

A CASE OF DOG BITE - RABIES

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Abstract

Rabies is a viral zoonotic neuroinvasive disease that causes acute encephalitis in mammals. It is most commonly caused by a bite from an infected animal, but occasionally by other forms of contact. If left untreated in humans it is almost invariably fatal. Rabies continues to be a major problem in India and it is believed that more than 50 per cent of all rabies cases worldwide occur in India.

Here we report a young male, who was brought to Gauhati Medical College & Hospital Mortuary for Medico-Legal autopsy by police in the month of November, 2011. According to one of his colleague, he was having problem in drinking water on the day before he was found dead; he also gave history of dog bite about two months back. He was found dead on the way to his home. At autopsy, several numbers of small hyper pigmented depressed circular scars were noted over both the lower limbs. Brain tissue was put in 10% formal saline and sent to the department of Pathology, Gauhati Medical College for Histopathological examination, which shows Negri Bodies in the smears taken from the hippocampus.

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Introduction

Rabies is a neurological disease of mammals that is almost invariably fatal once the clinical signs develop. Human are usually infected when they are bitten by an infected animal, or exposed to its saliva or central nervous system (CNS) tissues. Although rabies is generally well controlled among domesticated animals in developed nations, canine rabies continues to be a serious problem in some areas of Africa, the Middle East, Asia and Latin America. India shows highest number of rabies cases worldwide, except in Lakshadweep, and Andaman & Nicobar Islands ¹ with 20000 deaths

per year. These deaths represent only the deaths reported from hospitals. Tragically, children account for some 50% of these deaths, which the experts attributed to lack of awareness ². It is estimated that the number of deaths due to rabies may be 10 times more than those reported.

The word "Rabies" came from the Latin word Rabidus, meaning mad, derived from the Sanskrit root rabhas. Reference to Rabies occurs in the Mesopotamian laws of Eshnunna (c. 2200BC) ³. Disease in human beings is called Hydrophobia. Rabies results from infection by the rabies virus, a neurotropic virus in the genus Lyssavirus, family Rhabdoviridae. Incubation period in man is highly variable, commonly 3-8 weeks following exposure, but may vary from 4 days to many years ¹. The incubation period depends on the site of bite, severity of the bite,

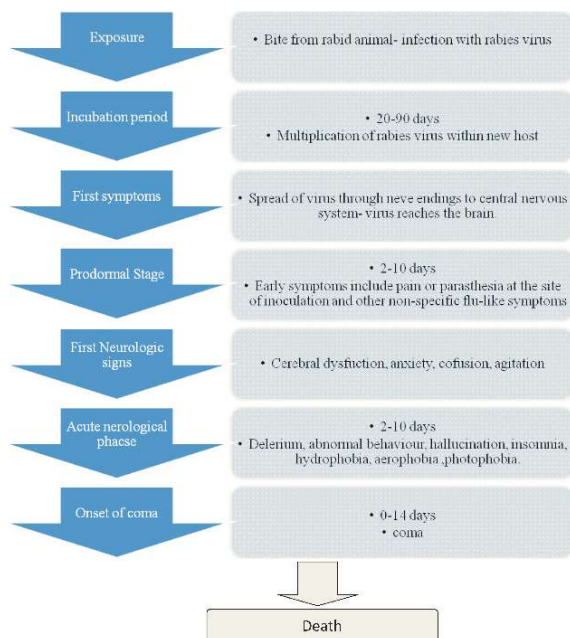
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number of wounds, amount of virus injected, species of the biting animal, protection provided by the clothing and treatment undertaken ¹.

Pathogenesis ³



Diagnosis of Rabies ⁴

Diagnosis of rabies can be done with the help of the following:

- History of bite by a rabid animal and characteristic signs and symptoms.
- Indirect Fluorescent Antibody Test (IFA).
- Rapid Fluorescent Focus Inhibition Test (RFFIT).
- Reverse-Transcription Polymerase Chain Reaction (RT-PCR) on fresh Saliva.
- Direct Fluorescent Antibody (DFA) testing and RT-PCR on a skin Biopsy Sample.
- Histopathology of brain showing

intracytoplasmic inclusion body called **Negri Body**.

Disinfection

The rabies virus can be inactivated by lipid solvents (soap solutions, ether, chloroform, and acetone), 1% sodium hypochlorite, 2% glutaraldehyde, 45-75% ethanol, iodine preparations, quaternary ammonium compounds, formaldehyde or a low pH. This virus is also susceptible to ultraviolet radiation or heat of 1 hour at 50°C. It is rapidly inactivated in sunlight, and it does not survive for long periods in the environment except in a cool dark area ⁵.

