

Strangles in New Zealand

Strangles is a contagious disease of horses caused by the bacterium *Streptococcus equi* subsp. *equi* (referred to as *S. equi* in the text). This bacterium may also cause genital infections and mastitis in horses. The disease exists throughout New Zealand and is likely to have been present since horses were first introduced. The prolonged course, extended recovery period and the associated serious complications make this disease economically important to the horse industry.

Following an incubation period of 3-to-14 days, the affected horses develop depression, anorexia and pyrexia. This is followed by the development of a productive cough, a serous oculonasal discharge which rapidly becomes purulent and the enlargement of submandibular and/or retro-pharyngeal lymph nodes. Abscesses in these lymph nodes enlarge and become painful and may cause respiratory difficulty. In most cases the abscesses will rupture in approximately 7 to 14 days after the onset of clinical signs. Depending on where the ruptured abscesses drain there may be either a copious mucopurulent nasal discharge or distension of the guttural pouch.^(1,2) Morbidity can approach 100% in susceptible populations but the mortality is generally less than 3%.⁽³⁾

The complications of strangles include guttural pouch empyema, purpura haemorrhagica, upper respiratory tract obstruction, pneumonia or pleuropneumonia, agalactia, mesenteric lymph node abscessation, periorbital abscessation, and death. Deaths are usually attributed to the upper respiratory tract obstruction or pneumonia.^(1,2,4,5)

Epidemiology

S. equi is highly host adapted to Equidae and causes diseases only in horses, donkeys and mules.⁽¹⁾ It is transmitted either directly by contact with mucopurulent discharges from infected horses or indirectly through contaminated food, water or fomites. The organism is be-

lieved not to survive for long periods in the environment although contaminated premises may harbour the organism for up to a year.⁽⁶⁾ Affected horses may shed bacteria for more than 1 month following the resolution of clinical signs. There is evidence of a chronic carrier state in some convalescent animals. In one instance, *S. equi* was isolated intermittently from nasal and pharyngeal swabs of a mare for a period of 10 months⁽⁷⁾ and in another case *S. equi* was isolated from the guttural pouch in a pony 15 months after it was first diagnosed. The authors speculated that the guttural pouch may be the site for persistent infection.⁽⁸⁾

Because *S. equi* is so strongly host associated, its transmission and the frequency and severity of outbreaks are dependent on the movement, population density and susceptibility of the horses involved. Horses of all ages may be affected. The disease is most common and severe in young horses.

Diagnosis

Diagnosis of strangles is based on the presence of typical clinical signs and confirmed by the isolation of *S. equi* from either nasal or lymph node discharge. It may be necessary to swab on more than one occasion to confirm the diagnosis. One study reported that lymph node swab specimens were culture positive approximately 50% of the time in contrast to nasal and pharyngeal swabs which were culture positive only 24% of the time.⁽²⁾

S. equi belongs to Lancefield group C and other members of this group, *S. equi* subsp. *zooepidemicus* and *S. equisimilis*, are also common upper respiratory tract commensals of the horse. Either or both of these latter two organisms may also be isolated from open strangles lesions where they are presumed to be secondary invaders. The laboratory differentiation of these three bacteria is traditionally based on the fermentation of lactose, sorbitol and trehalose. *S. equi* usually

fails to ferment any of these sugars. Occasionally atypical isolates of *S. equi* which have different colonial appearance and may ferment one or both of the sugars lactose and trehalose are isolated. It is recommended that these organisms should be examined for ribose fermentation to prevent misidentification.⁽⁹⁾

Isolates of *S. equi* are identified in laboratories throughout New Zealand (see Table I). Data from the Auckland laboratory were not available for the period included in the table. However, there have been recent isolates in that region. It is not known what percentage of affected horses have samples sent to the laboratory for confirmation. The prevalence of disease will be higher than the figures given in the table.

Treatment

Procaine penicillin G is the antibiotic of choice and is most effective during the earliest signs of infection before abscessation of lymph nodes is apparent. Once abscesses have formed the use of antibiotics should be restricted to those animals where the disease appears life threatening. The affected horse should be isolated, kept warm and dry, and offered soft palatable feed stuffs. Other therapies that can be used are to aid the development and draining of the abscesses. In the minority of cases where complications arise therapy should be directed towards the specific problems that have developed.^(2,3)

Prevention

To prevent the introduction of strangles onto a property it is recommended that incoming horses be quarantined for a minimum of 2 weeks. Any animals exhibiting early signs of respiratory disease should be isolated and swabs taken to check for the presence of *S. equi*. Strict sanitation procedures, the separation of different age groups of horses and the reduction of movements of horses onto and off the property are also procedures that should be utilised. In the face of an outbreak, the isolation of infected animals and strict sanitation becomes more important. Susceptible horses should be monitored daily for any evidence of pyrexia, inappetance or nasal discharge. Vaccination can be used but, to be effective, must be part of a preventive program and not the sole means of trying to prevent the disease.^(1,3)

Vaccination

Two vaccines are licensed for use in New Zealand. These are *Equivac* produced by CSL and *Equibac 2* produced by Fort Dodge. The companies marketing these vaccines estimate that approximately 8,000 horses are vaccinated annually. This probably represents about 8% of the

Table I: Isolates of *Streptococcus equi* recorded in four MAF Animal Health Laboratories since 1989.

Lab	19891	1990	1991	1992	1993	Total
Rua	40	28	25	30	24	147
PN	Un	Un	Un	5*	5	-
Ln	0	9	5	7	2	23
Iv	10	7	6	7	4	34
Total	50	44	36	49	35	

* 6 months records only

Un = Unavailable
Rua = Ruakura
PN = Palmerston North
Ln = Lincoln
Iv = Invermay

racine and recreational horses in New Zealand.

As strangles is primarily a disease of respiratory mucosa the level of local immunity will determine the amount of protection against infection or reinfection which can occur. Following natural infection, serum antibody levels to *S. equi* begin to wane within a few months. However, clinically, the resistance appears to last much longer.⁽³⁾ Approximately 75% of horses develop solid immunity to strangles following recovery from disease. Vaccination has been found to reduce the clinical attack rate by about 50% in vaccinated animals compared with non-vaccinated animals.⁽¹⁾

Vaccination may produce some adverse reactions. These include abscess formation at the injection site, muscle soreness and occasionally the onset of purpura haemorrhagica.⁽³⁾ The use of vaccine must always be incorporated within a good management program. It is also important to ensure that the susceptible animals are all adequately vaccinated prior to any period of time when

they are likely to be exposed to infected or possible carrier animals.

An updated booklet on strangles edited by Dr Brian Goulden is about to be published and distributed to veterinarians by Commonwealth Serum Laboratories, P O Box 30672, Lower Hutt, New Zealand.

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