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**PREVALENCE AND QUANTITATIVE FAECAL ANALYSIS OF EQUINE GASTROINTESTINAL NEMATODOSIS IN MAIDUGURI, NIGERIA****<sup>1\*</sup> Biu, A.A., <sup>2</sup> Olatunde, K.T., <sup>3</sup> Konto, M. <sup>4</sup> Paul, B.T., and <sup>5</sup> Ya'uba, A.M****<sup>1-5</sup> Department of Veterinary Microbiology & Parasitology****University of Maiduguri, Maiduguri, Nigeria****E-mail Address: biuвет@yahoo.com****ABSTRACT**

A study on the prevalence and quantitative faecal analysis of equine nematodes was conducted in Maiduguri. A total of 153 faecal samples were examined, and 35(23.1%) prevalence was recorded, revealing 33(22.8%) and 02(28.6%) for male and female horses ( $p < 0.05$ ); 3-10 year horses had 15(45.5%), 11-21 year horses had 18(17.3%) and 22-35 year horses had 02(13.3%) ( $p < 0.05$ ). For body coat colour, brown horses had 08(28.6%), black horses had 05(26.3%), white horses had 0(0%), brown white horses had 09(18.4%) and black white horses had 13(25.0%) ( $p > 0.05$ ). Intensively managed horses had 24(20.3%) while semi intensive horses had 11(32.4%) ( $p < 0.05$ ). *Parascaris equorum*, *Strongyle* and *Trichonema* ova were isolated at 17(48.6%), 15(42.9%) and 03(8.6%) prevalence respectively ( $p < 0.05$ ) with a mean  $\pm$  SD (range) egg per gram of faeces (describing the intensity of infection) as  $217.7 \pm 80.9$  (100-500),  $200.0 \pm 106.9$  (100-400) and  $116.7 \pm 57.7$  (100-200) respectively ( $p < 0.05$ ).

**Keywords:** Prevalence, Quantitative analysis, Equine nematodosis, Nigeria.

**INTRODUCTION**

In Borno State, majority of domesticated horses serve as a symbol of prestige especially at traditional durbar festivals, while only the remaining few are used as polo horses or for transport (Biu, *et al.*, 2006). Domesticated equids (horses and donkeys) are hosts to a large variety of gastrointestinal helminthes, of which nematodes of the family *Strongylidae* commonly named *Strongyles* are most important. These helminthes are ubiquitous, and it is hardly possible to find any grazing animal of these equines not harbouring a number of species at any particular time (Imam *et al.*, 2008); and are economically devastating parasites of horses with clinical presentations of unthriftiness, anaemia, colic and diarrhea (Saeed *et al.*, 2010). Studies in different parts of the world have demonstrated a shift in the prevalence of various species of equine parasites (Love, 2003 and Kaplan, 2004) and a thorough understanding of the epidemiology of horses helminthes under local management and climatic conditions will help in devising effective and economically viable parasite control programmes. Large numbers of horses are found in the northeastern region of Nigeria, and coupled with the frequent movement of apparently healthy carriers; there was the need to conduct this study.

**MATERIALS AND METHODS**

**Sample Collection**

Horses were individually restrained with halter fitted to their head and held by an assistant. Dental eruption, wear and Galvayne’s groove appearance pattern were used in the estimation of age as described by Wayne and Melvin (2000). Faecal samples were collected from the rectum of horses into Bijoux bottles and taken to the Veterinary Parasitology Laboratory, University of Maiduguri, Nigeria. A Parasitological investigation of the fresh faeces was conducted using 2 techniques: concentration method of Full Born Willis (Lem., 2012) (floatation in saturated solution of sodium chloride) to identify faecal ova according to Soulsby (1982) and the modified Mac Master (egg count per gram of faeces) method of Jain (2002) to determine the intensity of infection.

Data obtained based on type of ova, sex, age group, body coat colour, and management system of horses were calculated as prevalence (%). The intensity of infection was presented as mean± standard deviation (SD) (range) egg count per gram of faeces. The chi square test and analysis of variance (ANOVA) were used to compare the prevalence and the mean intensity of infection at p< 0.05 significant level (Graph Pad Instat, 2003).

**Results**

The results of this study as shown in Table 1 indicated an overall prevalence of 22.9% with intensity {mean±SD (range) EPG} of infection as 208.6±88.7 (100-500). Sex wise prevalence shows female horses to have an insignificantly higher (p> 0.05) prevalence (28.6%) compared to male (22.8%), while age wise prevalence indicated a significantly higher (p< 0.05) rate in 3-10 year old horses (45.5%) compared to 11-21 and 22-35 year old horses with 17.3% and 13.3% respectively. There was no significant difference (p>0.05) within body coat colour with brown, black, white, brown- white and black-white having 28.6%, 26.3%, 0.0%, 18.4% and 25.0% infestation rates respectively. Based on management system, semi intensive was significantly (32.4%) (p< 0.05) higher than intensive (20.3%). Table 2 shows the prevalence and intensity of parasitic ova isolated with *Parascaris equorum* [(48.6%) (217.7±80.9 (100-500))] significantly higher (p<0.05) than *Strongyles* [(42.9%) (200.0±106.9) (100-400)] and *Trichonema* ova [(8.6%) (166.7±57.7) (100-300)].

