

# WILD ANIMAL DISEASES



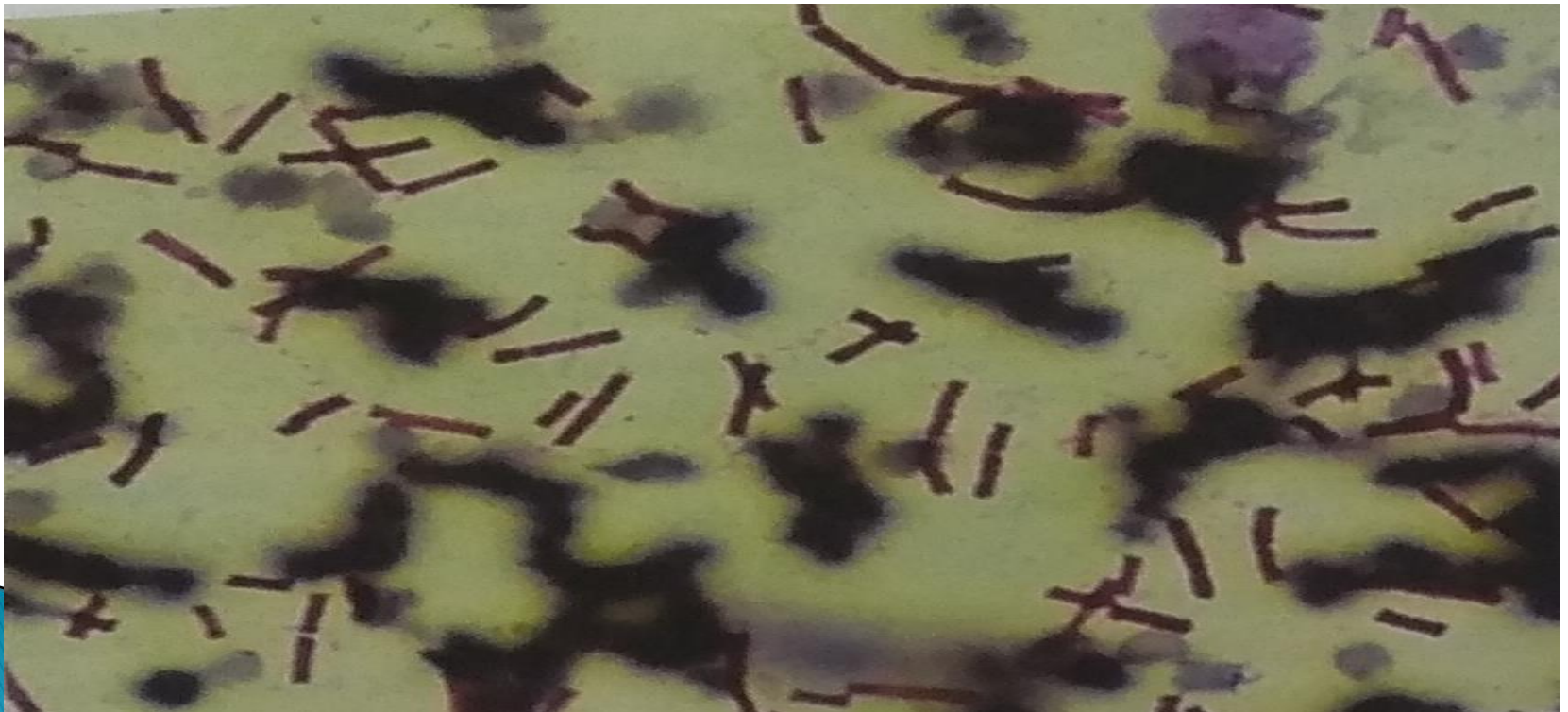
# ANTHRAX

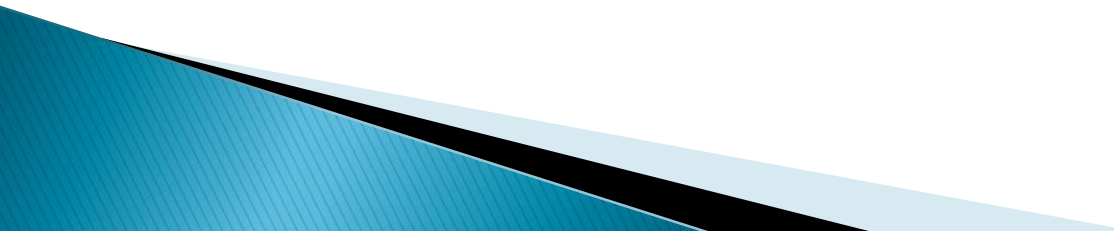
## Synonyms:

- ▶ Charbon
- ▶ Malignant pustule
- ▶ Miltsiekte
- ▶ Milzbrand
- ▶ Ragpicker's disease
- ▶ Sand de rate
- ▶ Splenic fever
- ▶ Woolsorter's disease



- ▶ Anthrax is an acute , infectious , febrile disease of all animals , followed by rapid death and caused by *Bacillus anthracis* .
- ▶ *Bacillus anthracis* is a gram positive , capsulated , spore forming , rod- shaped aerobic organism .
- ▶ Anthrax is a well known disease with great degree of public significance .

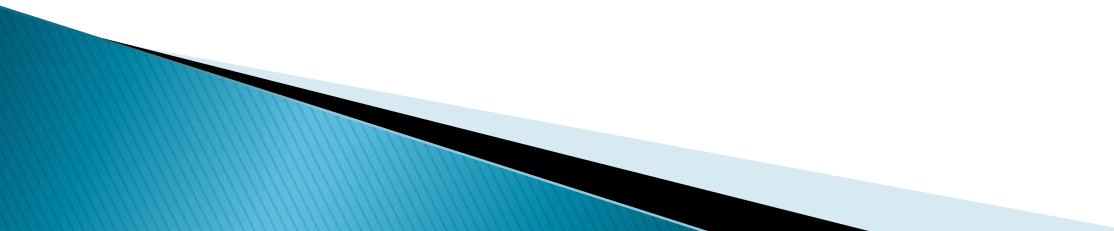


- ▶ Viable in contaminated soil for 40-60 years .
  - ▶ In bone of host viable up to 200 years.
  
  - ▶ **Animals affected :**
  - ▶ Primarily a disease of mammals and most prevalent in herbivores . Incidental outbreak occurs in Carnivores and Omnivores .
- 

## **Source of infection :-**

- ▶ Anthrax spores present in affected animal carcasses and in old livestock burial places .
- ▶ Anthrax continues as endemic/epidemic in many wildlife protected areas of the world .

## **Transmission:-**

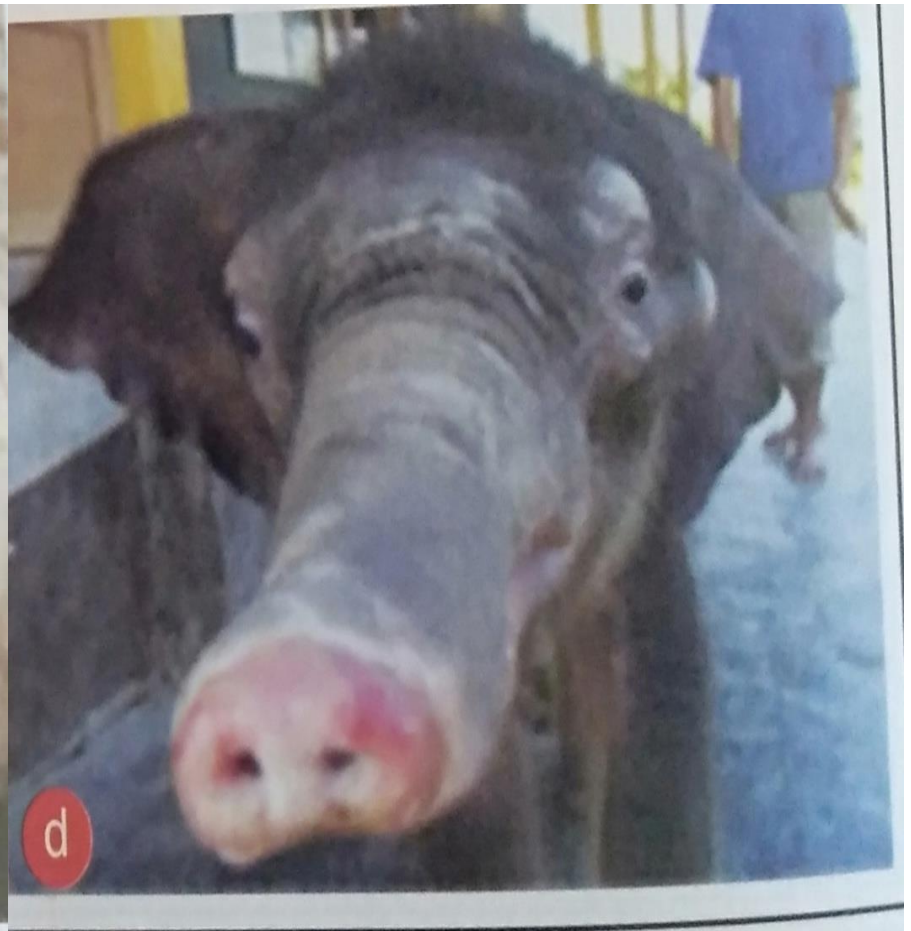
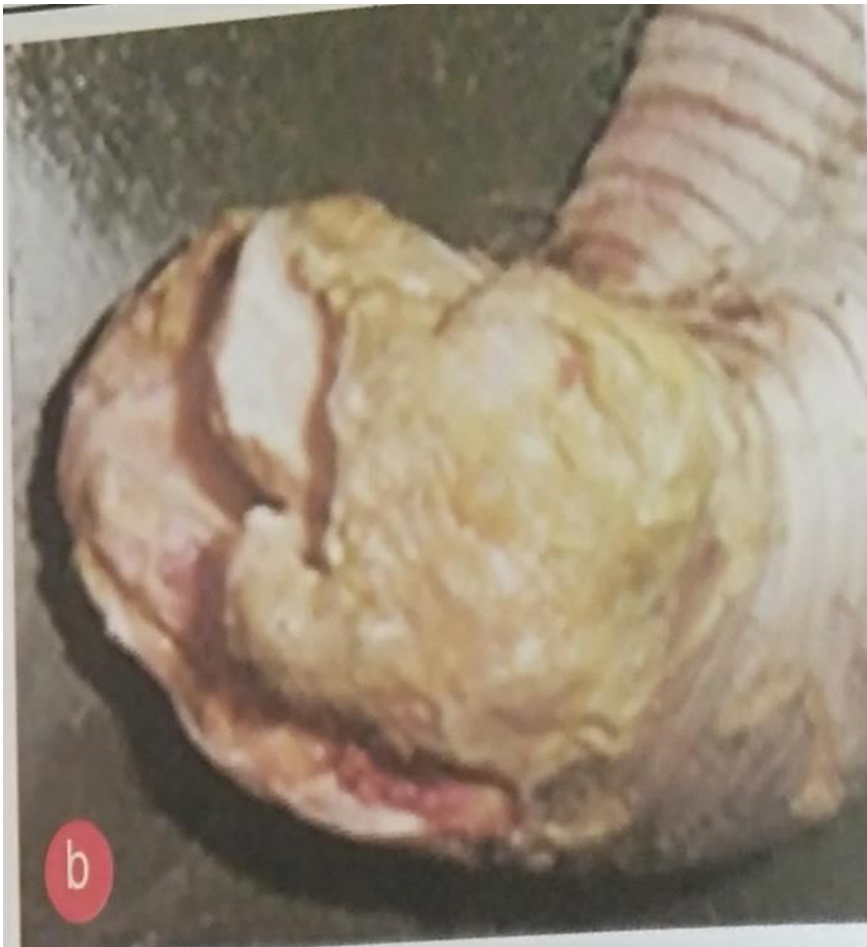
- ▶ Sporulation occurs when a fresh infected carcass is opened and exposed to surrounding oxygen in the air.
  - ▶ Putrefactive organism generally dies in the tissue of a carcass if unopened .
- 

