Prevalence of Endoparasites of Horses in Jos North and Jos South Local Government Areas of Plateau State Nigeria

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Abstract

Parasitism is the most common and economically devastating disease of horses. The study was therefore conducted to determine the prevalence of endoparasites of horses in Jos metropolis. Blood and fecal samples were collected from 83 horses comprising of 48 males and 35 females, the eighty three horses sampled were the available at the time of sampling. Samples were processed and examined for gastrointestinal and haemoparasites infection. The prevalence was 74.7% for gastrointestinal parasites and 36.1% for haemoparasites infection. Only one horse (1.00%) was found to have gastrointestinal and haemoparasites infection. The prevalence of hemoparasites was found to be higher (43.9%) in females than in males (31.3%). Species of gastrointestinal parasites identified were, Trichonema spp 30 (31.70%), Triodontophorus tenuicollis 35 (55.60%) and Gastrodiscus aegyptiacus 10 (12.70%). Haemoparasites identified were Babesia equi 15 (50.00%), Babesia caballi 14 (46.7 %) and microfilariae 3 (10.0%). The prevalence of the parasites detected in the study were significantly different in sex and location (p>0.05).

Key words: Parasitism, disease, horses, infection.
Introduction

Gastrointestinal and haemoparasites are endoparasites which live and have nourishment in the gastrointestinal tract and blood stream of host preventing the host of its essential nutrient (Rajac and Conboy, 2006). Infestation of gastrointestinal and haemoparasites, result to anemia, malnutrition and increase occurrence of parasitic infection in horses (Urquhart et al., 1996). The round worms are by far the most economically important helminthes of equine (Urquhart et al, 1996).

Haemoparasites are parasites found in the blood and the four most common blood parasites are, Schistosoma species, Trypanosoma species, Plasmodium species and Babesia species (FAO, 1992). Two species of Babesia, the small, B. equi and the large B. caballi may occur in horses and donkeys in America, Africa, Asia and mainland Europe and both are transmitted by a variety of tick species including Dermacentor, Hyalomma and Rhipicephalus (Soulsby, 1982).

Parasitism is the single most important impediment in successful horse rearing all over the world and many species of parasites are found to infect horses (Capewell et al, 2005). Parasitism is the most common and economically devastating disease of horses; clinically infected horses exhibit signs of unthriftness, anemia, colic and idarrhoea (Urquhart et al, 1996). Parasitism has caused a major production losses in equine production, it involve mortality reduction in weight gain, low fertility, etc. (Dunsmore et al, 1985).

Gastrointestinal and haemoparasites have severe and debilitating effects in the health and reproductive success of horses (Swallow, 2000). Parasitic infections are most common and significant health concern due to morbidity and mortality (Francisco et al, 2009). Studies on the prevalence of helminthes of horses in different part of the world have indicated varied prevalence under different management and parasite control system (Montenaro et al, 2002, Champman et al, 2002, Boxell et al, 2004 and Capewell et al, 2005). Nevertheless, intrinsic factors like age and sex are found to affect the strongyle infections (Bucknell et al, 1995). Young horses may carry thousands of parasites and experience severe clinical signs with certain mortality if not treated and mixed specie infections are most commonly found to infect the horses (Boxell et al, 2004).

Many extrinsic factors like (management, climate, and parasite control program) also influence the prevalence of parasites of domestic animals. Higher infection rates and more severe infections of horses indicate lack of immunity in the young horses or lack of good management practice (Ross, 1999). The distribution of some species is inversely related to the age of the study population and many species like Parascaris equorum and Strongylus westeri are only found in foals as compared with mature horses due to development of immunity (Urquhart et al, 1996 and Champman et al, 2002).

