

RABIES



DEFINITION

- Rabies is an acute infectious disease of the CNS having world wide distribution. All warm blooded animals including man are susceptible.



ETIOLOGY

- It is caused by classical rabies virus

CLASSIFICATION

Order – Mononegavirales

Family – Rhabdoviridae

Genus – Lyssa virus

7 genotypes

4 serotypes

Species – Classical rabies virus

EPIDEMIOLOGY

- Affects all the mammalian species
- Japan, Newzealand, UK, Australia & Antarctica are free from rabies
- 2 infectious cycles are recognized:
 - *Urban rabies in dogs*
 - *Sylvatic rabies in wild life*
- Morethan 95% of human cases are result of bite from rabid dogs

RESERVOIR

- Dogs, bats, skunks, racoons, foxes, cats etc





FOX



RACCOON



SKUNK



BAT

TRANSMISSION

- Through scratching, licking & bite of infected animal
- Saliva contact is must for disease
- Aerosol transmission is rare [persons involved in study of bats]



PATHOGENESIS

Bite of rabid animal[deep or superficialwound]



virus enters peripheral nerve endings



reach CNS by retrograde axoplasmic flow & replicate here



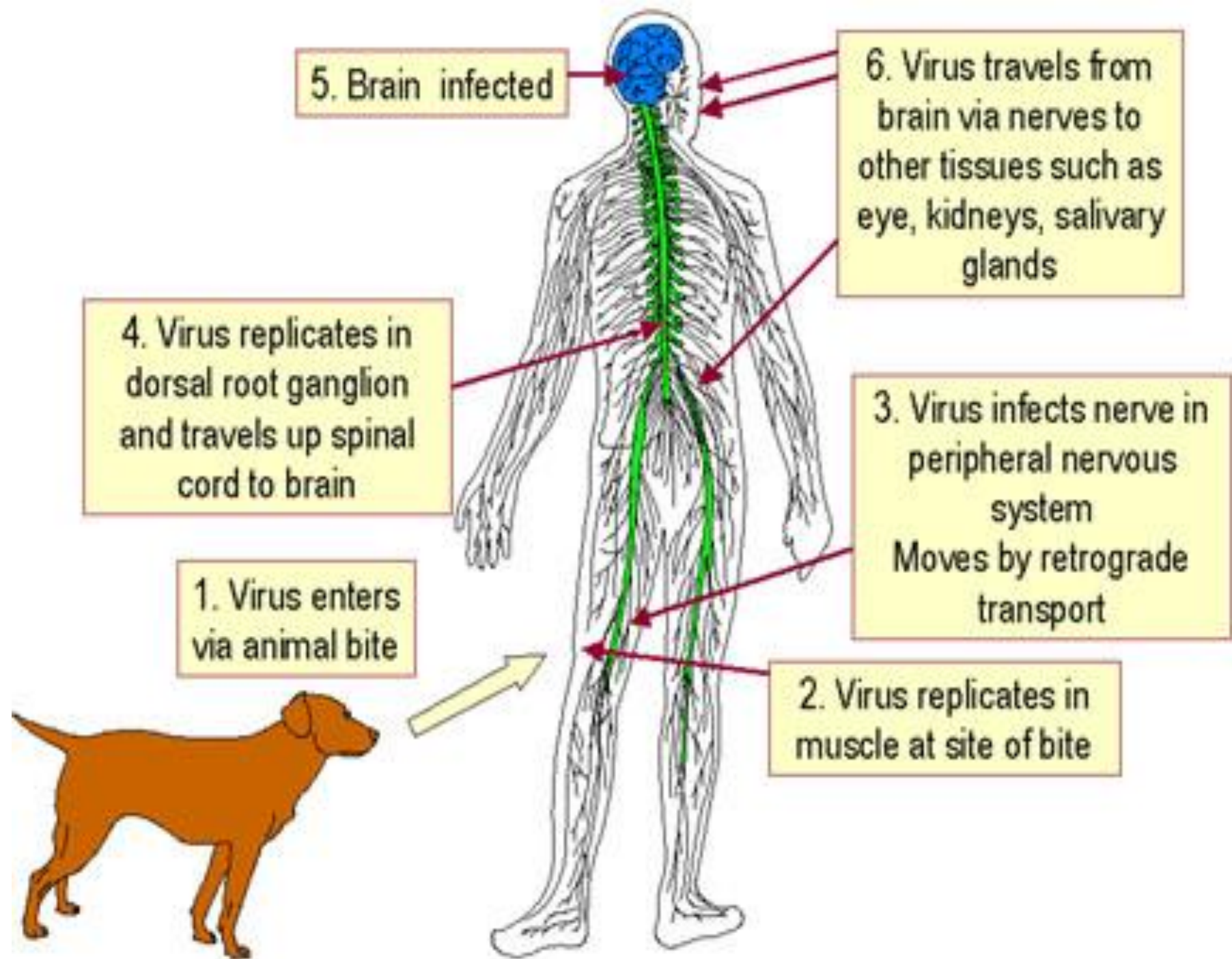
virus spreads 1st centripetally & then centrifugally



through nerves it will reach to different organs[salivary glands etc.]