## **Clinical signs and lesions :-**

- ▶ In case of elephants , sub-cutaneous edematous swelling on face , throat and neck.
- ▶ Sometimes bursting of few swellings on body occurs.
- ▶ However , bloody discharge from natural orifices is a commonly found symptom in case of wild bovids, cervids , antelopes etc.
  
- ▶ **Lesion :**
- ▶ Yellow gelatinous fluid found in subcutis of various part of body.
- ▶ Enlarged and soft spleen.
- ▶ Congestion and degenerative changes in liver and kidney.
- ▶ Haemorrhagic gastroenteritis.
- ▶ Lung are dark and haemorrhagic.



- ▶ Male lion with severe facial swelling caused by anthrax infection.



- ▶ Extensively injured anterior portion of trunk in one month old rescued wild elephant





- ▶ Typical posture of the carcass of a wild ruminant (impala) that has died of anthrax.



- ▶ Technique for obtaining a blood smear from the coronary band and hoof lamellae from putrefied or consumed carcass.



- ▶ Anthrax lesion in deer

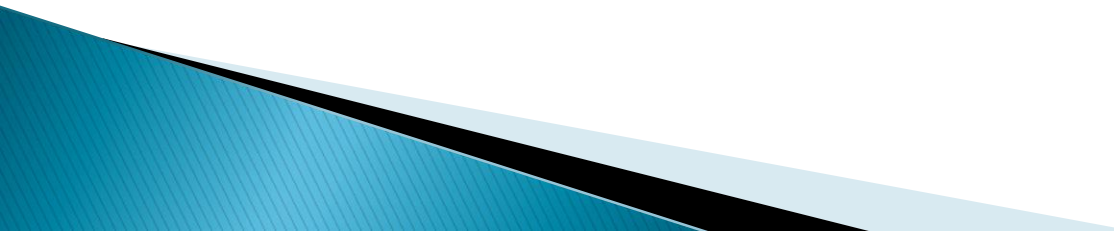
## **Diagnosis:-**

- On the basis of clinical signs and symptoms .
- Laboratory diagnosis by isolation of organism from infected animal.

## **▶ Prevention and management :-**

- ▶ Vaccination of domesticated animals having past record of the disease around the protected area .
- ▶ Carcass should not be opened if suspected for anthrax .
- ▶ Carcass should be deep buried using disinfectant material.
- ▶ Disinfectant the surface area contaminated by carcass.

# RABIES:

- ▶ Rabies is one of the oldest recognized diseases affecting humans and one of the most important Zoonotic diseases.
  - ▶ Rabies is a viral disease that causes inflammation of the brain in humans and other mammals
  - ▶ Dogs are the main source of human rabies deaths, contributing up to 99% of all rabies transmissions to humans.
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World Health  
Organization

# Rabies is a major public health problem



Fatal once  
symptoms  
appear



**One death**  
every 15 min  
worldwide



**99%**  
human cases  
result from  
dog bites



4 out of 10 deaths  
are in children



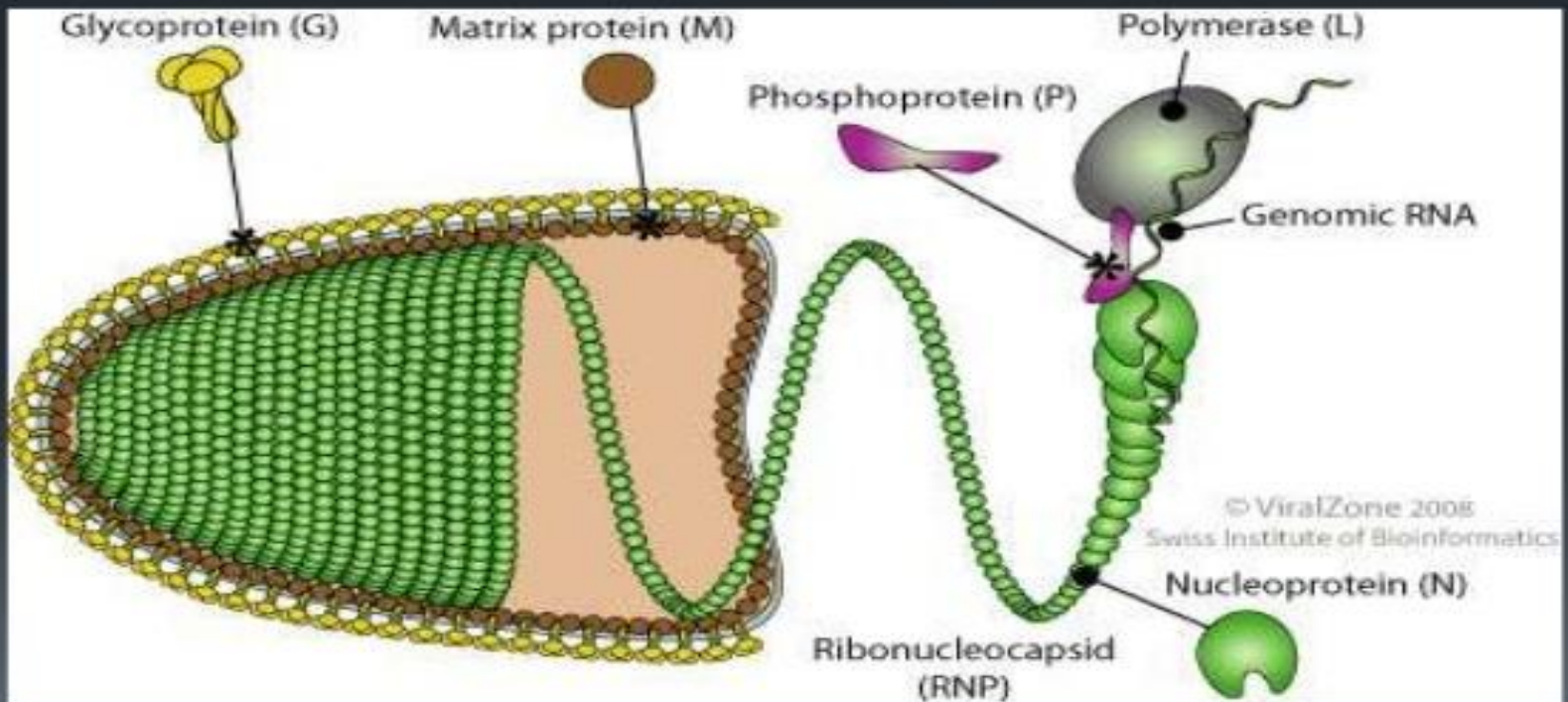
# Zero by 30

28 September - World Rabies Day

# Etiology:

## Morphology of rabies virus

- Size is 180 nm \* 75 nm, bullet shaped , ss RNA virus
- N proteins + RNA = nucleoprotein complex



- **R.N.A. virus (Bullet shaped)**
- **Family – Rhabdoviridae**
- **Genus - Lyssa**
- **2 type of virus**

Fixed virus	Street virus
It does not produces Negri bodies	It produces Negri bodies
Incubation period is constant between 5-6 days.	Incubation period is long i.e. 3 weeks to 3 months
Absence of virus in the salivary gland and saliva	Virus got affinity for salivary gland
Self limiting and not virulent for man and used for vaccine preparation	Not self limiting , pathogenic to all warm blooded animals



- ▶ **Animals affected :**
- ▶ All species of mammals.
- ▶ Rabies has been documented in Chital , Rhino , Elephants etc.
- ▶ Even oral infection has been documented in foxes and skunks by experimental means , following the ingestion of mouse carcasses infected by rabies virus.

