



Bio Vet Innovator Magazine

Volume 1 : Special Issue 1 : World Rabies Day - 2024

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Rabies Day Special: Bridging the Gap between Science and Safety

Popular Article

Insights on Feline Rabies

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DOI - <https://doi.org/10.5281/zenodo.13870770>

Received: September 09, 2024

Published: September 28, 2024

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Introduction:

Rabies, one of the deadliest zoonotic virus world has ever seen. Though world is progressing in many sectors even in medical science, still there is no specific treatment ever successful for rabies till date. The options we have for decreasing the prevalence of rabies is by understanding and abruption of lifecycle & transmission, prevention (for that we are currently depending on Vaccination). Dog is most common reservoir host and active transmitter of rabies, that part is well known for everyone but feline rabies is also not a new term. Rabies cases and deaths from the cat bites are noted across the world. General public mostly not aware that cat can also transmitted rabies as same as dog. The main reason for many bite cases leading to death is solely by negligence in getting post bite vaccination and not taking cat bite as serious as dog bite. The knowledge and scientific reports, understanding regarding the feline rabies is minimum than canine rabies.

Key words: Feline, Rabies, Nervous tissue, Urban cycle.

Epidemiology:

The prevalence of feline rabies and human rabies cases by cat is very less and its morbidity limited [to 1.8% (R L Ichhpujani *et al.*, 2008)]. although cats are prone to rabies, there are no cat specific strains of virus. Transmission occurs via bite by a rabid dog (mainly), monkey or cat (less common) etc. and can also by spill over to feral cats by contact with the bats. Cat is not a reservoir host for the rabies, that's why cat to human transmission is very much limited but not impossible.

Incubation period depends upon the site and depth of bite, number of bites and load of virus from the bite. The average incubation period in cats is 2 months, but may vary from 2 weeks to several months, or even years. (Tadeusz Frymus *et al.*, 2009).

Description and Importance of Disease:

Rabies is a neurotrophic virus can infect all mammalian species causing fatal encephalomyelitis. This bullet shaped lyssa virus is a single stranded RNA virus belong to the family rhabdoviridae, mononigavirales.

Risk group (Zoonoses): Veterinarians, pet owners and children, animal handlers, animal rescuers and activists.

Human Rabies:

India is endemic for rabies, and accounts for 36% of the world's rabies deaths. True burden of rabies in India is not fully known; although as per available information, it causes 18,000-20,000 deaths every year. About 30-60% of reported rabies cases and deaths in India occur in children under the age of 15 years as bites that occur in children often go unrecognized and unreported. (WHO/India/Health topics/Rabies).

Pathophysiology:

Once the rabid dog/cat or any infected animal bites another host like a cat (Ex// in a fight) initial replication occurs within the local bitten tissue or muscles, then enters the local nerves by centrifugal movement of virus. the treatment is ineffective once the rabies virus reaches the nervous tissue as most drug can't penetrate intact tissue. By retrograde axonal movement from peripheral nervous system reaches the central nervous system causing fatal encephalomyelitis. later by centripetal movement from the CNS virus reaches the salivary glands where the high titre of virus is noticed. Saliva is the important source of rabies transmission in urban cycle.

Clinical Signs:

The clinical signs of rabies are developed in three different stages - prodromal stage, furious stage and paralytic stage.

- **Prodromal stage** is seen in initial days of infection (about 3 days), infected cat is seen with altered behaviour, deepening of voice, change in behaviour, continues licking of bite wound, can notice Laryngospasms.
- **Furious stage** is seen for next one week, in this stage rabies is actively transmitted. The virus load is very high in saliva, infected cats will be restless, irritable, nervous with hyperesthesia and hyper salivation, dilation of pupils can be also noticed. Animal will vigorously bite the inanimate objects that comes in contact, the animals and humans when interacted.
- **Paralytic stage** will be seen for about four days. animal can have seizures; cat shows progressive generalised paralysis, spastic paralysis links to dysphasia, respiratory muscle paralysis leads to cessation of breathing and eventually coma - death.

