Research Journal of Biological Sciences 3 (10): 1137-1139, 2008
ISSN: 1815-8846

Determination of Prevalence of Strangles in Saudi Arabia

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Abstract: Strangles is one of the most important infectious diseases that affect the respiratory system of the horse. The disease is characterized by fever, nasal discharges and enlargement of the associated lymph nodes. *Strptococcus equi* the causative agent of strangles, is a Gram positive bacteria. The goal of this study is to determine the prevalence of strangles among horses residing on horse farms in main regions of the Kingdom of Saudi Arabia. To achieve this goal, field visits were made to horse farms in Al-Ahsa, Dammam, Jubail, Riyadh, Jeddah and Tayf. A total of 75 farms that contain 926 horses were visited. Farm owners and managers were questioned regarding the presence of signs similar to strangles. In the meantime, horses were clinically evaluated. This survey indicated no horses were strangles confirmed. Finally, 35 horses admitted to the Veterinary Teaching Hospital at King Faisal University were examined. These horses were admitted for signs of respiratory disorders. Physical and endoscopic examination as well as bacterial culture indicated they were strangles free. Strangles seems not to be a threat to horses in Saudi Arabia.

Key words: Prevalence of strangles, infectious disease, bacteria, horses, *Strptococcus equi*

INTRODUCTION

Strangles a highly contagious disease of horses that is manifested by respiratory signs such as fever, nasal discharges and inflammation of lymph nodes in the head region. The diseases is caused by *Streptococcus equi* which is a gram-positive, ovoid or spherical in shape, a member of Lancefield group *C. streptococcus* (Hardie, 1986). The disease is widely distributed around the world according to the Equine Disease Quarterly (2008). Numerous outbreaks were reported from Sweden and Switzerland. In addition, cases were reported from Argentina and the United Kingdom. Equidea is the only animal group affected by *S. equi*. The large distribution of horses around the world makes the disease world wide in distribution (Rossdale and Ricketts, 1974; Handerson, 1983). Foals less than 6 months are more susceptible to the disease due to the lack of acquired immunity (Fallon, 1969). However, any age animal can be affected unless a vaccination program has been used or previously exposure has occurred. Inhalation and ingestion are the most common route of infection. The disease can be transmitted via direct oral or nasal contact or by the aerosal route. It also can be transmitted by indirect contact through transfer of purulent discharge in feed, water, water bucket, bedding, handlers, flies, veterinarians and other animals.

The morbidity rate may reach 100%. However, the mortality rate is low usually and does not exceed 10%. Long term carriage of *S. equi* may occur if the organism remains in the guttural pouch (Newton *et al*., 1997). Clinical manifestation includes elevated body temperature of more than 40°C, depression, anorexia and restlessness (Sweeney, 2002). Nasal discharge is serous in the beginning but becomes mucopurulent and eventually purulent. The intermandibular region is painful with some swallowing difficulties and head extension due to lymphadinitis of regional lymph nodes. Local edema may develop. External rupture of affected lymph nodes may occur in 1-2 weeks as well as internal rupture of lymph nodes into the pharynx. Additional complications are guttural pouch empyema that might result in chronic nasal discharges or acute severe upper airway obstruction, Horner´s Syndrome purpura hemorrhagica and spread of the infection to the lungs, liver, kidney, brain and mesenteric mediastinal, periorbital and perivertebral lymph nodes leading to signs due to involvement of these lymph nodes and organs may then occur (Al-Ghamdi, 2006).

Very little information regarding strangles in the Kingdom of Saudi Arabia is available. The aim of this study is to determine the prevalence of strangles among horses in the Kingdom of Saudi Arabia.

MATERIALS AND METHODS

Seventy five horse farms located in Al-Ahsa, Dammam, Jubail, Riyadh, Jeddah and Al-Tayf were included in this study. A survey investigation of signs of

strangles such as fever, depression, nasal secretion, enlargement of area under the mandibles and the upper neck region was conducted with the owners. In addition, a total number of 926 horses were examined. Examination of horses included complete history taking, physical examination for the presence of signs of depression, nasal secretion, enlargement of lymph nodes in the head and upper neck areas. Finally, guttural pouch wash was performed on 35 cases referred to the Veterinary Teaching Hospital at King Faisal University. These horses were admitted for signs of respiratory disorders. In addition, bacterial culture was performed on the obtained washes.

RESULTS AND DISCUSSION

Detailed history taking failed to detect evidence of strangles among horses over the past two years in 75 horse farms that are located in Al-Ahsa, Dammam, Jubail, Riyadh, Jeddah and Al-Tayf (Table 1). Physical examination of 926 horses showed no signs of depression, nasal secretion, enlargement of lymph nodes in the head and upper neck areas (Table 2). Results of bacteriological swabs obtained from 35 horses admitted to the Veterinary Teaching Hospital at King Faisal University also failed to grow *S. equi*.

History taking included careful questioning of owners on important signs that are highly indicative of strangles including fever, depression, nasal secretion, enlargement of area under the mandibles and the upper neck region. None of these signs were described by owners. The horse owners were closely associated with their horses and very sharp on observing changes that impact the health of their horses. Having said that other diseases may mimic strangles, however the epidemiologic nature of the disease and performing the appropriate testing should clear any misdiagnosis.

Table 1: Horse farms investigated in various regions of Saudi Arabia

Region	Number of farms
Al-Ahsa	34
Al-Dammam	8
Jeddah	5
Jubail	6
Al-Riyadh	19
Al-Tayf	3
Total	75

Table 2: Horses examined in various regions of Saudi Arabia

Region	Number of horses
Al-Ahsa	267
Al-Dammam	85
Jeddah	126
Jubail	16
Al-Riyadh	359
Al-Tayf	73
Total	926

Examination of the horses for the main changes that indicates strangles should provide reliable data on the existence of the disease. The morbidity rate of strangles ranges between 30-100% and therefore taking in consideration an average of 50% morbidity rate a minimum of 300 animals should be examined in order to be at least 90% confident. In this study, 926 horses residing various farms that are spread over the country were examined. Such geographic distribution should provide reliable information on the existence of the disease. During an outbreak of a respiratory disease that was characterized by high morbidity, poor performance, nasal secretion and cough, serologic examination revealed a EHV (Al-Ghamdi and Al-Naeem, unpublished data).

Finally, detailed examination of horses referred to the veterinary teaching hospital may determine the prevalence of the disease in a limited group of animals but it provides the opportunity to use additional testing such as endoscope. The failure to detect the disease among the examined group is in agreement with previous work that detected no *S. equi* organism in foals suffering from guttural pouch empymea even with massive nasal secretion (Al-Ghamdi, 2006). These approaches should detect horses carrying the infection for up to three years as previously mentioned (Newton, 1997). Therefore, a wide spectrum of the epidemic, with respect to the time, of the disease has been evaluated.

Failure to detect strangles might be surprising since the disease has been reported in the United Arab Emirates, however it involved quarantined horses arriving for horse events (Wrenery, Personal communication). In addition, it seems that there is geographic predisposing factor in the distribution of the strangles around the world (Timoney, Personal Communication). Having said that, the importance of this work focuses on the fact that vaccines against strangles are mostly based on live modified organisms (Kelly *et al*., 2006). This implies that such vaccines should be allowed in areas in which the disease has not been documented. In addition further serologic work may be required to validate these findings.

ACKNOWLEDGMENT

This study was supported by King Abdul Aziz City for Sciences and Technology (At -25-29).

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