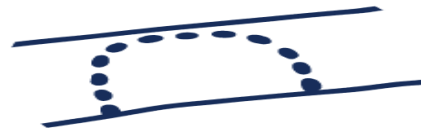


# Mode of transmission

- ▶ **Urban type** – transmission takes place through dog bite.
- ▶ **Sylvatic type** – transmitted through wild life ex. Fox, Jackal, wolf, Vampire Bat bite.



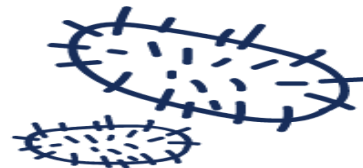
**scratch from  
infected animal**



**bite from  
infected animal**



**bat saliva in the air**



**Lyssavirus**



# RABIES CLINICAL FORMS: FURIOUS AND DUMB (PARALYTIC)



- **Furious form** – Animal is restless, nervous, aggressive, and dangerous (fearless). Inability to swallow water (hydrophobia), excessive salivation, exaggerated response to light and sound, hyperesthesia (animals commonly bite or scratch themselves).



- **Dumb or paralytic form** - As encephalitis progresses, fury gives way to paralysis. Convulsive seizures, depression, coma, and respiratory arrest resulting in death 2 to 14 days after onset of clinical signs.

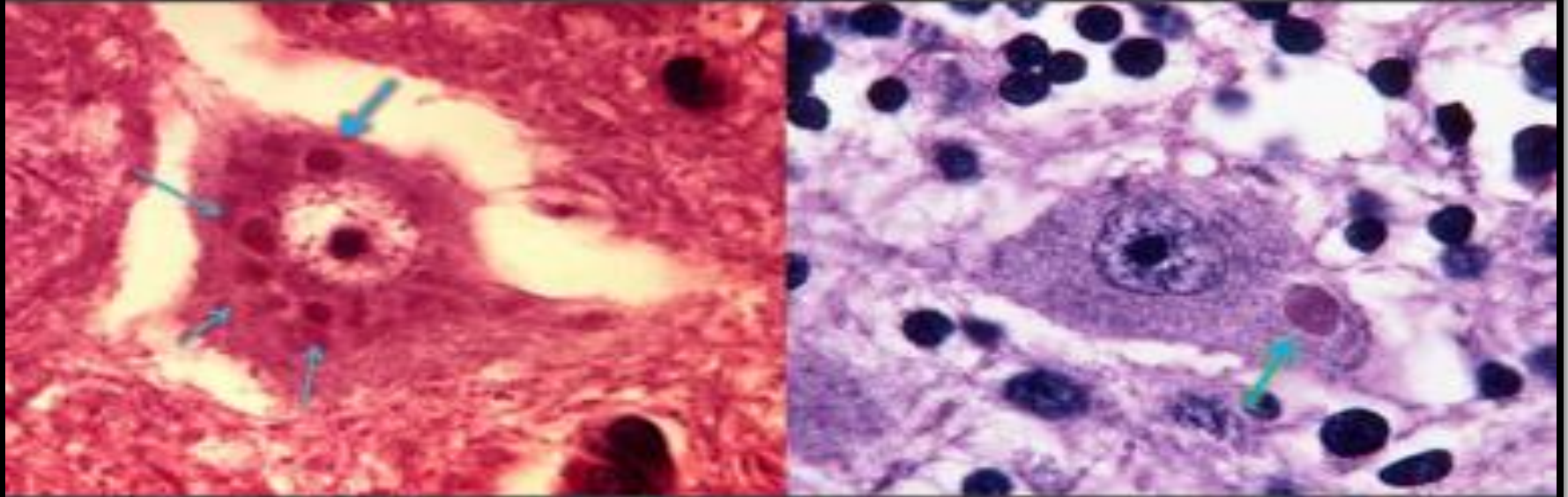


## Lesion:



Intestinal mucosa showing severe haemorrhages and congestion in wild ass died of rabies.

## NEGRI BODIES



# Prevention in man:

## A Post-exposure prophylaxis administered intramuscularly

### Essen schedule (5-dose)

Vaccination dose



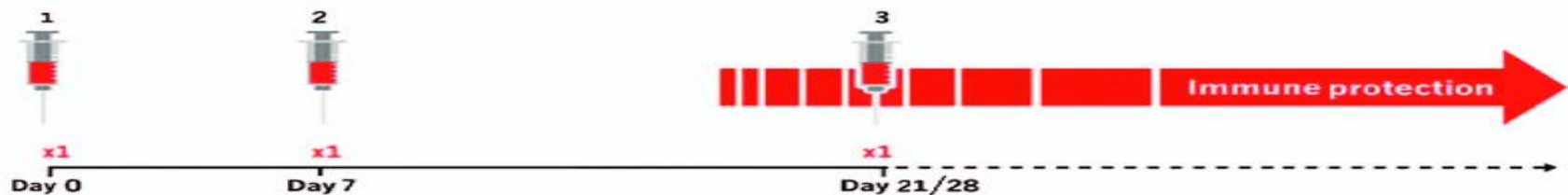
### Zagreb schedule (4-dose, 2-site)

Vaccination dose



## B Pre-exposure prophylaxis

Vaccination dose



# **RABIES IS 100% FATAL YET EASILY PREVENTABLE**

**Wash the wound  
immediately with  
water & soap**



**Do not ignore animal  
bites or scratches**

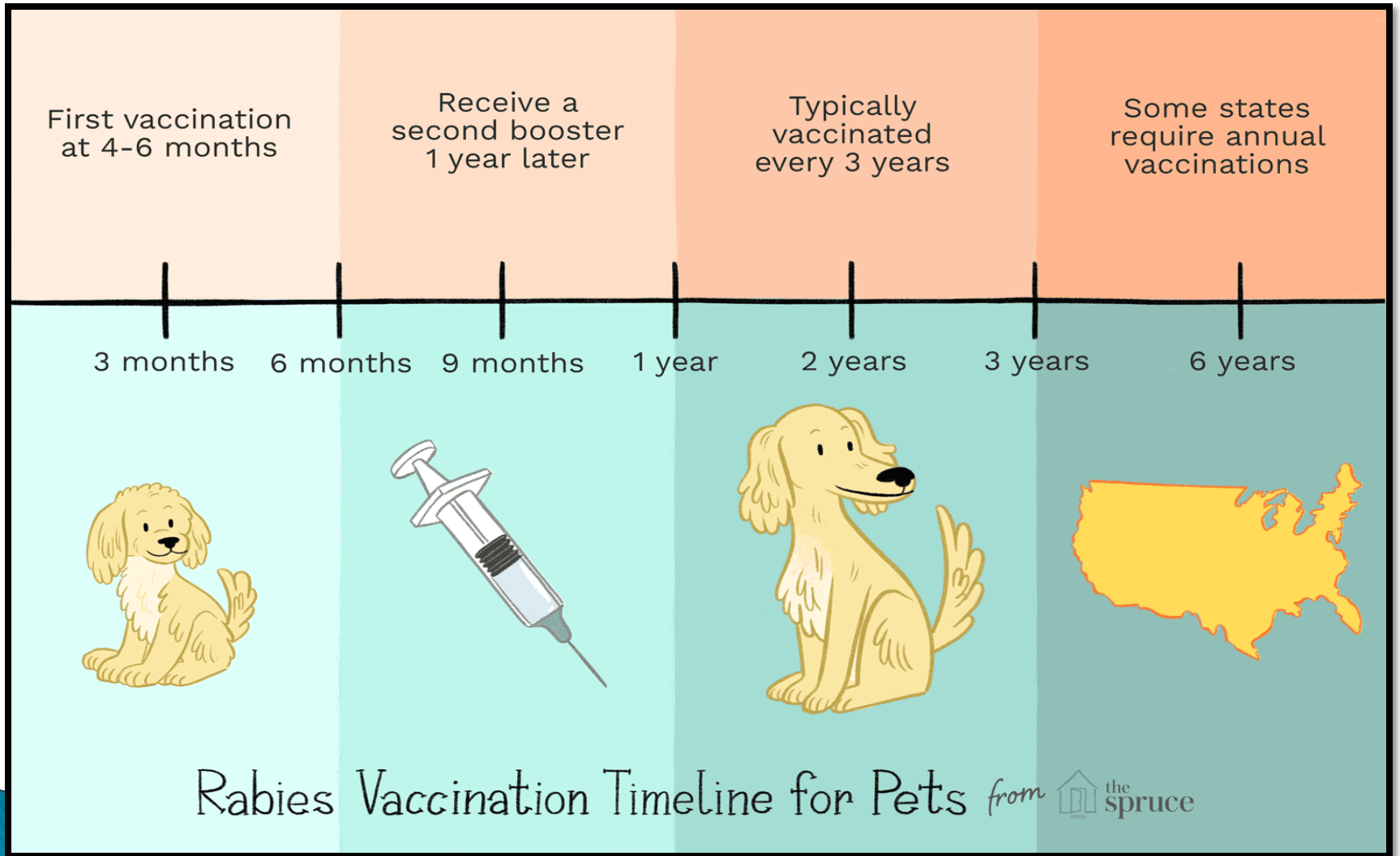


**Consult doctor /hospital  
for anti rabies treatment  
without delay**



## **PREVENT RABIES!**

# Prevention in dog





# KYASANUR FOREST DISEASE

## ▶ **Synonyms**

▶ MONKEY DISEASE

▶ MONKEY FEVER

▶ Kyasanur Forest disease (KFD) is caused by Kyasanur Forest disease virus (KFDV), a member of the virus family *Flaviviridae*.

