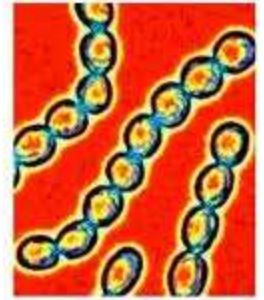


Equine Strangles (Equine Distemper)



Understanding Equine Strangles



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Definition

- Strangles is a contagious upper respiratory tract infection and associated lymph nodes Of horses and other equines. caused by the bacterium, *Streptococcus equi var equi*. It is enzootic in domesticated horses worldwide.

Animals affected

- Horses of all ages and breeds ;it is more common in younger animals.



Causative agent

- The causative organism, *Streptococcus equi* *equi*, is highly host-adapted and produces clinical disease only in horses, donkeys, and mules.



EPIDEMIOLOGY:

- The disease is very contagious and morbidity is high.
- Strangles is enzootic in domesticated horses worldwide. Strangles is one of the most commonly diagnosed contagious equine diseases worldwide.
- Affects horses at any age, but morbidity is much higher in foals and weanlings.
- *S. equi*; is an obligate parasite, but it can survive in the environment for at least 2 months.

- Transmitted by direct contact with the infected animal or indirectly through fomites, Nasal and abscess discharge contaminates waterers, feeders, pastures, grooming utensils and veterinarians.
- Recovered animals are persistently infected & remained as carriers and can transmit disease for about 3 years.
- Strangles is one of the most important equine diseases in developed countries; not just due to cases of death but also due to losses in commercial horses management.

Clinical signs of Strangles

Swollen
lymph
glands
that may
burst



Pus discharge
from nostrils

Clinical signs

- The incubation period of strangles is 3-14 days.

Clinical signs are variable,
depending on the;

- stage and
- severity of the infection.

1.ACUTE FORM:

- Disease suddenly develops with high fever. complete anorexia, depression and dullness
- **Heavy serous nasal discharge, rapidly becomes copious and purulent.**



- **Severe , painful pharyngitis, laryngitis; and lymphadenitis with swelling of the lymph nodes in the neck/throat area (submandibular). If the affected lymph nodes are behind the throat, the pressure on the pharynx from the pus-filled lymph nodes and throat inflammation can cause severe difficulty in breathing, hence the name for the disease: “Strangles”.**

- **In order to relieve the pain and pressure on the throat, affected horses may stand with their neck outstretched.**

- **Difficulty in swallowing due to severe painful pharyngitis, inspiratory respiratory noise (compression of the dorsal pharyngeal wall), soft, moist cough**
- **Clinical signs of the disease are generally visible for three to seven days, but may last up to two weeks.**

- During later stages of the disease, characteristic abscesses develop in the lymph nodes of the throat, they become hot, swollen and painful; may burst, draining thick, cream-yellow pus from openings in the skin.



- **Swelling of the retropharyngeal lymph nodes may cause obstruction of the oro-pharynx with subsequent dysphagia and dyspnea. Death by asphyxiation may occur at this stage in severe cases.**

- **In particularly severe cases; many other lymph nodes(pharyngeal, submaxillary, and parotid may abscess at the same time. Local abscesses may occur at any point of body surface, particularly the face and limbs.**





- **Infection may spread to local lymph vessels causing obstructive oedema(glanders and other diseases)**