On the other hand, horses in Nigeria may be infected with a wide variety of vector-borne haemoparasites (Swallow 2000). The most economically important genera are the Trypanosomes (Trypanosoma vivax, T. brucei), Babesia (Babesia bigemina, B. bovis, B. equi, B. caballi), Anaplasma and Ehrlichia (cowdria), and to a less extend Theileria (Theileria pava and I. veilifera) (Leeflang and Ilemobade, 1977). African animal Trypanosomosis, Babesiosis and Cowdriosis are considered as the most important constraints to sub Saharan Africa (Ajayi et al, 1983, FAO, 1992, Young et al, 1988)

In most countries, there is widespread occurrence of haemoparasites infections in domesticated animals, but dramatic and obvious effects of clinical parasitism are less often seen (Champongchan et al, 1988). More seriously, worms are the major cause of colic, which is the single largest cause of mortality in horses (Young et al, 1988). Internal parasites, especially intestinal ones, can damage tissue and when sedentary as adults, can cause anemia and the usurpation of a host’s nutrients and vitamin (Callow, 1978). In addition to spreading diseases, biting flies cause the loss of large quantities of blood (Coles, 1986). Chronic infections are characteristic of the tissue-dwelling filarial worms, where worms may live for more than ten years, as well as of many of the gastrointestinal species (Callow, 1978).

Parasitism is a common health problem in horses. Parasites can produce a varying degree of
damage depending on the type and number of parasites present and the immune states of the horse (Ross, 1999). Problems, associated with parasitic infections include diarrhea, emaciation, anemia, and anorexia, lost of weight pale mucous membranes, intermittent fever and haemoglobinemia (Hassan, 2003). Although parasitic infections can not be completely eliminated, but the implementation of a sound de-worming program and control of vectors will limit the exposure to infective stage of parasites, and minimize their number (Ross, 1999).

Materials and Methods

The Study Area

The study was conducted in Jos North and Jos South Local Government Areas of Plateau State. Jos South Local Government Area has a coordinate of 09°48' N 08°52' E and elevation of 1,230M (4,035ft) above sea level. Jos North has a coordinate of 09°55' N and 08°54' E with an average humidity of 60% and average annual rainfall of 1400mm (Daniel, 2002).

Sample size and type, Collection and Processing of Samples

Fecal and Blood samples each were samples were collected from the 83 available horses recruited for this study. The samples collected cut across different sexes kept under different system of management kept for different purposes and various sources, the history of their records were obtained from the owners where possible.

Five grams (5g) of the fecal samples was obtained directly from the rectum and the of each animals with the used of a hand glove on and transferred into a clean disposable polythene bags, similar to the technique described by WHO (1991), 10mil of Blood was equally collected from the animals by venipuncture using sterile needles and syringes from the jugular vein of the animals and were poured into a clean sterile EDTA bottles and were properly labeled. Prior to sample collection, the animals were restrained, identified and the perineum thoroughly prepared by cleaning with cotton wool soaked in distilled water to prevent contamination.

Fecal samples were processed based on the formol ether concentration technique and the saturated sodium chloride flotation (WHO, 1991), the blood samples were processed using using Giemsa stained blood smear method adopted from Ugochukwu, (2003) and Ochei (2007).

Results and Discussion

A total number of 83 horses from Jos North and Jos South Local Government Areas of Plateau State were examined for gastro intestinal and haemoparasitic infection. Out of the 83 horses examined, 63(75.90%) were positive for gastrointestinal infection while 26(31.33%) were positive for haemoparasitic infection. Only one horse (1.00%) was positive for both gastrointestinal and haemoparasites infection (Table 2).

<table>
<thead>
<tr>
<th>Parasite</th>
<th>No examined</th>
<th>No +ve</th>
<th>%ve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal</td>
<td>83</td>
<td>20</td>
<td>31.70</td>
</tr>
<tr>
<td>Trichonema spp</td>
<td>35</td>
<td>55.60</td>
<td></td>
</tr>
<tr>
<td>Triodontrophorus renum collis</td>
<td>8</td>
<td>12.70%</td>
<td></td>
</tr>
<tr>
<td>Grastrodiscus aegyptiaws</td>
<td>8</td>
<td>12.70%</td>
<td></td>
</tr>
<tr>
<td>Heamoparaste</td>
<td>3</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>Babesia equi</td>
<td>9</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>Babesia caballi</td>
<td>13</td>
<td>52.00</td>
<td></td>
</tr>
<tr>
<td>Microtilarine</td>
<td>3</td>
<td>12.00</td>
<td></td>
</tr>
</tbody>
</table>

Prevalence in Relation to Sex

The prevalence of gastrointestinal and haemoparasites among male horses in Jos South was observed to be 26(34.60%) and 26(18.50%) respectively, while that of females 10(90.00%) and 10(70.00%) respectively. The prevalence recorded in Jos North among male horses was 17(94.10%) and 17 (23.50%) for the gastrointestinal and
haemoparasites respectively, 11(72.70%) haemoparasites were observed for the female (Table 2).