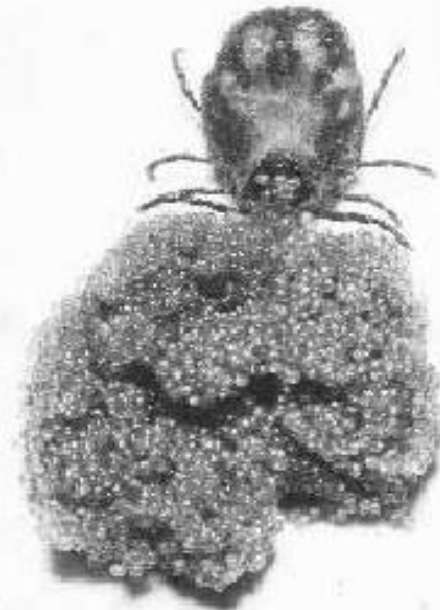
▶ Kyasanur Forest Disease (KFD) is a zoonotic disease associated with sudden onset of high grade fever, prostration, nausea, vomiting, diarrhea and occasionally neurological & hemorrhagic manifestations.

# VECTORS

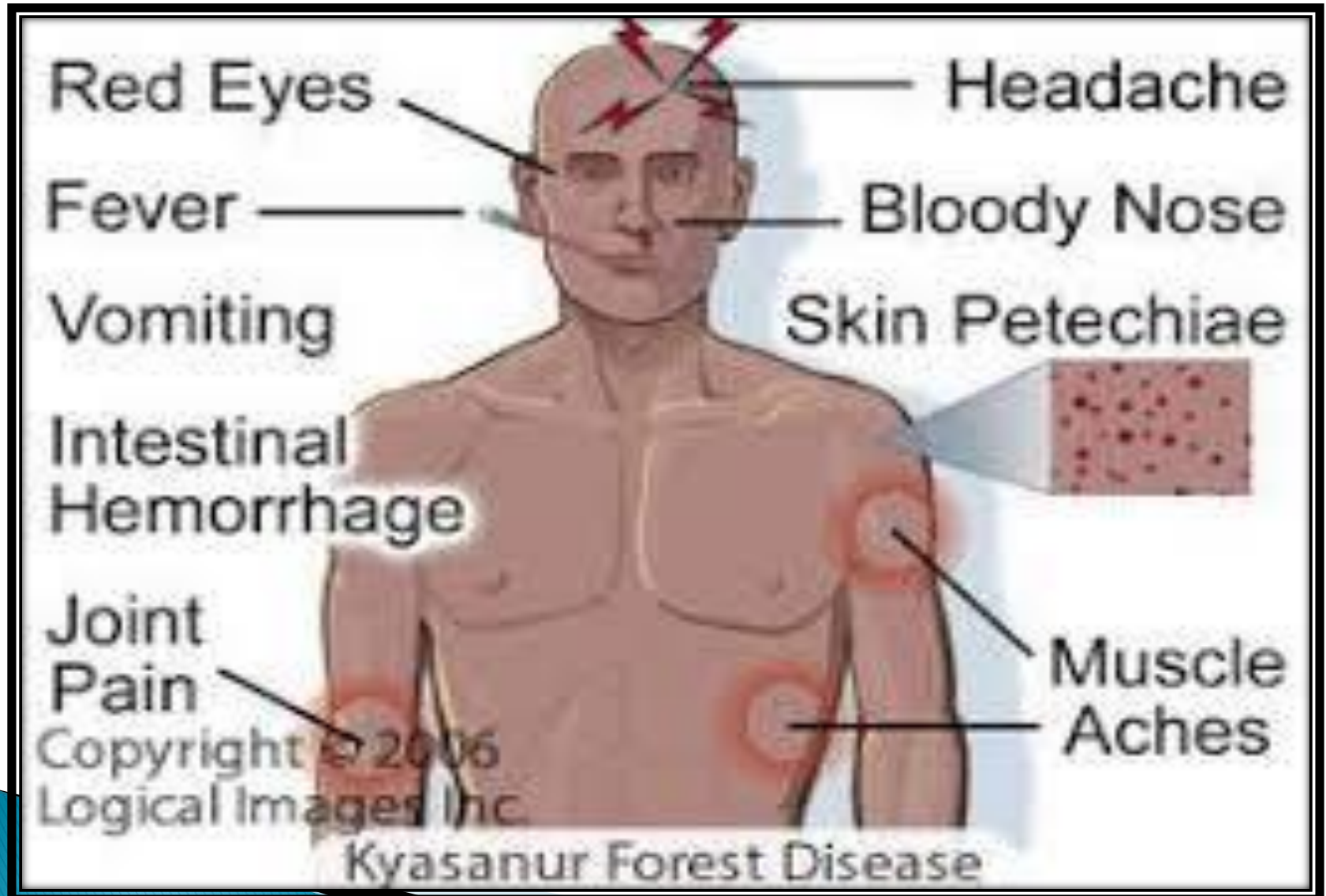
Virus has been isolated from 16 species of ticks but Hard tick species of the genus *Haemophysalis* particularly *H.spinigera* and *H.turtura* are the main vectors

Ticks act as both as vectors and reservoirs of infection in KFD

**Female tick laying eggs**



## Symptoms in Human being :



# Symptoms

- The incubation period is about 2-7 days.
- Often during a relapse:
  - Last about 2-12 days
  - Same symptoms
  - Additional complications:
    - Neck stiffness
    - Mental disturbance
    - Giddiness
    - Abnormality of reflexes
    - Signs of encephalitis



# Vaccination :

An inactivated vaccine for KFD : Prophylaxis



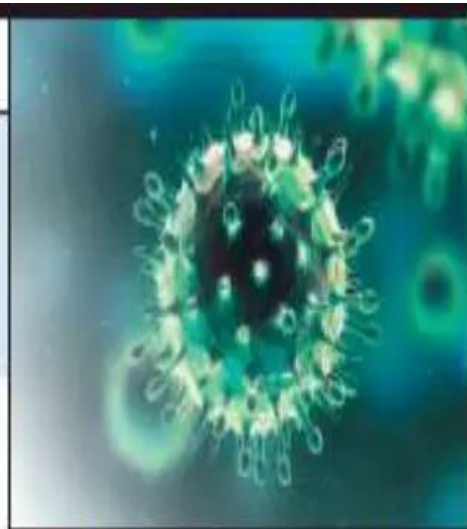
Vaccination provided for forest officers to prevent Kyasanur Forest Disease

## TAKE THE SHOT

▶ Each KFD vaccine vial has up to 10 doses which is sufficient for 10 patients at a time

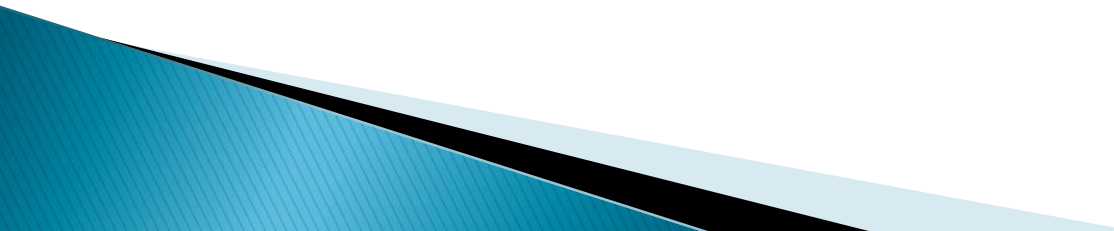
▶ After the first dose, the second vaccine is to be taken after a month

