SHORT COMMUNICATION

PARASCARIS EQUORUM IN A THOROUGHBRED HORSE IN PERAK TURF CLUB

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ABSTRACT. In the Malaysian environment horses are primarily used in sports activities such as racing, endurance, dressage and show jumping as well as in recreational pursuits and police work. Recently, the Perak Turf Club witnessed the death of a four-year-old thoroughbred mare which was given enrofloxacin injection as treatment and was regularly dewormed and vaccinated against equine influenza, Japanese encephalitis and tetanus. Post-mortem examination of intestinal contents revealed presence of worms. The sample was then sent to the Veterinary Research Institute (VRI), Perak for morphological identification of the worm. The worm was identified as *Parascaris equorum*. Thus, awareness on gastrointestinal parasites should be raised especially by recommending improved management practices such as proper manure disposal and deworming procedures to control parasite infestations as well as good management and nutrition.

METHOD AND RESULTS

Parascaris equorum is a nematode parasite with world-wide distribution under the group of Ascaridoidea. It occurs mainly in the small intestine of yearlings or foals. The incubation period of the parasite is about 10-15 weeks. (Lindgren *et al.,* 2007*)*

Parascaris equorum has a direct life cycle in which the transmission occurs through faecal oral route. Eggs laid by the female adult ascarids in the intestine are passed into the environment through the faeces of infected horses. The infective third stage larvae develop within 10 days in the environment under optimum conditions in which the temperature ranges from 25 °C to 35 °C. The L3 stage could survive in the environment for 5 to 10 years. Upon ingestion of L3, the larvae colonise in the gastrointestinal tract of the host primarily in small intestine and migrate to the liver and lungs. Within 1 month, the larvae develop into fourth stage larvae upon returning to the small intestine. The adult worms achieve patency about 75 to 80 days after infection by progressively maturing in small intestine. Most horses acquire immunity in early years of life as the rare nematode induces absolute acquired immunity. In horses over 2 years of age, patent infections are rarely diagnosed (Reinemeyer, 2009).

Clinical signs and pathogenicity of *Parascaris equorum* infection ranges from moderate to highly pathogenic (Boyle and Houston, 2006). In infected

Figure 1. Morphological identification of *Parascaris equorum* (Photos by Premaalatha B.)

Figure 2. Full image of *Parascaris equorum* (length 20.3 cm)

horses, the clinical signs include coughing, nasal discharge, anorexia, lethargy, decreased growth and rough hair coat (Lind and Christenson, 2009). According to Reinemeyer (2009), *Parascaris equorum* infection also could cause enteritis and colic resulting in death sequel to perforation or gastrointestinal impaction.

The worm can be identified morphologically from the small intestines. It is a very large, white nematode that can range from 15 cm to 28 cm in length for males and 40 cm to 50 cm in females (Taylor *et al.*, 2005). Please see Figures 1 and 2. The anterior part of the adult worm has a simple mouth opening with three prominent lips which comprises of one dorsal and two subventral lips surrounding a stoma. In lateral view, the lips appear to be in the shape of a spade. Denticles are present in single rows at the inner surface of lip. At the posterior, the male worm possesses a relatively longer tail with a small button-like termination and has a small caudal alae. Females have a slit in the tail region (Snyder, 1985).

The laboratory identification of *Parascaris equorum* from faecal samples collected from horse stables is through simple faecal floatation. The eggs are dark brown with a thick shell. Methods such as the McMaster technique provide quantitative measures of the infection. However, there is no correlation proven with the number of eggs shed in faeces and the degree of worm burden. To determine the resistance level of the worms towards specific dewormers, the fecal egg count reduction test (FECRT) can be used (Reinemeyer, 2009). In this case, although treatment was given and

the horse was well taken care in terms of nutrition and hygiene of stables, the worm was found in the intestines, which could be due to resistance of worm to the given drug or a reduced dose which did not kill off all the worms.

DISCUSSION

Treatment for *Parascaris equorum* infection was primarily drugs of the macrocyclic lactones group such as Ivermectin and moxidectin. From surveys, the initial clinical evidence of failure of ivermectin or moxidectin to reduce ascarid eggs upon administration indicates macrocyclic lactone resistance. Multiple factors were discussed such as over usage of antihelminthics in breeder farms, the wide range of difference in effective dosage and recommended dosage for hardy parasites like *Parascaris equorum*, the higher prevalence of resistant ascarids in stables leading to transmission among facilities, and the pharmokinetics of the drug itself persisting for longer time in plasma leading to lower dose exposure to new infections (Reinemeyer, 2009). Other factors such as gender, hygiene, quality of feed and hot weather were found to be contributing to the ascarid infection (Al-Emarah *et al.,* 2008). Pyrantel embonate and fenbendazole are currently successful and effective against treatment for the ascarid (Lind and Christenson, 2009).

In order to reduce costs on treatment, efficient prevention and control measures need to be taken to overcome *Parascaris equorum* infection. Primary control measures that could be taken include improving the management of working horses, proper education to owners about negative effect of worms in horses and having effective deworming schedule (Khan *et al*., 2017). Awareness on the importance of resistance of common worms to drugs used regularly for deworming needs to be heightened. Regular screening for worm eggs by sending faecal samples for laboratory diagnosis is crucial to prevent an increasing load of parasites in the animal.

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