Table 2: prevalence of Heamo and gastrointestinal parasite in relation to sex

<table>
<thead>
<tr>
<th>Parasites</th>
<th>No+ve</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No+ve (n=48)</td>
<td>%+ve</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trichonema spp</td>
<td>20</td>
<td>10 (50.00%)</td>
<td>5 (25.00)</td>
</tr>
<tr>
<td>Triodontophorus</td>
<td>35</td>
<td>18 (51.43)</td>
<td>17 (48.57)</td>
</tr>
<tr>
<td>rennun collis</td>
<td>8</td>
<td>4 (50.00)</td>
<td>4 (50.00)</td>
</tr>
<tr>
<td>Grastrodiscus</td>
<td>8</td>
<td>4 (50.00)</td>
<td>4 (50.00)</td>
</tr>
<tr>
<td>Agyptiaws</td>
<td>9</td>
<td>4 (50.00)</td>
<td>5 (55.00)</td>
</tr>
<tr>
<td>Babesia equi</td>
<td>13</td>
<td>7 (53.85)</td>
<td>6 (47.15)</td>
</tr>
<tr>
<td>Babesia caballi</td>
<td>3</td>
<td>1 (33.33)</td>
<td>2 (66.67)</td>
</tr>
<tr>
<td>Microtilarine</td>
<td>3</td>
<td>1 (33.33)</td>
<td>2 (66.67)</td>
</tr>
</tbody>
</table>

Prevalence in Relation to Location

The distributions and prevalence of gastrointestinal and haemoparasites in the location of study reveals and infection of 36(50.00%) for gastrointestinal and 36(33.30%) for haemoparasites in Jos South. We observed 28(85.70%) and 28(39.30%) for gastrointestinal and haemoparasites infection in Jos North LGA respectively (Fig.1).

![Fig. 1: prevalence of gastrointestinal parasite of horses according to location.](image)

Out of the samples infected, the species of gastrointestinal parasites found are:

*Trichonema spp* 20(31.70%), *Triodontophorus tenuicolli* 35(55.60%), *Gastrodiscus aegyptiacus* 8(12.70%). Also the species of haemoparasites found are *Babesia equi* 9(36.00%), *Babesia caballi* 13(52.00%) and *microfilariae* 3(12.00%). The species of gastrointestinal and haemoparasites and number of infections are shown in Table 2 and 3.

The overall prevalence of gastrointestinal parasites infection in this study was observed to be 63 (52.10%) out of which 21 (17.40%) were positive for single infection and 37(30.60%) were positive for mixed infection. 25(50.00%) overall prevalence was recorded for the haemoparasites out of which 23(46.00%) had only a single infection and 2(4.00%) were positive for mixed infection.

The prevalence of gastrointestinal parasites infections 42(65.60%) was higher than haemoparasites infection 23(32.90%). This can be attributed to the season, time frame and management practice of the study area. To support
this, Chapman et al (2002) and Boxell et al (2004) also reported the spread of helminthes and haemoparasites in horse population across the world and grown under varied management and climatic conditions.

Fig. 2: prevalence of hemo-parasite of horses according to location.

The prevalence of gastrointestinal and haemoparasites was generally higher in female than male horses. This may be due to physiological activities, gestation, and lactation of the females which might lower their immunity. The lower infection noticed in the male can be due to lack of exposure to sources of contamination. This agrees with Konigova et al (2002) and Love (2003) who’s reported shows that many intrinsic factors such as sex, age, and breed and extrinsic factors like management, climate and parasite control program influence the prevalence of parasites of domestic animals. Boxell et al (2004) reported that proper management and use of broad spectrum anthelminthic like benzimadazoles and macrocyclic lactones has and still resulted in drastic reduction in worm population in animals.of large strongyles.

With regard to the Blood parasites, significant difference exist between Babesia equi and Babesia caballi (P<0.05). In this regard a greater proportion of the horses were infected with Babesia caballi than Babesia equi. On the contrary Nuria (1992) did a similar work in Ethiopia reported Babesia equi() to be widely distributed than Babesia caballi: this may be due to geographical location or size of the study population.

References

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