▶ The third booster dose is to be taken after six-nine months



▶ Following this, the vaccine has to be taken once every year to boost immunity

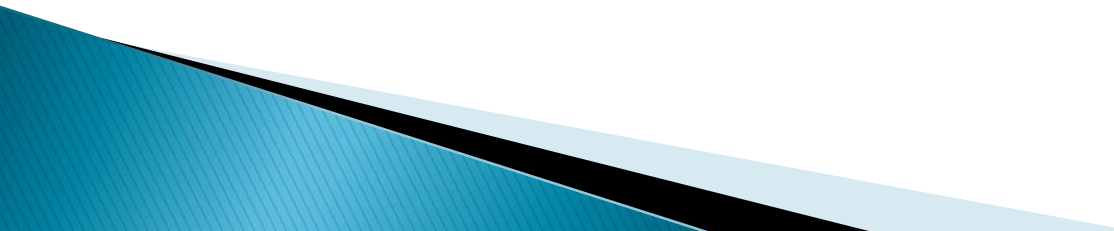
# FOOT AND MOUTH DISEASE

- ▶ This is highly contagious viral disease, occurs in case of wild ruminants and other artiodactylids , in general and caused by various serotypes of the epitheliotropic virus (O, A, C, SAT1, SAT2, SAT3 and ASIA 1 as well as many subserotypes) .
  - ▶ The affected animal species may have lesions in the foot and mouth .
  - ▶ This disease may lead to severe morbidity among the hooved stock .
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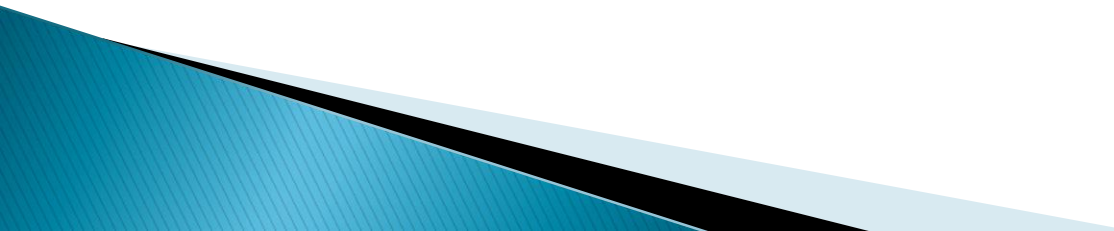
▶ **Animals affected :**

- ▶ This disease has been documented in herbivores like Gaurs , Cervids , Suids etc. and common among wild fauna but needs documentation in most of cases .
- ▶ Elephants are also affected.
- ▶ All Deers, Serow , Himalayan Black Bear , Rhinoceros , Hippopotamus , Bison , Wild Pig and Nilgai etc.

▶ **Source of infection :**

- ▶ Aerosol .
  - ▶ Contaminated feed and water .
  - ▶ Nasal secretion , nasal discharge and lacrimal secretion.
  - ▶ Infected bedding.
- 

## **Clinical signs :**

- ▶ High fever for 2-3 days .
  - ▶ Vesicular eruptions are seen in the epithelium of oral cavity , tongue , teats , udder and feet .
  - ▶ Drooling and tooth grinding .
  - ▶ Lameness or a tendency to lie down .
  - ▶ Shivering or raised temperature .
  - ▶ Lethargy or depression .
  - ▶ Death of young animals .
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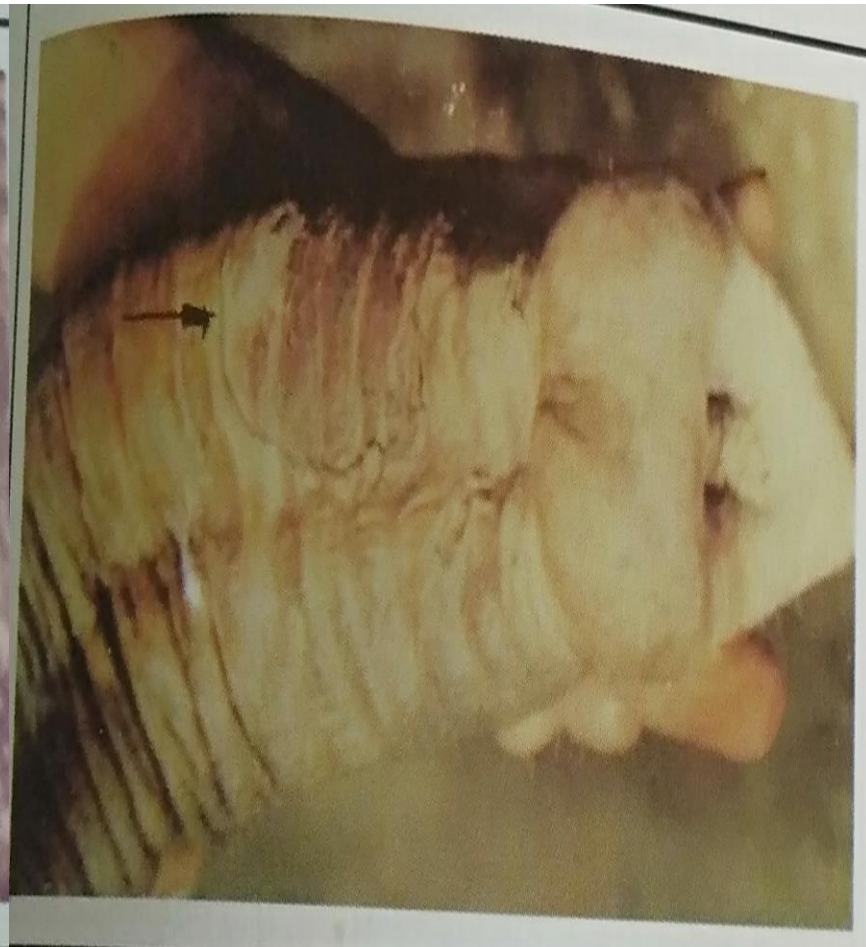
# Lesion :



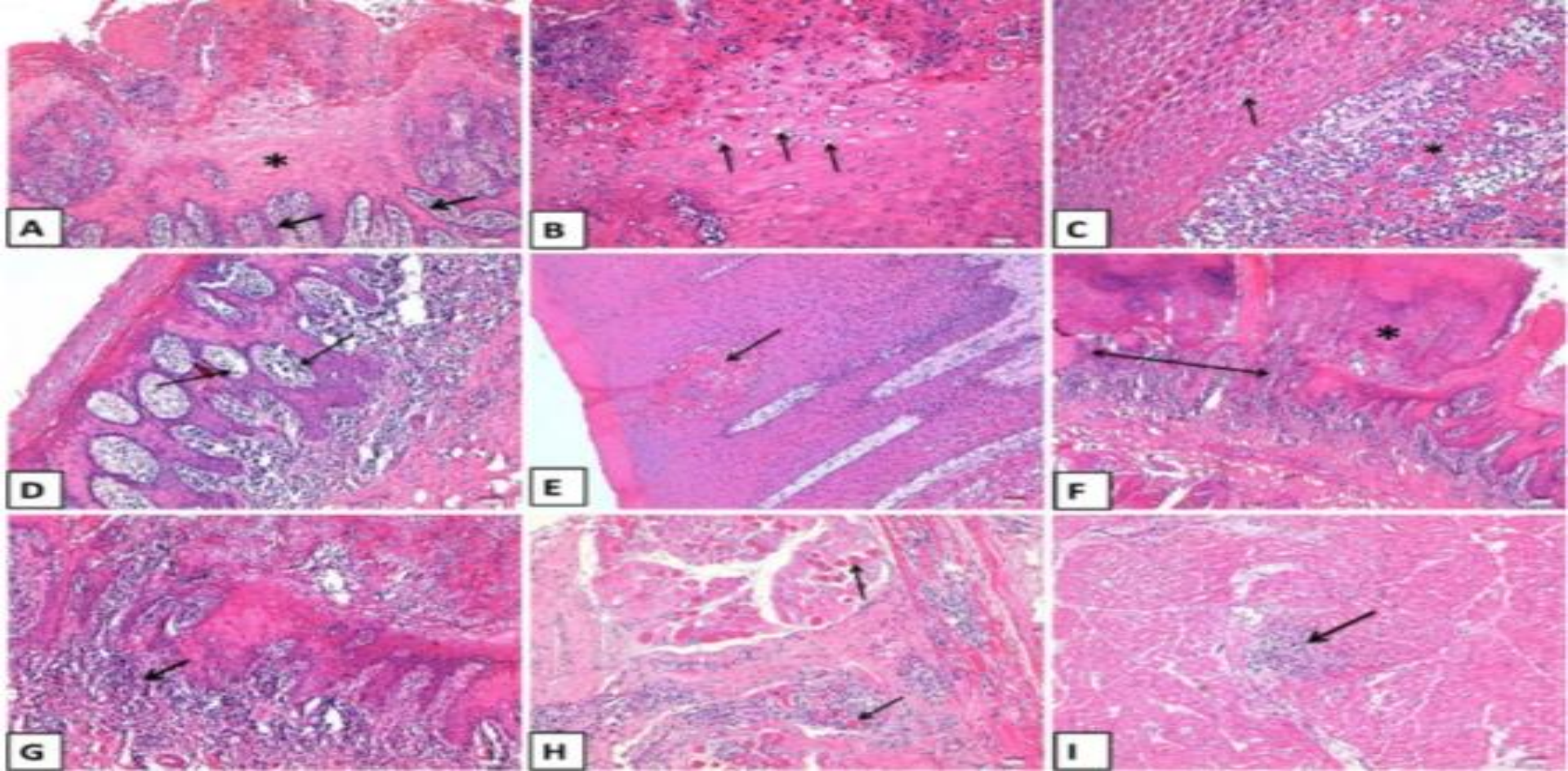
Pig snout with FMD sores



FMD lesion involving nail of elephant ( *E. maximus*).



FMD lesion on trunk of elephant



- A.** The epithelium of coronary band shows acanthosis . **B.** Intracellular edema in the cells of stratum spinosum. **C.** Intercellular bridges with dissociation of keratinocytes. **D.** Multiple microvesicles within epidermis of coronary band. **E.** Focal coagulative necrosis in epidermis. **F.** ulcerated lingual epithelium .**G.** Lymphocytic infiltration in lamina propria of tongue. **H.** cardiomyocytes with hyper eosinophilic cytoplasm & loss of striation. **I.** Focal area of myocardium replaced with lymphocytes .