different clinical signs along with depression ,
coma & death



CLINICAL SIGNS

- I.P.= 14 to 90 days & may extend upto 14 yrs
- Deep wound: I.P. increases
- Superficial wound: I.P. decreases
- Disease depend upon dose, genotype, location of bite, severity of bite etc.
- **2 forms of rabies:-**
 - *furious form [excitative]*
 - *dumb form [paralytic]*

- **Furious form:-**

aggressiveness, restlessness, hyperexcitability, tendency to bite inanimate object & encephalitis[increase in it lead to dumb form]

- **Dumb form:-**

muscle weakness, difficulty in swallowing, profuse salivation & dropping of jaw, paralysis, coma, respiratory arrest & death



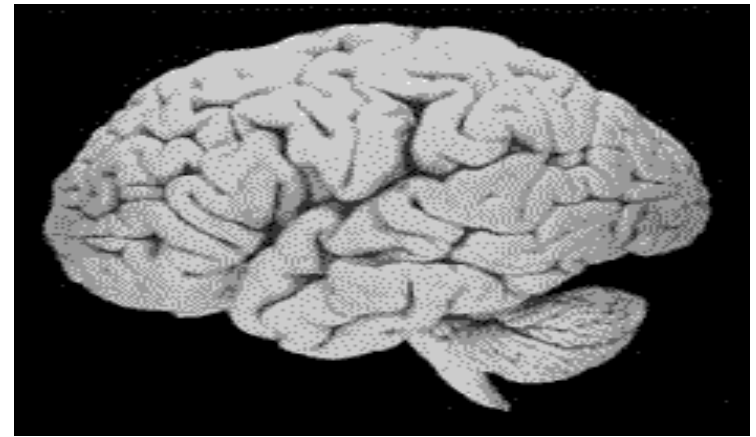
Brain inflammation



Virus transmitted by
infected saliva
through bite
or wound



DIAGNOSIS



- **SAMPLE:-**

Dead – hippocampus, thalamus, cerebral cortex & medulla oblongata

Live – saliva[not important in case of animals]

samples should be collected in virus transport media at 4°C & for longer time it should be stored at -70°C temp

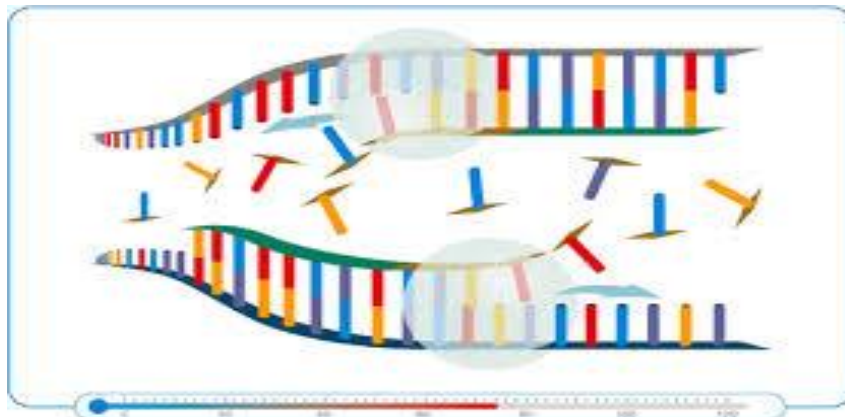
- **DETECTION OF VIRAL ANTIGEN IN SPECIMEN:-**

Sample: brain tissue

Tests: **FAT [gold standard test]**, IPT, ELISA, RIDT [rapid immuno diagnostic test]

- **DETECTION OF VIRAL NUCLEIC ACID:-**

Test: RT-PCR



- **VIRUS ISOLATION:-**

- 1- CELL CULTURE-

- neuroblastoma cells, CCL 1311, BHK-21

- No CPE

- 2- ANIMAL INOCULATION-

- 3-10 mice of 3-4 wks

- route – intracerebrally, observed for 28 days

- Dead mice is examined for presence of virus
via FAT

- **IDENTIFICATION OF VIRUS:-**

Monoclonal Ab, NA probes, PCR followed by NA sequencing

- **DEMONSTRATION OF ANTIBODIES AGAINST VIRUS:-**

VN test- virus is slow growing so use; **FAVN**
[fluorescent antibody virus neutralisation],
RFFIT [rapid fluorescent focus inhibition test],
Indirect ELISA

- **CONTROL BY VACCINATION:-**

- Inactivated / live attenuated vaccine
- Recombinant vaccine
- Oral vaccine
- Modified live rabies virus vaccine



THANK YOU

