Epidemiological Study on Gastrointestinal Parasites in Horses in Al-Ahsa and Al-Dammam Governorates

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دراسة وبحثية على طفيلييات الجهاز الهضمي في الخيول

بمحافظتي الأحساء والدماه

إعداد
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الخلاصة

انجزت هذه الدراسة الوبائية لتقدير انتشار طفيليات الجهاز الهضمي الأكثر شيوعًا في الخيول بالمنطقة الشرقية للملكة العربية السعودية، بالإضافة إلى عمل تقدير كمي لعوامل الخطورة المرتبطة بهذه الإصابات الطفيلية في الخيول.

تم جمع 302 عينة براز من مجموع 61 مزرعة متموضعة في كل من محافظتي الاحساء والدمام، تم جمع المعلومات الوبائية لكل قطيع، وكل عينة في اوراق الاستبيان الخاصة بهذه الدراسة، والتي اشتملت على كل من العمر، الجنس، والسلالة، لكل حيوان بالاضافة إلى كمية الاحساس الاحداثي داخل تلك المزارع، التي خضعت للدراسة واحراز الحالة الصحية لكل الحيوانات.

من جهة أخرى تم رصد عدد من الحيوانات (77 حي) خلال فترتي الصيف والشتاء للاحضار أي تغيرات قد تطرأ على إصابة هذه الحيوانات بطفيليات الجهاز الهضمي.

كل عينة براز خضعت للفحص العيني للاحضار أي تغيرات في الشكل، القوام، اللون، وتدوين هذه الملاحظات، من ناحية أخرى، كل عينة من هذه العينات خضعت للفحص ثلاث تقييمات مختلفة وهي: الفحص المباشر، تقنية التدوين وتقنية التصوير بالإضافة إلى استخدام شريحة عد البيوض، كما استخدم جهاز قياس الابعاد لتأكيد تشخيص الطفيليات.

كان انتشار الطفيليات ومتوسط عدد البيوس والآكياس (الطفيليات احادية الخلية) لكل جرام من البراز Dictyocaulus arnfieldi Caldwell%12.85 Parascaris equorum كالتالي: طفيل Parascaris equorum (71 بضة/جرام)، Oxyuris equi %1.32 Strongyles-type ova (99 بضة/جرام)، Eimeria %3.33 (99 بضة/جرام)، Trichromonas equi (66 حي/كيسة) و Parascaris equorum /cyst (6) %3.33 leukarti.

تم تحليل عوامل الخطورة لكل طفيل حيث أظهر كلا من الجنس (0.04 (0.001) بالاـ. العمر (0.001) والاعراض السريرية (0.01) بالإضافة إلى فترة العلاج (0.022) و منطقة الدراسة اهمية مع طفيل Parascaris equorum (0.023) بالإضافة إلى عدد العيادات (0.022) و شكل العلاج. كما اظهر ل طفيل Parascaris equorum (0.023) اهمية مع طفيل Parascaris equorum (0.023) بالإضافة إلى عدد السريرية (0.012) و شكل العلاج. كما اظهر ل طفيل Parascaris equorum (0.023) اهمية مع طفيل Parascaris equorum (0.023) بالإضافة إلى عدد العيادات (0.022) و شكل العلاج.

الاستنتاجات والتوصيات.
An epidemiological study was conducted to investigate the prevalence of the most common gastrointestinal parasites in horses in the Eastern Province of the Kingdom Saudi Arabia, as well as investigating risk factors associated with parasitic infections in horses. Fecal samples were collected from 302 horses in 61 herds located in Al-Ahsa and Al-Dammam governorates using purposive sampling. Epidemiological data were recorded in questionnaire sheets and included age, sex, breed, season, management and health condition of the animals.

Repeated check to investigate the gastrointestinal parasites in the feces was achieved through making two visits for horses herds in each farm. One visit was made in the warm season and another in the cold season. About 62% of the horses were available as repeats. Each sample was tested using direct smear, flotation and sedimentation techniques. McMaster slide was also used for parasitic count. Micrometry using a graticule was performed for measuring ova and larvae.

The prevalence of Parascaris equorum was the highest followed by other nematodes (12.58%) and the number of ova per gram of feces was (971.0 ova / g). Risk factors such as sex, age and symptoms were highly significant (p<0.004, p<0.001 and p<0.001) respectively. The treatment period and district were significant (p<0.022 and p<0.023) respectively with the occurrence of Parascaris equorum. Prevalences and ova count for Dictyocaulus arnfieldi, strongyles-type ova, Oxyuris equi were 2.32% (114.0 ova / g), 1.32% (99.0 ova / g) and 0.33% (99.0 ova / g) respectively.
 Anthelmintics were highly significant (p<0.002) and the treatment period was significant (p<0.012) with the occurrence of *Dictyocaulus arnfieldi*. Both anthelmintics and symptoms were highly significant (p<0.001) with the occurrence of strongyles while the season was only significant (p<0.021). The prevalence of *Tritrichomonas equi* was 13.58% and the mean number of cyst per field was (6.0). The season factor was found significant (p<0.008) with the occurrence of *Tritrichomonas equi*. The prevalence of *Eimeria leuckarti* was found to be 0.33%, while the number of oocysts per gram of feces was 99.0.
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DEDICATION

This thesis is dedicated to my family (my father, mother, wife and kids: Shahad and Aya) brothers and sisters with all my best love and appreciation.
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CHAPTER 1
INTRODUCTION

The number of horses in the Kingdom of Saudi Arabia is growing rapidly. In 1997, there were about 13,000 registered horses according to the Department of Studies, Planning and Statistics at the Ministry of Agriculture. This number reached over 22,000 by the year of 2007 (Department of studies, Planning and Statistics, Ministry of agriculture, 2007). The use of horses varies between racing, endurance, pleasure riding and showing (Al-Ghamdi, 2008). Inadequacy in performance of horses as well as ill-thriftiness, weight loss, anorexia and anemia are consequences of infections with gastrointestinal parasites (Kassai, 1999; Rodostitis et al., 2000; Koudela and Bodecek, 2006). However, less data is available in Saudi Arabia on equine diseases particularly parasites. Therefore, understanding of the parasitological problems and appropriate prevention methods is extremely important to equine practitioners and horse owners.

Gastrointestinal parasites cause clinically and economically serious health problems in horses. They mainly affect the digestive system however respiratory system and other organs may be affected as well. Economical impact of these parasites is evident on many fronts including direct impact on horse health, poor performance, cost of treatment, cost of prevention and labor work (MacAllister and Freeman, 2006).

Many types of gastrointestinal parasites are capable of infecting horses; however, few parasites are known to cause significant health problems. The primary class of gastrointestinal parasites that causes health problems in horses are nematodes. This includes the large and small strongyles, the ascarid
*Parascaris equorum* (in foals), the pinworm *Oxyuris equi* and the lungworm *Dictyocaulus arnfieldi* as well as cestodes which include the *Anoplocephala perfoliata* (Love *et al*., 1999). Many of the protozoan parasitic infections may infect horses. *Tritrichomonas equi* is considered one of the most common parasitic infections which is found in the large intestine of the horses and can be a potential cause of diarrhea in foals (Mair *et al*., 2002; Lun *et al*., 2005).

The aims and objectives of this study lie into two folds; firstly, determining the prevalence of most common gastrointestinal parasites in horses residing farms located in the Eastern Province of Saudi Arabia using concentration techniques and secondly, examining risk factors including age, sex, breed, management and health conditions that may contribute to the spreading of parasites.