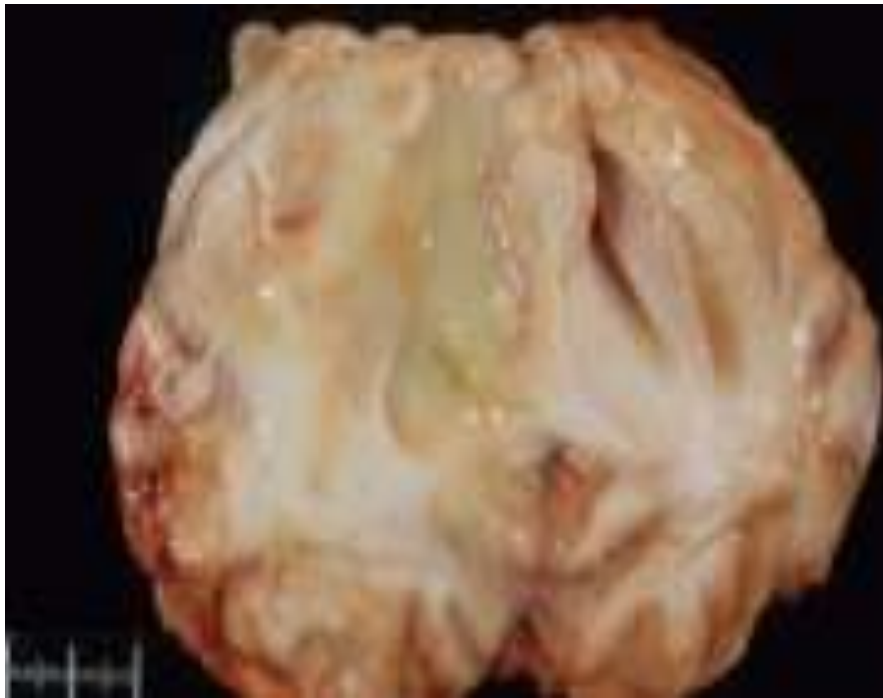
2. MILD, SUB-CLINICAL, ATYPICAL FORM OF STRANGLES:

- Characterized by transient fever for one to two days, anorexia, cough, and profuse nasal discharge. Some horses may develop mild enlargement of mandibular lymph nodes.
- Mostly observed in older animals with residual immunity

3. METASTATIC STRANGLES (“BASTARD STRANGLES”)

- *Is characterized by formation of abscesses in any organ or body site(liver, spleen, kidneys, mesenteric lymph nodes, brain and lungs).
- *Clinical signs depends on organ affected and severity of infection, but chronic weight loss and sudden death are common. A brain abscess may rupture causing sudden death or a retropharyngeal lymph node abscess may burst in the throat and the pus will be inhaled into the lung.

- *Streptococcus equi equi* infection (strangles);
brain abscess.



Complications:

Usually occurs in about 20% of affected cases;

1. Most common, **fatal suppurative bronchopneumonia**, due to aspiration of pus from ruptured abscess in the upper air way.

2. Purpura haemorrhagica; which is an immune-mediated acute inflammation of peripheral blood vessels that occurs within 4 weeks of strangles, while the animal is convalescing. It results from the formation of immune complexes between the horse's antibodies and bacterial components.