# WEST NILE FEVER

- ▶ West Nile virus belongs to family Flaviviridae , genus Flavi virus ( positive-strand RNA )
- ▶ Birds are the primary amplifying host of WNV and infections have been detected in more than 300 species of native and exotic birds in North America , including Raptor species.
- ▶ **Transmission :**
- ▶ Transmission of WNV in nature is maintained between avian hosts and mosquito vectors with occasional transmission to dead-end hosts ( human and horses).

## Clinical signs and lesion:

- ▶ The most commonly reported neurologic signs in WNV-infected raptors include ataxia and depression.
- ▶ Head tremors and tilt .
- ▶ Less commonly reported signs include torticollis , nystagmus and other abnormal pupillary responses.
- ▶ Feather abnormalities are seen .
- ▶ Abnormal pupillary responses , circling , abnormal positioning of tongue , wings or tail .
- ▶ Dysphagia , hind limb rigidity or paresis.
- ▶ Hypersensitivity and seizures .
- ▶ Vomiting , peripheral nerve damage , gastrointestinal stasis and visual impairment are also seen .



Oedema of supraorbital fossa and blood tinged foam at nostrils .



Red tailed hawk with acute WNV infection showing head tremors, Dysphagia and ataxia.

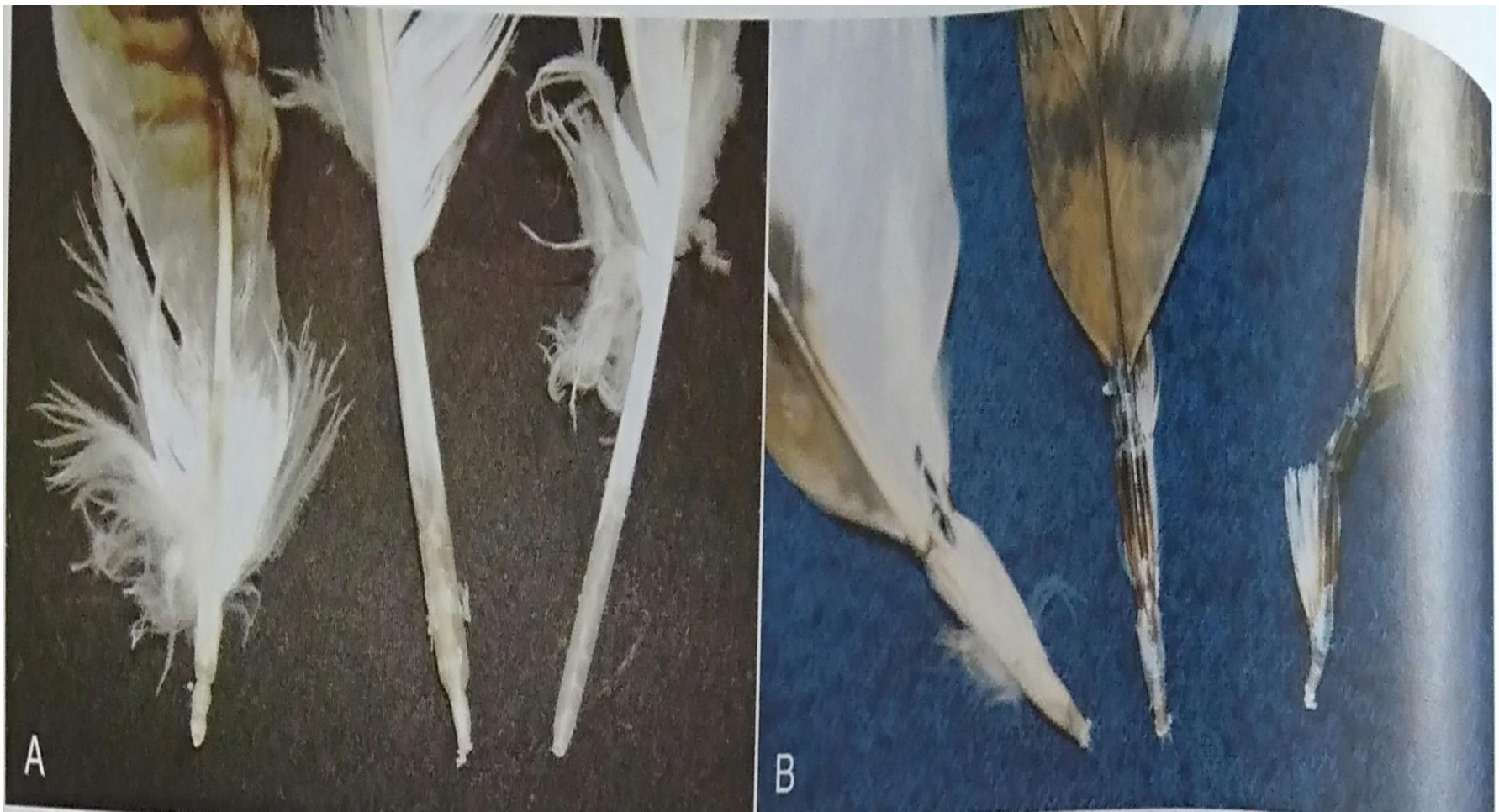




- ▶ Great horned owl with acute WNV infection with hindlimb paresis, ataxia, depression and dysphagia.



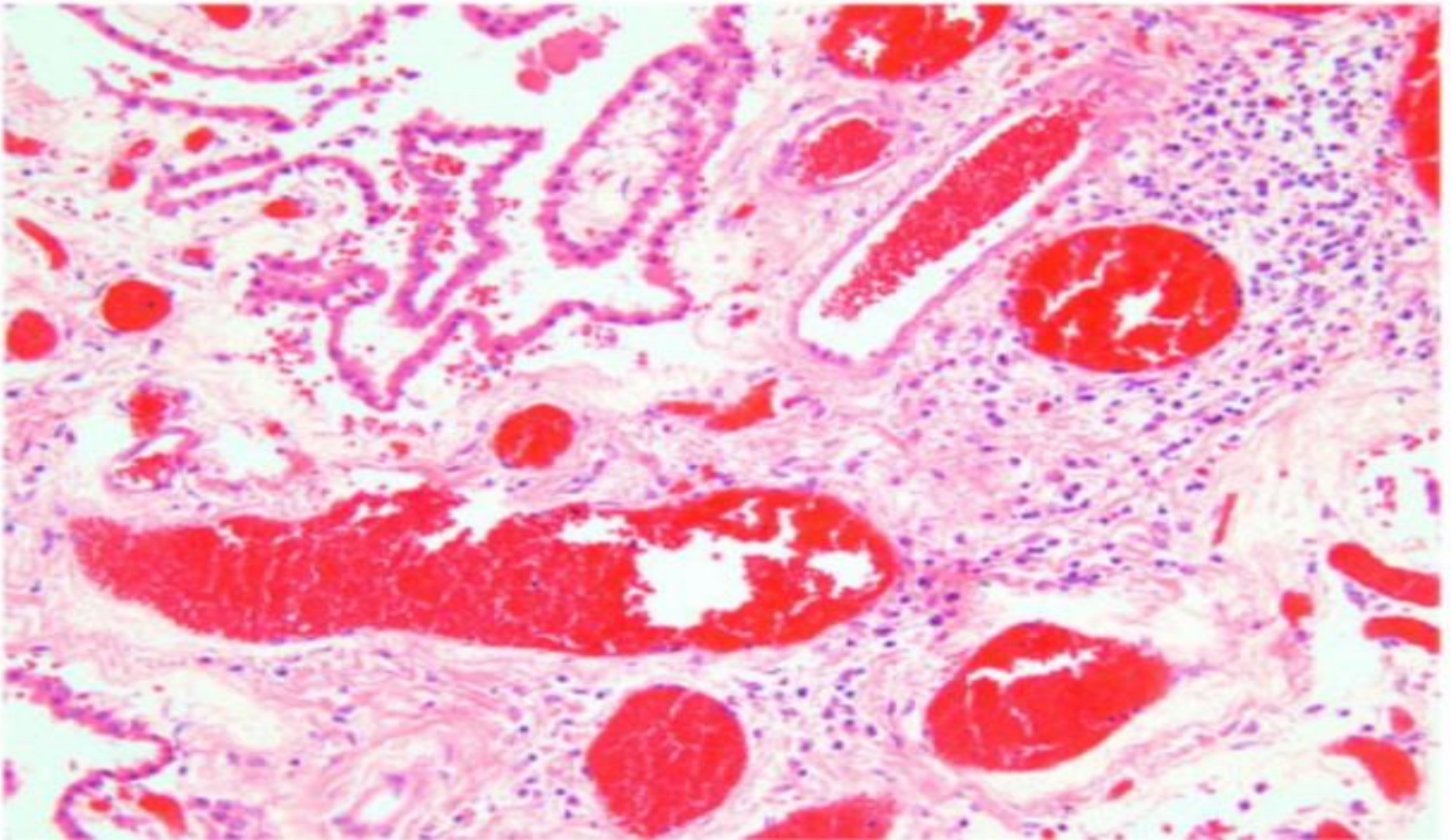
- ▶ A. Ferruginous hawk (*Buteo regalis*) infected with WNV showing ataxia, dehydration and lethargy. B. Golden eagle with head tremors, hind limb rigidity, dehydrated and emaciated.



- ▶ Feathers with abnormal morphology that molted prematurely from WNV- infected raptors. A. Red tailed hawk B. Barn owl.



