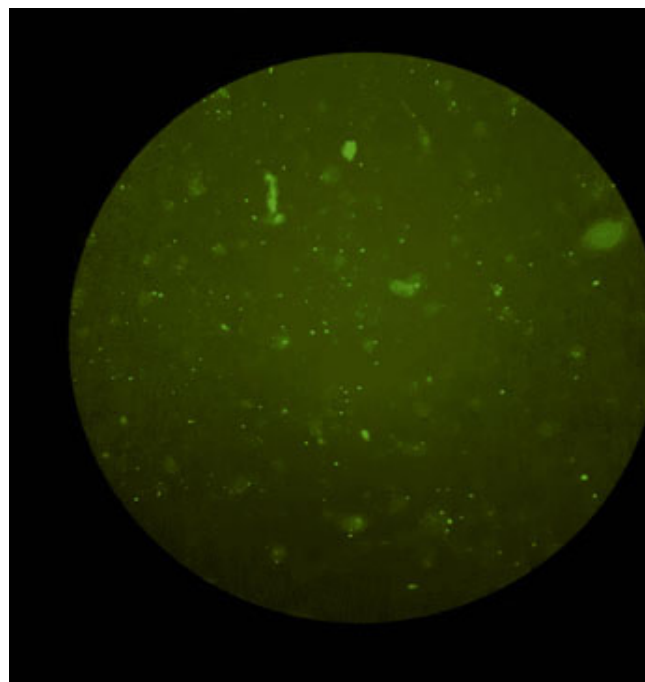


Figure 2. Rabbit Brain Specimen on DFAT

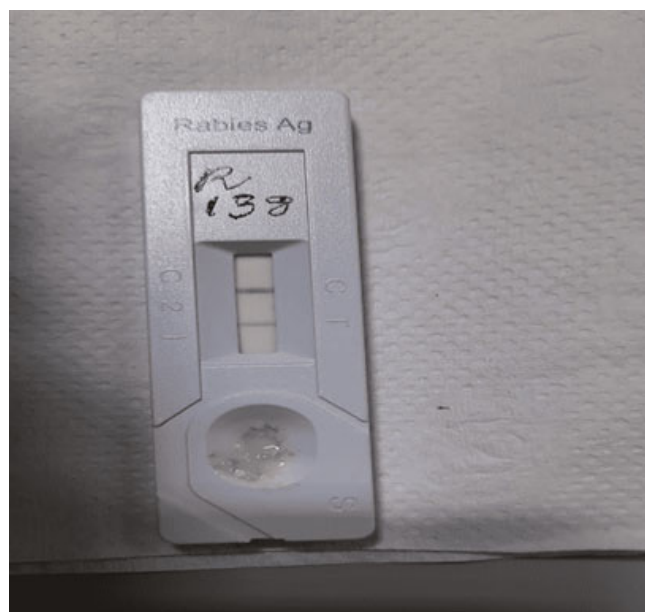


Figure 3. Rabbit Brain Specimen on ICT

Vaccination is highly essential for the prevention and transmission of rabies. The feasibility of vaccinating all valuable animals in endemic areas should be explored. All mammals are at risk of contracting this disease. Rabbits are statistically considered to be at very low risk for contracting rabies and hence there is no approved vaccine for them. So vaccination is not generally undertaken in rabbits. Veterinarians should be aware of this possibility and should advise owners to prevent their pet rabbits from getting exposed to rabid dogs and wildlife in endemic areas. Local health authorities must be made aware of any lagomorph or rodent that has a biting tendency and shows unusual behaviour, especially with a history of biting so that they can take an informed decision whether PEP should be administered to humans there or not. Whenever possible, these animals must be diagnostically tested to analyse the possibility of exposure of other animals as well as humans to rabies.

Conclusion

A case of naturally acquired rabies infection in a domestic rabbit has been reported here indicating that all mammals are at risk in highly endemic areas. The risk of potential exposure to humans by handling sick animals should be considered, although human cases transmitted from rabbits have not been reported to date. Decision-making on the need of vaccination in human exposure situations with these animals in endemic areas should be done on a case-to-case basis.

Conflict of Interest: None

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