Prevention

- Vaccination of domesticated animals (especially dogs, cats and ferrets).
- Protective clothing such as thick rubber gloves, eye goggles and a plastic or rubber apron should be worn when doing autopsies or in other circumstances when exposure to infectious tissues could occur.
- Bites or other exposures should be reported immediately. Post-exposure prophylaxis consists of immediate wound cleansing and disinfection, rabies vaccination and the administration of human rabies immunoglobulin (all severe exposure and in all cases of unprovoked bites by wild animals) ¹. Asymptomatic dogs, cats or ferrets that have bitten humans are observed for 10 days; if the animal develops symptoms of rabies during this time, it is euthanized and tested for rabies ⁵.

Case report

In the month of November 2011, dead

body of a 25 year old male was brought to Gauhati Medical College & Hospital Mortuary for Medico-Legal autopsy. According to one of his colleague, he was having problem in drinking water on the day before he was found dead; he also gave history of dog bite about two months back. He was found dead on the way to his home.

Post Mortem Findings

On external examination of the deadbody, no specific external finding was noted, except few hypo-pigmented depressed scars on both the lower limbs.



Fig. 1: Circular hypo-pigmented scars on leg.

On internal examination

1. All viscera were found congested,
2. Heart was full of liquid blood,
3. Stomach contains fluid,
4. Lungs show petechiae on their surfaces.

On the basis of these external and internal findings, it was decided to preserve the followings

Brain (hippocampus) and lung tissues in 10% formal saline for histopathological analysis. Sent to the department of

Pathology, Gauhati Medical College.

Viscera for chemical analysis in saturated solution of sodium chloride were sent to the Directorate Forensic Science.

Results

Histopathological examination report showed Negri Bodies in the brain sample and Pneumonic changes in the lung tissue. Chemical analysis of viscera did not reveal any Poison.

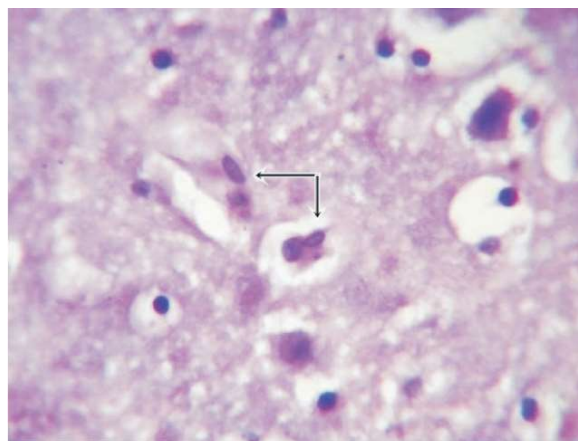


Fig. 2: HPE of brain showing Negri Bodies (Arrow).

(H & E stain, 40X magnification)

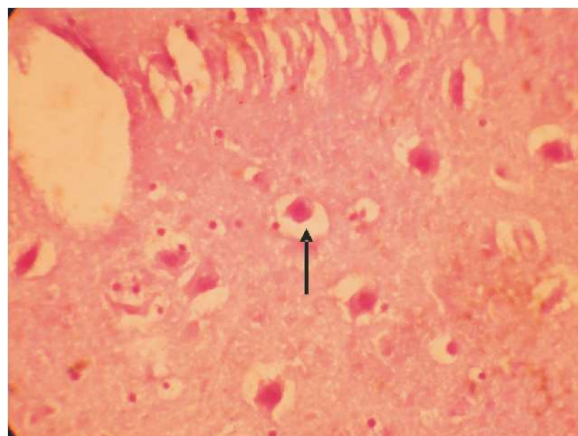


Fig. 3: HPE of brain showing Negri Bodies (Arrow).

(H & E stain, 40X magnification)

Opinion (Cause of death)

On the basis of history, autopsy findings and histopathological examination report, we are of the opinion that the person died because of rabies as brain histology showed characteristic intra-cytoplasmic inclusion body called Negri Body.

Discussion

Most of the rabies cases were diagnosed before death during the course of treatment, so it is rare to get such kind of cases during autopsy. This case was diagnosed on the basis of histopathological findings, as expensive rapid tests like IFA, RFFIT, RT-PCR are not available in our set up.

We all know that Prevention is better than cure and Rabies is invariably fatal in human being, so it is better to prevent Rabies by vaccinating domesticated animals and by the avoidance of contact with rabid wild animals. Rabies vaccines are available for dogs, cats, ferrets, cattle, sheep and horses. Preventing animals from roaming will reduce the risk of exposure to rabid wild animals. To prevent the transmission of rabies to humans or other animals (as well as to prevent unnecessary prophylaxis in people who have been exposed), unvaccinated animals that have been exposed should be euthanized and tested. Most challenging task is the controlling of street dogs; elimination of stray and ownerless dogs should be combined with a programme of swift mass immunization, in the shortest possible time, of at least 80% of the entire dog population of the area. Other methods include (i) registration and licensing of all domestic dogs, (ii) restrain of dogs in public

places, (iii) immediate destruction of dogs and cats bitten by rabid animals, (iv) quarantine for 6 months of imported dogs, and (v) health education of people regarding the care of dogs and prevention of rabies¹.

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