Meningeal and brain tissue hemorrhages in WNV- infected long eared owl



Multifocal perivascular inflammatory mononuclear inflammation and congestion

# INFECTIVE HEPATITIS VIRUS

- A serious disease in primates such as monkeys , chimpanzees , gorillas , orangutans etc.
- It is public health hazard to those handling chimpanzees or having contact with their faeces .
- **Animals affected:**
- Chimpanzees suffer from this .
- **Transmission :**
- When contact with the infected animal faeces .
- Spread by man to animals sometimes.

- ▶ **Clinical signs and lesion:**

- ▶ General weakness .

- ▶ Icterus .

- ▶ Emesis

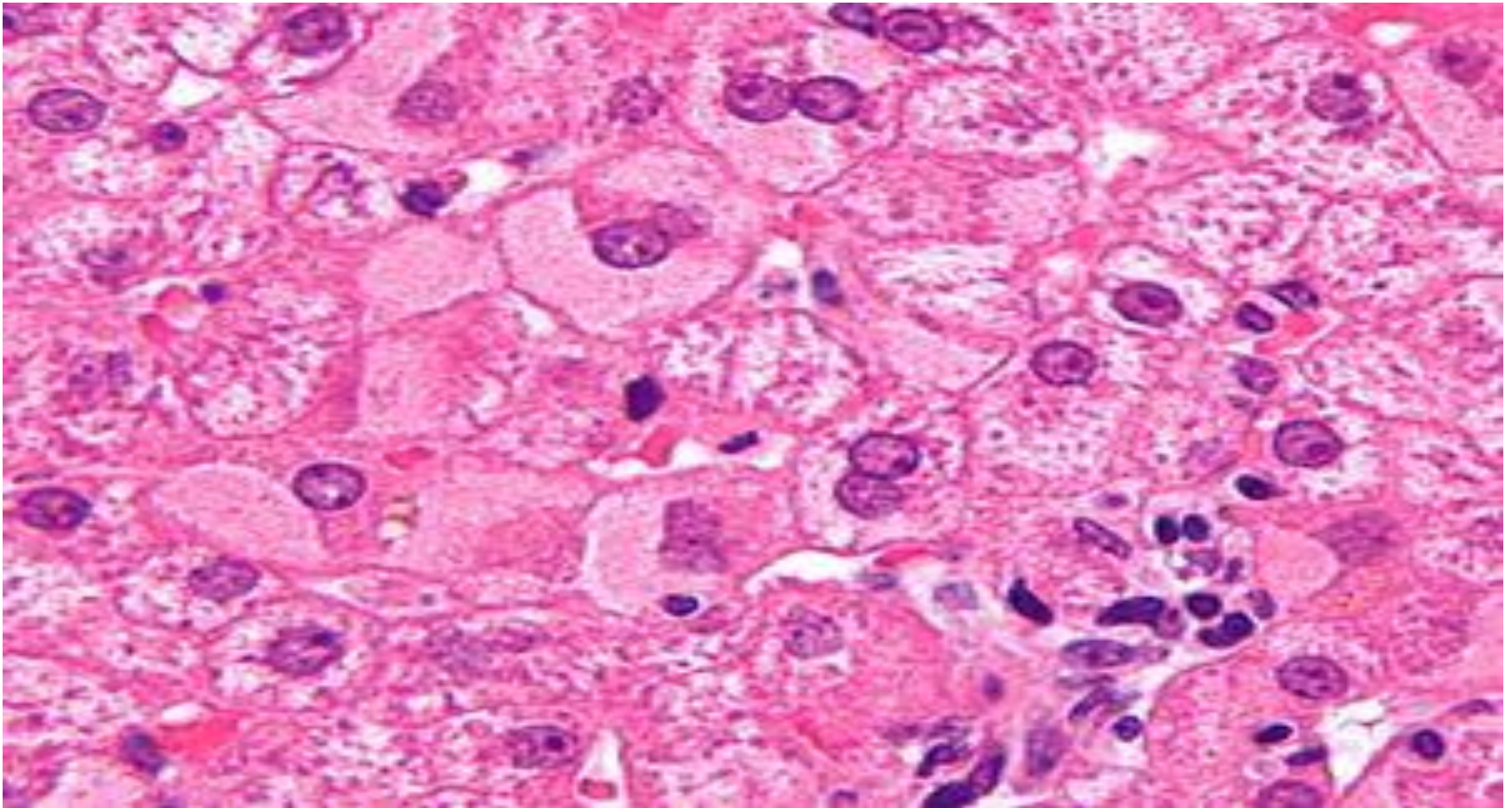
- ▶ Diarrhoea

- ▶ Elevated SGOT and SGPT levels indicating liver damage in humans .

- ▶ **Lesion :**

- ▶ chronic hepatitis, cirrhosis, and hepatocellular carcinoma.

- ▶ Mucus membrane seen as yellowish in color.



- ▶ Micrograph showing ground glass hepatocytes, which are seen in chronic hepatitis B infections (a type of viral hepatitis), and represent accumulations of viral antigen in the endoplasmic reticulum. H&E stain.



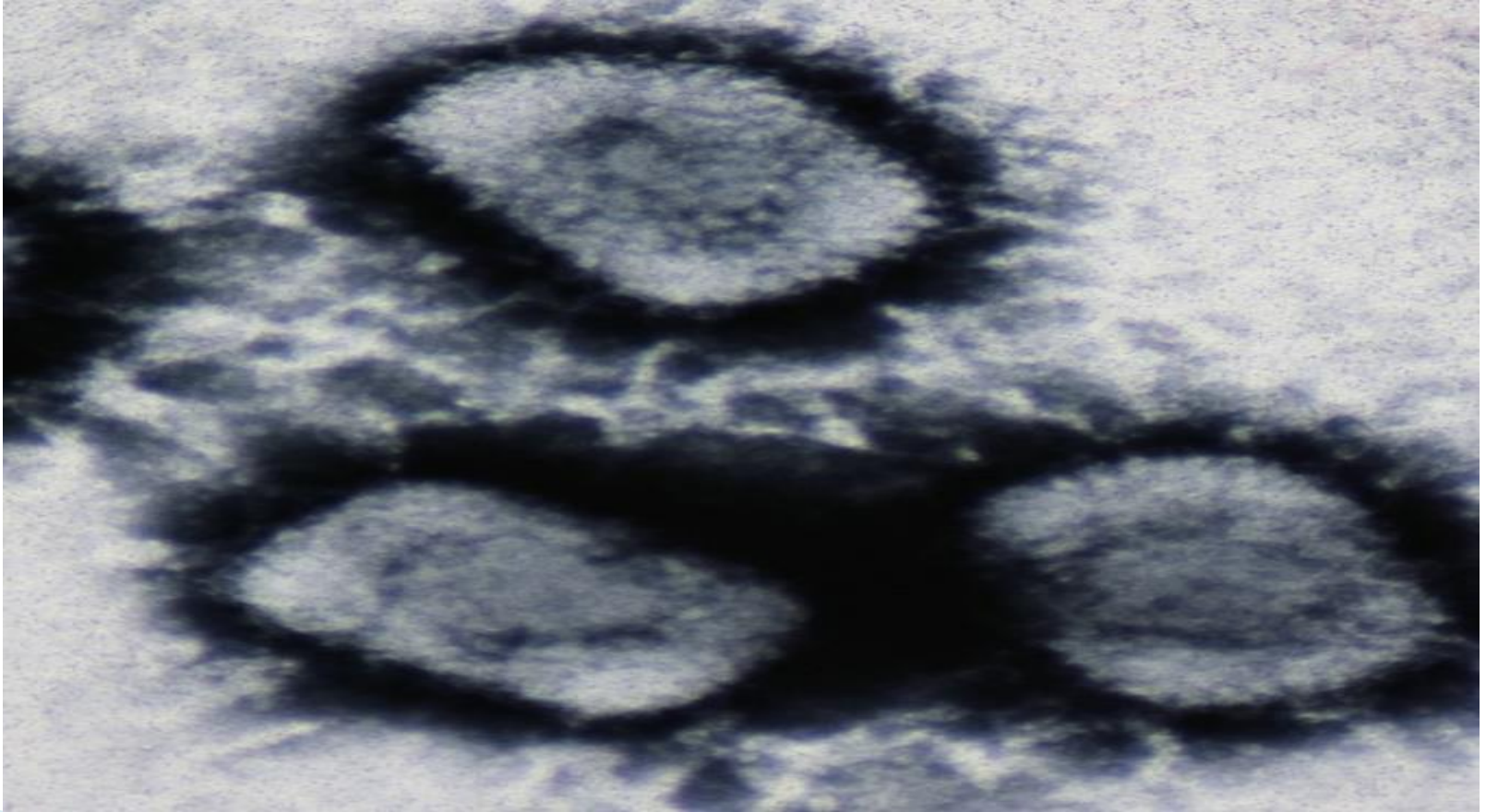
# POX DISEASE :

- ▶ Pox virus has been isolated from carnivores and is named the Moscow virus , which is closely related to the cowpox virus .
- ▶ Cow pox is an infectious disease caused by cowpox virus .
- ▶ Feline pox affects felids and other animals.
- ▶ Monkey pox is most frequent one in wild animals.
- ▶ Pox virus is documented in chimpanzee under captive condition reared at zoological garden.
  
- ▶ **Animals affected:**
- ▶ Felids , elephant, raccoon , rhinoceros , ant-eater , monkeys , carnivores, chimpanzees , etc.