**Table 1: Prevalence and intensity of equine nematodosis based on sex, age, body coat and management system.**

	<b>No. of horses examined</b>	<b>No.(%) of horses infected</b>	<b>Intensity of infection Mean ± SD EPG (range)</b>
<b>All horses</b>	152	35(22.9)	208.6±88.7 (100-500)
<b>Sex:</b>			
Male	145	33(22.8)	203.0±91.8 (100-400)
Female	07	02(28.6)	150.0±70.7 (100-200)

<b>Age group (years):</b>		
3-10	33	15(45.5) 340.0±135.2 (400-500)
11-21	104	18(17.3) 150.0±51.5 (100-200)
22-35	15	02(13.3) 150.0±70.0 (50-300)
<b>Body coat colour:</b>		
Brown	28	08(28.6) 200.0±106.9 (100-400)
Black	19	05(26.3) 220.0±61.6 (200-300)
White	04	- -
Brown and white	49	09(18.4) 211.1±105.4 (100-400)
Black and white	52	13(25.0) 207.7±75.9 (200-300)
<b>Management System:</b>		
Intensive	118	24(20.3) 229.2±90.8 (100-400)
Semi- intensive	34	11(32.4) 154.5±68.8 (100-300)

**Table 2: Prevalence and intensity of equine nematodosis in Maiduguri**

<b>Nematode species ova</b>	<b>No. (%) of horses infected (n=35)</b>	<b>Intensity mean ± SD egg per gram of faeces (range)</b>
<i>Parascaris equorum</i>	17 (48.6)	217.7±80.9 (100-500)
<i>Strongyles</i>	15 (42.9)	200.0±106.9 (100-400)
<i>Trichonema</i>	03 (8.6)	166.7±57.7 (100-300)

**DISCUSSION**

This study has revealed an overall prevalence of 23.1% for equine gastrointestinal nematodosis. This is higher than the 15.73% reported by Imam *et al.*, (2008) in south Darfur State of Sudan, but lower than the 87% reported by Slocombe and Mc Craw, (1973) in Ontario, Canada; 78% by Oeleman *et al.*, (1999) in Sweden; 65.51% by Saeed *et al.*, (2010) in Lahore, Pakistan. This also agrees with Lewa *et al.*, (2000) that internal parasitism is an important condition in horses, with a great number seen in the gastrointestinal tract comprising of nematodes mostly and disease is characterized by a severe inflammatory enteropathy affecting the caecum and colon, with symptoms of severe colitis, protein- losing enteropathy, considerable weight loss, diarrhea, subcutaneous oedema, and persistent low grade normocytic or macrocytic anaemia. Also parasitism is a characteristically insidious low-key disease process that may be present but not perceived by the unwary horseman (Lewa *et al.*, 2000; Traversa *et al.*, 2007).

This study has observed an insignificant difference in infection between male and female horses. This agrees with Saeed *et al.*, (2010) that there is no significant difference in sex, but contradicts Lem *et al.*, (2012) who observed female horses were more affected probably due to hormonal changes. Saeed *et al.*, (2010) also reported that risk factors associated with the development of clinical disease included the age of the horse, the season and recent anthelmintic treatment, while Lem *et al.*, (2012) observed that the prevalence and intensity of infection of helminthes is influenced by origin, age and sex of the animals. Age-wise, this study has observed a significantly higher ( $p < 0.05$ ) prevalence amongst 3-10 year old horses compared to older horses of between 22-35 years. This agrees with Slocombe and Mc Craw, (1973); Oeleman *et al.*, (1999); Traversa *et al.*, (2007) that young horses are more susceptible especially those of 2-3 years experiencing severe clinical symptoms of diarrhea, unthriftiness, anaemia, colic and mortality, though all ages are affected, but infection declines with increasing age as adults develop acquired immunity. Based on coat color there was no significant variation ( $p < 0.05$ ) in prevalence. This agrees with Saeed *et al.*, (2010) who observed that only intrinsic and extrinsic epidemiological factors of age, sex, breed, management and climatic conditions and parasite control programmes influenced the prevalence of parasites of domestic animals.

Horses kept under semi intensive management in this study had a significantly higher ( $p < 0.05$ ) prevalence compared to intensive management. This agrees with Konigova *et al.*, (2002) and Love, (2003) that extrinsic factors of management influence the prevalence of equine strongylosis among horse populations especially those exposed to free range grazing. Genera of parasites identified in this study were *Parascaris equorum* with a significantly higher ( $p < 0.05$ ) prevalence compared to *Strongyle* and *Trichonema* species. Many studies have reported widespread occurrence of these parasites in horse populations across the world (Chapman *et al.*, 2002; Boxell *et al.*, 2004, Saeed *et al.*, 2010; Lem *et al.*, 2012). It is suggested that horse owners should use broad spectrum anthelmintics regularly both as prophylactic and curative.

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