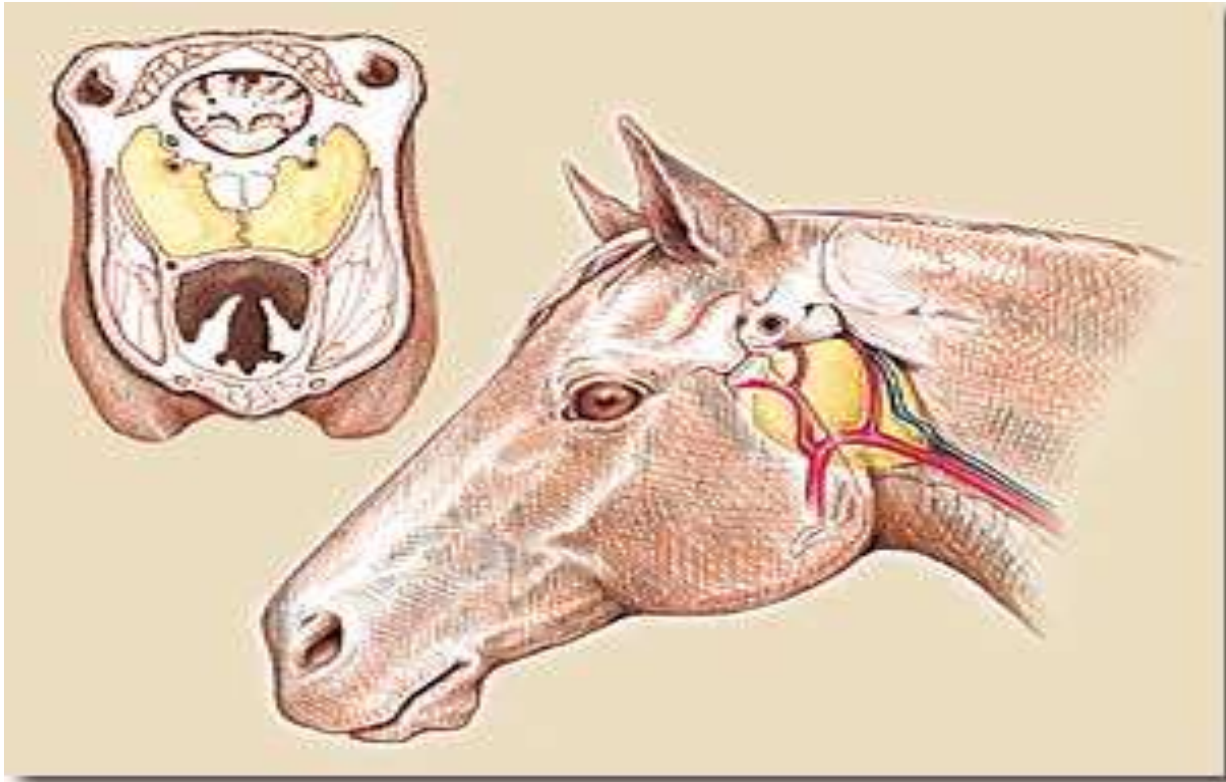


- **These immune complexes become trapped in capillaries where they cause inflammation, visible in the mucous membranes as pinpoint haemorrhages. These haemorrhages lead to a widespread severe edema of the head, limbs, and other parts of the body. Purpura can also be a complication of routine vaccination.**



- **3. Guttural pouch empyaema** (filled with pus), which may be associated with classic strangles, or follow in the immediate convalescent period. Persistent infection in the guttural pouch may lead to inspissations (drying) of pus and, in some cases, the formation of a solid, stone-like, concretion called a chondroid. They are carriers, and a major source of infection to spark outbreaks in susceptible horses with which they are mixed.

The guttural pouches (shown here in yellow) can be the source of ongoing problems when they fill with pus as a result of strangles.



Chondroids in the guttural pouch after chronic Strangles infection



This collection was surgically removed from the guttural pouch of a horse with a chronic infection due to strangles



- **4. Carriers (bacteria shedders):**
Recovered horses may shed *S. equi* from their nose and in their saliva for up to 6 weeks following infection. Therefore, isolate all horses that have had strangles from susceptible animals for 6 weeks following infection.

- **Purulent cellulitis** :(inflammation of the subcutaneous tissue), which is an unusual occurrence where infection spreads locally in the subcutaneous tissue to the head.