▶ **Etiology :**

▶ Family : Poxviridae , Genus : *orthopox* virus

▶ Brick shaped , linear , double stranded segments of DNA .



## ▶ **Clinical signs and lesion :**

- ▶ Fever
- ▶ Facial edema
- ▶ Maculopapular rash and various pustules .
- ▶ Localized or multiple lesions on the skin .
- ▶ CPXV infections are epitheliotropic , often starting as vesicular lesions and then developing in to a pustule with an indented centre and a raised erythematous border.
- ▶ The mortality among exotic animals and felids is high.

## ▶ **Lesion :**

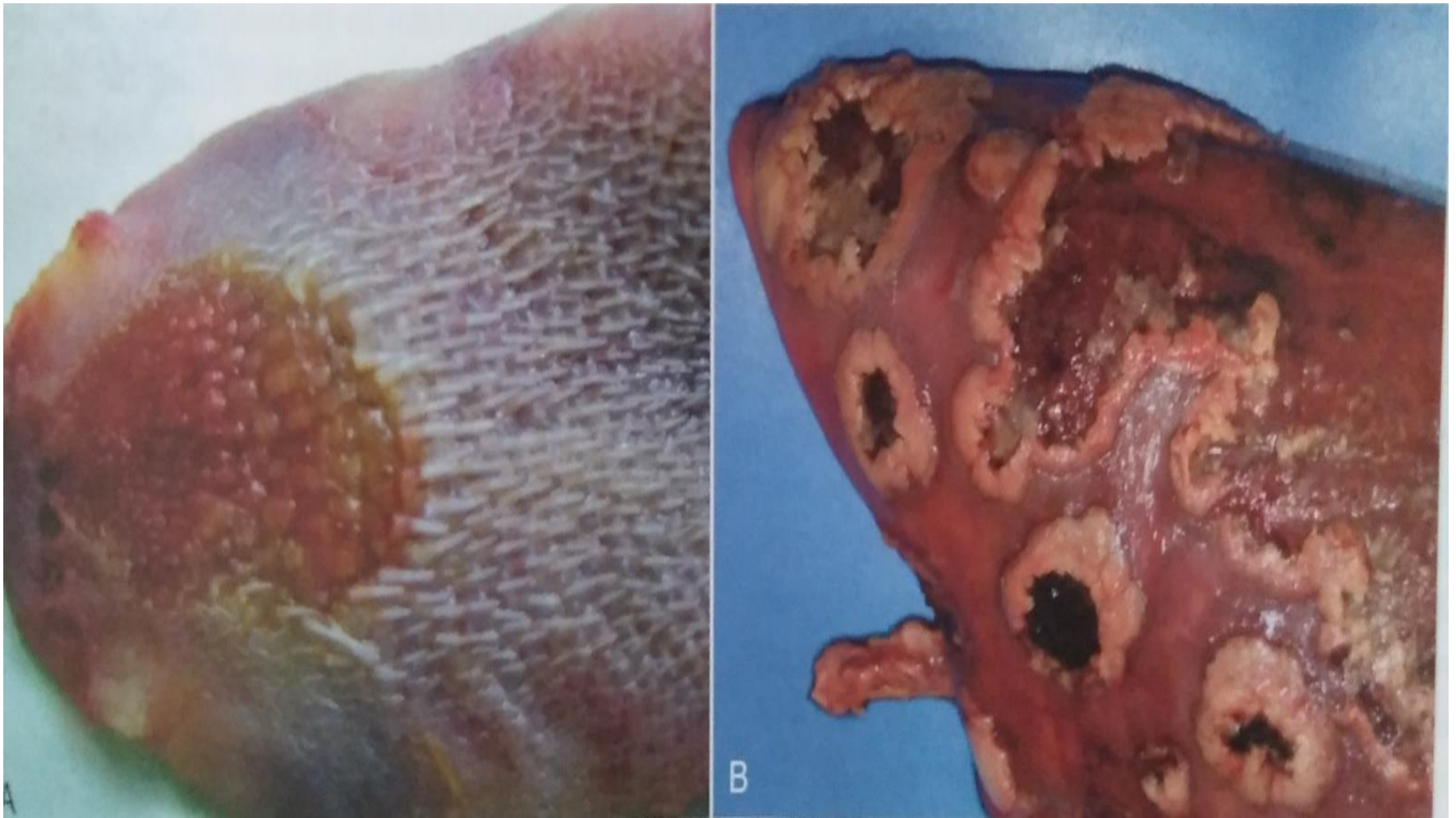
- ▶ lymphangitis, and erythema multiforme have been reported .
- ▶ lesions primarily occur on the muzzle, nose, and hard palate oral mucosa of young feedlot cattle and can cause an ulcerative esophagitis, while pseudocowpox primarily affects the teats, udder, and perineum.



cowpox virus infection in cat showing blepharitis



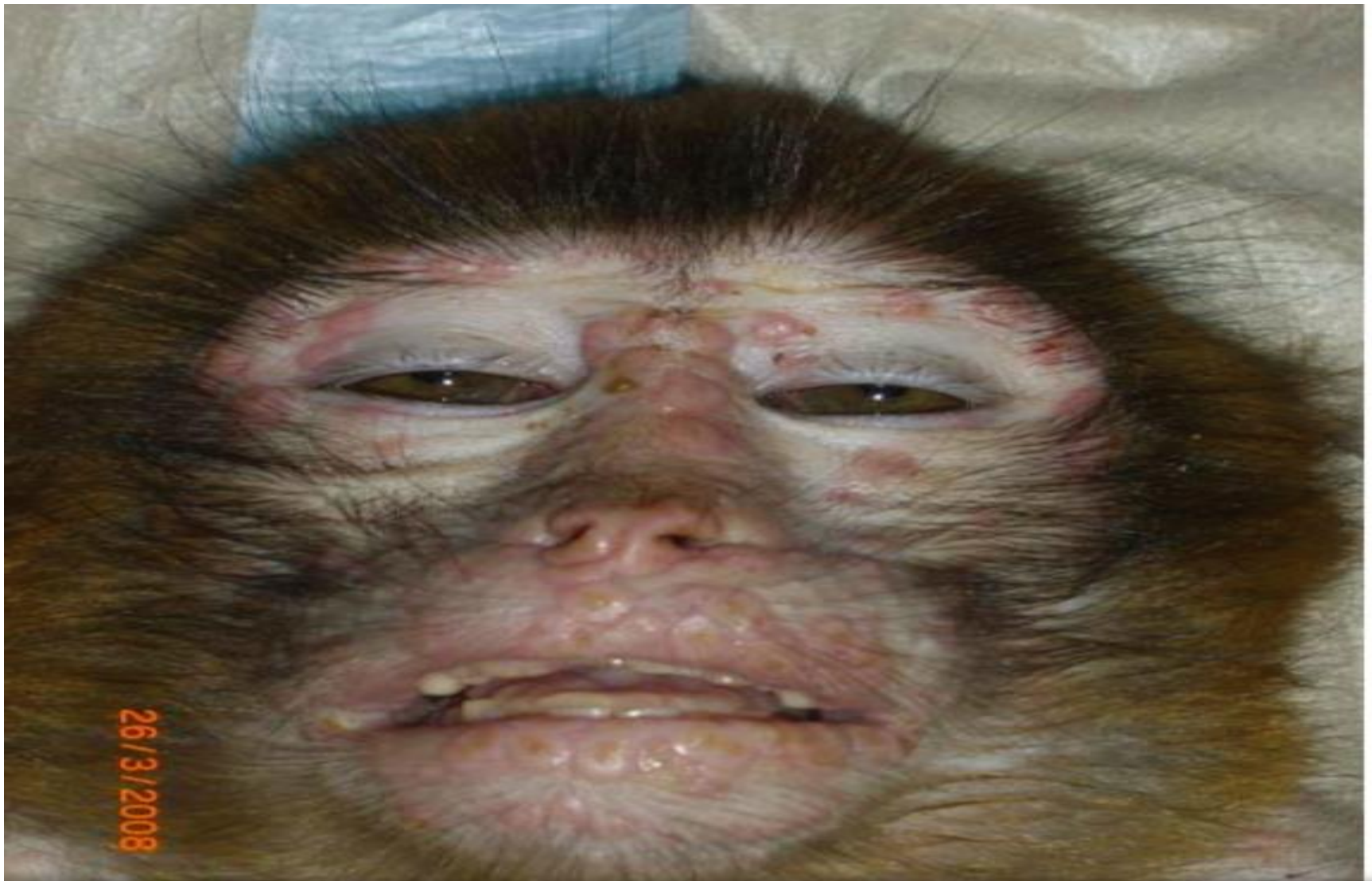
- ▶ Typical cowpox virus lesions in zoo animals. A. round punched out erosions at the mucosal surface of nose and lips of this jaguarundi. B. Localized subacute to chronic epidermal lesion with scarring on the body of a mongoose.



- ▶ A. typical lesion at the dorsal aspect of the tongue of a jaguarondi .  
B. Pathognomic poxvirus with extensive ulceration of the mucosal membrane of the tongue in an Asian elephant.



- ▶ A. Acute lesion on the head of a mongoose.
- ▶ B. severe skin ulcerations and laminitis with sloughing and loss of hoof shoes in an Asian elephant.



- ▶ Monkeypox virus infected *Macaca mulatta* with multifocal severe papular dermatitis.





THANK YOU