TETANUS

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(Locked jaw/Saw Horse disease

- A highly fatal disease of all domestic animals caused by the neurotoxin and characterized by hyperaesthessia, tetany and convulsions

Etiology:

- *Clostridium tetani* , Gm positive, anerobe.
- It forms a terminal spore, twice the width of micro-organism and gives a “drum stick like” appearance.
- The organism produces a highly potent toxin i.e. Tetanospasmin (Neurotoxin), Tetanolysin (Hemolysin) and Fibrinolysin

Host Range:

- All farm animals
- Susceptibility is Horse> Sheep/Goat > Cattle >Pigs
- Rare in carnivores, but birds are resistant.

Transmission:

- Contaminated soil , especially from faeces of horse
- Deep punctured wound; spores lies in dormant stage but proliferate when tissue conditions favourable.
- Horse- punctured wounds
- Cattle-Genital tract
- Pig- Castration
- Neonates- Umbilical cord
- Lambs- Castration, shearing, docking, vaccination.

Pathogenesis:

Organism→Localized at the sites of introduction without affecting surrounding tissues→Due to low O2 tension proliferation starts→Release tetanospasmin and tetanolysin→Goes to circulation through diffusion of toxins→Bound to motor end plates through retrograde transport→Blocks the motor neurons→ Causes spastic paralysis→Ultimately death due to asphyxia due to fixation of

Clinical Findings:

- The incubation period - one to several weeks (10–14 days).
- Localized stiffness, often involving the masseter muscles and muscles of the neck, the hind limbs, and the region of the infected wound, is seen first.
- Generalized stiffness one day later with tonic spasm and hyperaesthesia.
- Excitation increases with sudden movement or noise or other stimuli.
- A spasm of head muscles causes difficulty in prehension and mastication of food, hence the common name, lockjaw.
- Continuous drooling of saliva
- Animals stands with tail raised, erected ears, dilated nostrils, and retracted eyelids and feels difficulty in movement.
- Prolapse of third eyelid—Early signs in horse.
- Constipation and urine retention may occur

- Tetany occurs and as it progress, the animal adopt saw horse appearance
- Initially, temperature, heart and respiration rates are normal.
- In young animal-Bloat may occur
- The animals stands and walk with difficulty and falls down and once it is down, mostly it will not get up.
- Due to stimuli, there is hyperaesthesia, tetany and convulsions.
- The temperature may goes up to 106-1080F due to convulsion.
- Excessive sweating and marked opisthotonus are developed.
- The hind limbs are stuck out stiffly behind and fore limbs forwards.
- Death occur due to asphyxia.

Diagnosis:

- History and Clinical signs
- Culture of organism by anaerobic method

Differential Diagnosis:

- Hypocalcaemic tetany (Mare)----Calcium therapy
- Acute laminitis in horse-----No Convulsion
- Cerebrospinal meningitis------ No hypersensitivity with sound and movement
- Lactation tetany (Cattle)--------No third eyelid prolapse and bloat are absent
- Enzootic muscular dystrophy of lambs---No tetany occur

Treatment:

The main goal of treatment is:

- Destruction of organisms
- Neutralization of toxins
- Relaxation of muscles
- Maintenance of hydration status and nutritional support.

❖ **To kill the organism:**

✓ Penicillin @20-40,000 IU/Kg BW, IM or, around or in wound if present

❖ **To neutralize toxin:**

✓ ATS @3 lakh IU/Horse, IV, SC or IM at 12 hrs intervals 3 times.

✓ ATS may be given into or around wound and allow it for some times, then wound s/be cleaned with H_2O_2.

✓ May not effective , once clinical signs appear

- ✓ Good response in horses @ 50,000 IU of ATS into subarachnoid space through the cisterna magna.
- ✓ Same may be used in digs and cats with precaution.

To overcome tetany and convulsion:

- ✓ 30-45 gm Chloral hydrate +200-300 ml of 10% mag. Sulf. Orally , IV
- ✓ A combination of chlorpromazine (0.88mg/kg, IV or 2.2 mg/kg, IM) and phenobarbital or Diazepam used to reduce hyperaesthetic reaction and convulsion
- Affected animal should be kept in dark room with sufficient space
- Avoid any stimuli
- Good bedding, enema repeatedly, remove urine, passing of the stomach tube and feeding the animal repeatedly are valuable management.

Control:

- Doing proper skin and instrument disinfection at castrating, docking, and shearing time.
- By providing immunity as passive and or active immunity.
- Passive immunity through tetanus antitoxin followed by cleaning of wound is advisable.
- Tetanus toxoid can be administered at the same time as tetanus antitoxin, provided they are injected at different sites and using different syringes.
- Tetanus antitoxin is often routinely given to mares following foaling and to new born foals.

Active immunity:

- Foals --- primary vaccination at 3-4 months of age.

DOSE:

A. TETANUS TOXOID

- Large Animals: 5ml, SC
- Small Animals: 3 ml, SC

B. TETANUS ANTI-TOXIN

PROPHYLACTIC

- Cattle/Horse: 1500-3000 IU, SC
- Calf /Sheep/Pigs: 500-1500 IU, SC
- Dog: 250-500 IU, SC

Note:

For therapeutic effect the IV/IM route should be followed and the dose is assessed depending upon the response of animal to the therapy