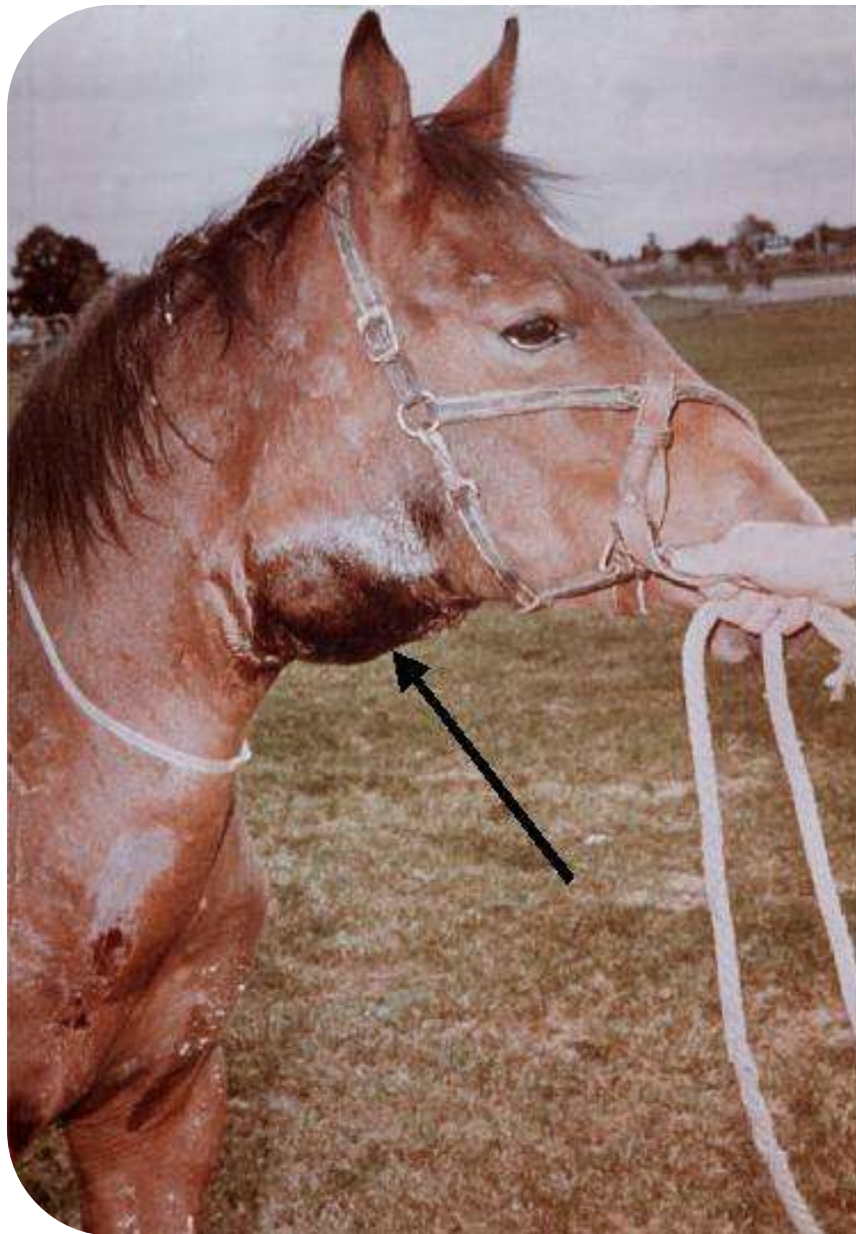
- Asphyxia due to enlarged lymph nodes compressing the larynx or windpipe,











STRANGLES
S. EQUI
GUTTURAL POUCH
INVOLVEMENT

Abscesses in the lymph nodes will mature and rupture, draining a creamy pus.





Treatment

1. **Systemic treatment:** As with many streptococcal infections, penicillin or penicillin-derivative antibiotics are the most effective treatments.

- Procaine penicillin (22000 IU/ Kg, iv, every 6 hours).
- Tetracycline (6.6 mg/ Kg.iv, every 12-24 hour).
- Sulfonamide-trimethoprim combination (15-30mg/Kg, orally or iv, every 12 hours).

2. Local treatment of infected lymph nodes

- Warm packs are used to mature the unbursed, immature abscesses; so making it less painful and more comfortable for the horse itself; once the abscesses have been matured they must be kept clean to prevent further infections. This treatment for *S.equi* only helps to reduce pain for the horse rather than curing the infection.

- Burst abscesses are cleaned and disinfected with diluted povidone-iodine solution to disinfect the open hole, flushing the inside with a syringe tipped with a teat cannula, followed by gentle scrubbing to keep the surrounding area clean.

Draining a swollen lymph node





Complications

The horse may become a chronic carrier of the disease,

- These carriers can be detected either by culture or by detection of *S. equi* DNA using the polymerase chain reaction (PCR) test. PCR is a more sensitive test but also is currently more expensive.

- Asphyxia due to enlarged lymph nodes compressing the larynx or windpipe,
- The average length for the course of this disease is 23 days.

Complications of Strangles

The main and often fatal complications of strangles are:

- Bastard strangles, (spreading to other areas of the body),

Purpura haemorrhagica

- which is an immune-mediated acute inflammation of peripheral blood vessels that occurs within 4 weeks of strangles, while the animal is convalescing. It results from the formation of immune complexes between the horse's antibodies and bacterial components. These immune complexes become trapped in capillaries where they cause inflammation, visible in the mucous membranes as pinpoint haemorrhages. These haemorrhages lead to a widespread severe edema of the head, limbs, and other parts of the body. Purpura can also be a complication of routine vaccination

- Guttural pouch empyaema (filled with pus), which may be concurrent with classic strangles, or follow in the immediate convalescent period. Persistent infection in the guttural pouch may lead to inspissation (drying) of pus and, in some cases, the formation of a solid, stone-like, concretion called a chondroid. Animals that have persistent infection of the guttural pouches become the carriers, the major source of infection to spark outbreaks in susceptible horses with which they are mixed.