Post Mortem Lesions:

Encephalomyelitis, neural degeneration (with mononuclear infiltration), perivascular cuffing, evincing Negri bodies is less in cat than compared to dog.

Diagnosis:

Diagnosis is based on the clinical signs and by laboratory confirmation.

By the clinical signs noticed a physician can diagnose tentatively that cat may be suffering with rabies. Currently there are no tests available to test live cats for rabies. It can only confirm by sampling brain tissue of dead cat or humanely euthanized one. Brain tissue can be used in testing by immunofluorescence test (produce bright green colour) or by PCR.

Treatment: There is no specific antiviral drug available for Rabies virus.

The current protocol followed when cat is bitten by another animal and brought to physician;

- If cat is brought to physician with the suspicion or history of animal bite, animal should be thoroughly examined, once there is a bite wound on cat's body - depth, location of wound & possible complications should be determined.

- Once bitten, within 24 hours of bite cat should get anti-rabies vaccine (inactivated tissue cultured vaccine as post exposure prophylaxis) > 2.5 I.U potency intramuscularly or subcutaneously. This vaccination regimen should be followed on 3rd, 7th, 14th, and 28th day post bite after the day of 1st dose or day cat is bitten.
- Bitten area should be adequately clipped on margins, hair should be removed and thoroughly flushed to clean the debris and painted with antiseptic solution like Povidone Iodine. Wound care should be followed regularly along with strict antibiotic regimen (even every bite may not cause rabies but animal's saliva contains huge load of bacteria can cause local tissue necrosis and even sepsis)
- Regular monitoring of animal, advising the cat's owner regarding the minimizing the contact to prevent unnecessary bites till completing the Post Exposure Prophylaxis (PEP) regimen to the cat and should be vaccinated regularly on mentioned dates without fail.

If someone suspects a stray cat to be rabid, better not to get in contact with animal without personal safety and should inform the local authorities/municipality regarding the situation and they will handle the rabid cats as per the guidelines and protocols. A cat can be determined as rabid once they are able to catch the cat (very difficult, may escape), can be withhold cat for minimum two to three weeks. If the cat didn't show any progressive rabies symptoms, it can be determined not as rabid cat. If cat shows rabies signs or person who was bitten by rabid cat shows rabies signs that cat should be humanely euthanized and carcass should be properly condemned. (the above process is not a very practical approach and has many constrains in each step)

Prevention and Control:

1. Incidence of rabies is solely controlled by vaccinating the cats. Proper pre-exposure (initial dose is about after 3.5 months of age following FVRCP vaccine 2 doses and ARV should be given as an annual dose) and post-exposure prophylaxis (0,3rd, 7th, 14th, and 28th day) to be followed
2. Bait vaccination for stray and wild animals (breaks sylvatic and urban cycle spills)
3. Animal birth control measures and reducing the population of stray cats.
4. Public awareness and education regarding rabies, bite wound care and vaccination protocols.
5. Advising parents to teach children that to inform them if any accidental animal bites occur (as unaware of animal bites causing more mortality due to rabies in children).

Human-Feline-Rabies:

Pet owners or anyone when got beaten by a cat, regardless animal is vaccinated / unvaccinated should immediately contact a physician, get check-up and should follow proper vaccination regimen (Multiple ARV shots as boosters - 0,3rd, 7th, 14th, and 28th day, 90th day if required and Tetanus Toxoid single shot) along with the antibiotic therapy. Once anyone is got bitten, they should immediately clean the bitten site under the running water with soap for about 15 minutes. If the wound is deep and belongs to grade 2 or grade 3 bite wound Rabies Immunoglobulin therapy (RIG) is recommended as per WHO along with continuous monitoring of patient is required.

Conclusion:

Rabies can be prevented by simple regular vaccination, so if the public is aware of vaccinations and bite wound management, they can save them and their beloved pets suffering from this zoonotic virus. Mass vaccinations of stray animals, controlling wildlife rabies and the animal birth control measures are the key to make the Indian Rabies free.

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