STRANGLERS

Epidemiology and control

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Strangles in horses

- The most important contagious equine disease worldwide
- Infection with the bacterium *Streptococcus equi*
- Respiratory obstruction gives the disease its name
- Infection rates up to 100%
- Case fatality rates up to 10% reported in some outbreaks
Is strangles on the increase?
Respiratory Disease in Africa?

Respiratory disease is important

Ethiopia – 250 horse taxi owners 48% reported respiratory disease

Mid Rift Valley - 79% horse cart owners reported respiratory disease as a major constraint

Andy Stringer - Liverpool
Strangles in Africa?

Little data recorded

Hot dry countries may be less of an issue?
(Big problem in Ethiopia?)

Lesotho – serological evidence suggests 10%

Melissa UpJohn – RVC
Strep equi

Beta haemolytic streptococci

Gram +ve

Lancefield group C

Pyogenic streptococci
Clinical signs of strangles

• Marked ‘snotty’ nasal discharge
• Fever, loss of appetite & depression
• Lymph node abscessation
  – submandibular, parotid, retropharyngeal
• +/- cough, ocular discharge, conjunctivitis
LYMPH NODES OF PAROTID, MANDIBULAR, AND RETROPHARYNGEAL LYMPHOCENTRES AND CRANIAL PART OF DEEP CERVICAL LYMPHOCENTRE OF HORSE'S HEAD.
Complications of strangles

‘Bastard’ strangles
• Abscessation of lymph nodes & organs beyond the head
• Signs often non-specific
• A cause of ‘strangles’ death

Purpura haemorrhagica
• Immune-mediated disease
• Bleeding and swelling
• Frequently fatal when severe
Transmission of *S. equi*

Spread from obviously *sick* horses

- Direct & indirect transmission possible
  - Direct horse to horse contact
  - Shared housing, water & feed utensils
  - Tack, equipment, etc
  - Personnel incl. veterinary surgeon

- Management & hygiene important
The hidden threat

Spread from outwardly healthy horses

• incubating disease
  – go on to develop clinical signs

• recent convalescents
  – 4-6 weeks after signs have cleared

• long-term, healthy carriers
  – infectious for months or years
  – usually have infected guttural pouch
“Strangles occasionally breaks out in stables which have had no recent arrivals & where there has been no contact with infected horses.

An example of this is where remounts have finished their training, are transferred to the squadron stables, & one or two of them will develop the disease.”
Development of the carrier state

Lymph nodes of parotid, mandibular, and retropharyngeal lymphocentres and cranial part of deep cervical lymphocentre of horse's head.
Guttural pouch drainage

Pharyngeal opening

Head raised
Guttural pouch drainage

Pharyngeal opening

Head raised

Head lowered
Guttural pouch drainage

Pharyngeal opening

Head raised

Head lowered
Diagnosis

• Clinical signs
• Temperature
• Bacterial culture
• PCR (Animal Health Trust)
Correct use of swabs
Diagnosis of Carriers

3 NP swabs in a two week period

Endoscopy and flushing of the guttural pouches
Why do some horses become carriers???

- Immuno-competence of horse
- Genetic component
- Severity of clinical signs
- Prior exposure to *S. equi*
- Inter-current disease / malnutrition
- Use of antibiotics
- Management of horses
Adaptation of *S. equi* in carriers

- *S. equi* may persist in the guttural pouch for up to several years

- Sub-clinical inflammation of the guttural pouch epithelium is associated with the presence of chondroids

- May lead to mutations in *S. equi*

The SeM protein

- Region found to be deleted in 24% of strains causing persistent infections (Chanter et al., 2000)

- Therefore, the SeM gene is **NOT** a good PCR target
• *S. equi* shares over 96% identity with the common equine bacterium *S. zooepidemicus*
Strangles PCR at the AHT

• Targets a gene unique to *S. equi*, which encodes an intracellular enzyme.

• In 2006/2007, of over 700 *S. equi* culture +ve samples all were PCR +ve.

• Can detect *S. equi* in the presence of large numbers of contaminating bacteria.

• Improved sensitivity over culture.
The new ‘real-time’ strangles PCR

• Exploits the same validated gene target as used in the existing PCR test.

• Improved sensitivity – down to 1 DNA copy.

• Faster sample turnaround.
Serology
(AHT – 2008)
Identifies exposed horses
1) Currently infected
2) Previously infected but now immune
3) Previously infected and still infected (carriers)
Serology

Identifies how far the infection has spread

Identifies potential sources of new infections
Treatment of strangles

• Adequate rest
• Anti-inflammatories (bute)
• Hot compresses
• Lancing and flushing abscesses
• Fluids / Soft feeds
• Antibiotics
Endoscopy and treatment of carriers

- Physical removal of chondroids.
- Penicillin gel administered into guttural pouches.
- Systemic antibiotics for 2 to 4 weeks.
- Repeat endoscopy and lavage to confirm infection free status.
Control of an outbreak

NO
UNAUTHORISED
ENTRY INTO
STABLE YARD
Isolation

- Disinfect or change clothes and footwear
- Dispose of bedding, food, water carefully
- Double bag disposable clothes
- Use approved disinfectant e.g. iodine / chlorine based
Vaccination
Control in Africa

Avoid unnecessary contact at markets (Animals or people)

Avoid sharing tack (head collars / bits)
Control in Africa

Avoid water troughs / holes – use stand pipe and own bucket if possible

Isolate new arrivals (2 to 3 weeks)

Minimise exposure to young or sick animals
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Strategy to eradicate and prevent strangles (STEPS)