- The 2 guttural pouches are large mucous sacs; each is a ventral diverticulum of the Eustachian tube. They are present only in Equidae and are situated between the base of the cranium dorsally and the pharynx ventrally. They open into the nasal pharynx and each has a capacity of about 300 mL.

- Purulent cellulitis (inflammation of the subcutaneous tissue), which is an unusual occurrence where infection spreads locally in the subcutaneous tissue to the head.



- **Bacterial shedding:** Apart from the problem of long-term guttural pouch carriers; recovered horses may shed *S. equi* from their nose and in their saliva for up to 6 weeks following infection. Therefore, isolate all horses that have had strangles from susceptible animals for 6 weeks following infection.

Prevention

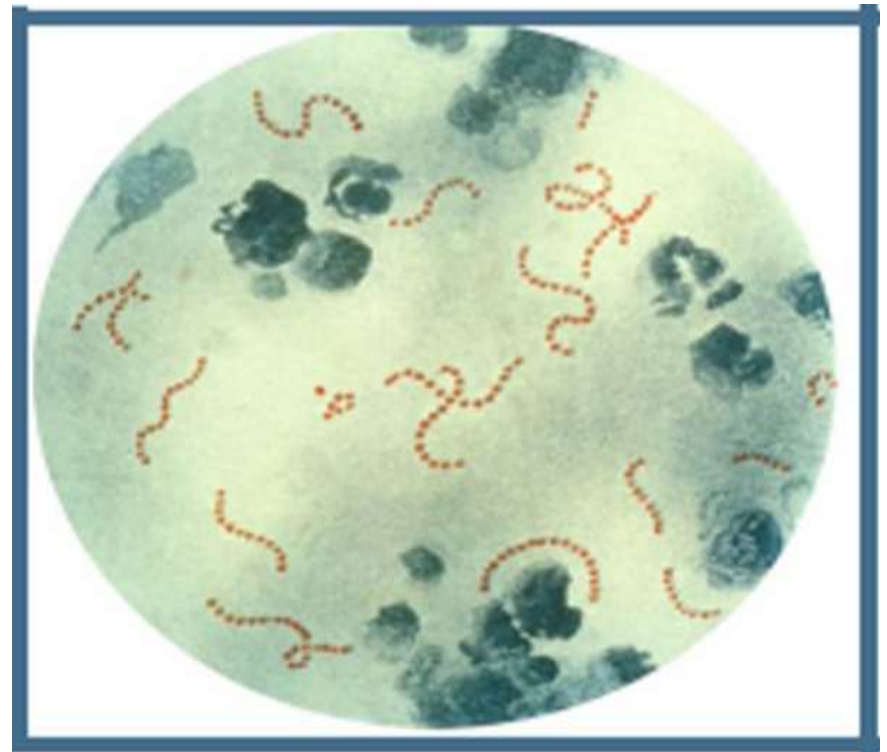
- Both intramuscular and intranasal vaccines are available. Both a killed and a live vaccine are available.
- Isolation of new horses for 4 to 6 weeks,
- immediate isolation of infected horses, and disinfection of stalls, water buckets, feed troughs, and other equipment will help prevent the spread of strangles.
- As with any contagious disease, handwashing is a simple and effective tool.

Immunity

- Immunity is short lived and incomplete. In fact 25% of horses infected with strangles do not appear to develop immunity. This makes it very difficult for a vaccine to provide complete protection and it is not claimed that the vaccine is an absolute preventative. However, field experience has shown that vaccination can control the disease by reducing the degree of clinical disease and reducing the number of horses affected.

Diagnosis:

- Direct primary Gram stained pus smear examination yields large number of
- Gram positive
- chains of
- streptococci





- Diagnosis is confirmed by bacterial culture of exudate from abscesses or nasal swab samples



- CBC reveals neutrophilic leukocytosis and hyperfibrinogenaemia.
- Complicated cases may require endoscopic examination of the upper respiratory tract (including the guttural pouches), ultrasonographic examination of the retropharyngeal area,

Thank you for listening

