Some Studies on Trichomoniasis of Pigeons at Qualiobia Governorate

By

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SUMMARY

The present study was carried out to explore the status of Trichomoniasis of pigeons at Qualiobia governorate. A total of 325 pigeons from different districts at Qualiobia governorate were examined during a year (from March 2007 to February 2008). It was found that 68.92 % of the examined pigeons were positive for *T. gallinae* infection. The incidence of infection among the examined pigeons was 61.04 %, 72.36 % and 70.40 % in adult males, adult females and squabs, respectively. Seasonally, the highest incidence of infections was 93.33 % in spring in adult females, while the lowest incidence was recorded in adult males in summer (41.18 %). Grossly, yellowish white focal caseated material were seen in the buccal cavity, esophagus, crop and proventriculus. The liver was slightly enlarged and showed small yellowish necrotic patches. Thirty naturally infected pigeons with *T. gallinae* and five pigeons free from *T. gallinae* infection were used in a treatment trial. The pigeons were divided into three groups. The first group was regarded as a negative control (contained the five non infected pigeons). The second group contained 15 naturally infected pigeons with *T. gallinae*. The third group contained 15 naturally infected pigeons with *T. gallinae* and treated with metronidazole (Flagyl®) in a dose of 100 mg/pigeon in the drinking water for 7 successive days. Mortality rate during treatment period was 13.33 % in the treated group and 66.67 % in infected and untreated group. The population density of *T. gallinae* was gradually decreased reaching the lowest degree (+) starting from the 4th day of treatment till the 6th day and the parasite completely disappeared on the 7th day of treatment. The histopathological examination revealed that the proventriculus of naturally infected pigeons and treated with metronidazole showed mild congestion in the blood vessels with mild leukocytic infiltration mainly heterophils in the submucosa. The liver of infected pigeons and treated with metronidazole showed mild degenerative changes in the hepatocytes with leukocytic infiltration in the hepatic tissues.

It is concluded that the incidence of Trichomoniasis in pigeons at Qualiobia governorate is the highest in adult females followed by squabs and
also is the highest in the spring season. Treatment of Trichomoniasis with metronidazole is effective, and showed an improvement of the mucosal status of esophagus, crop and proventriculus as well as the hepatocytes.

**INTRODUCTION**

Trichomoniasis in birds is caused by the flagellated protozoan *Trichomonas* species. In pigeons, it causes a condition known as "canker". Turkeys, chickens, and a wide variety of wild birds were parasitized with varying degrees of pathogenicity (Levine, 1973). *T. gallinae* is a pathogenic sarcocystigophoran parasite commonly found in the upper digestive tract of columbids and in certain avian predators that feed on columbids (Conti, 1993). Eiberg strain of the parasite was a virulent hepatotropic flagellate of pigeons. It causes ulcers in the upper digestive tract which allow it to enter the circulatory system, then access to the liver where they cause the formation of caseous lesions leading to serious losses and high mortality especially in young birds (Narcisi et al, 1991). Pigeons were the natural hosts for *T. gallinae*, and it was transmitted from the adults to their squabs through crop milk which was produced in the crop, and the squabs were infected within minutes after hatching (McDougald, 2003).

Prevalence of *T. gallinae* infection in pigeons was higher at the warmer sites and times besides the lower rainfall (Bunburg et al, 2007). The high prevalence of *T. gallinae* infection and the low rate of pathological changes in pigeons were the main result of host-parasite relationship (Krone et al, 2005).

Pigeons infected with a virulent strain of *T. gallinae* had purulent inflammation with caseation necrosis as the predominant lesion. Ulceration of the mucosa with a massive inflammatory response, primarily heterophils are common. In the liver, focal necrotic abscesses in all zones of lobules, with an inflammatory reaction characterized by mononuclear cells and heterophils. As liver lesions progressed, no intact hepatocytes remained in the center of foci; trichomonads were most numerous at the periphery (Shihata 1978; Levine, 1985 and Narcisi et al, 1991). An increase in thickness in the wall of
crop and esophagus due to presence of oedema and hyperkeratinization of mucosa (Abd El-Rahman, 1991), while the liver showed perivascular aggregation of heterophils and lymphocytes (Helmy, 1995). The necrotic lesions were observed in the buccal cavity and the esophagus but not in the liver, microscopically the parasites were found in sections from these organs with inflammatory reaction (Bhattacharya et al, 1997). Several drugs were active against trichomoniasis in the pigeons. Trichomoniasis in pigeons was effectively treated with dimetridazole at a level of 0.05% (Panigrahy and Grimes, 1982). Dimetridazole was medicated in the drinking water as a prolonged-release tablet (400 mg/liter) to suppress the T. gallinae infection successfully (Inghelbrecht et al, 1996). The metronidazole was 100% effective in naturally infected pigeons with T. gallinae when it is given orally in a dose of 100 mg / pigeon for seven days (Abd El-Motelib and Galal, 1993 and Aydin et al, 2000), and 1gm / liter for five successive days (Shihata, 1978). The ronidazole in a dose of 10 mg / racing pigeon for seven days was effective (Krautwald et al, 2004). The present study was conducted to determine the prevalence of Trichomoniasis in pigeons at Qualiobia governorate and to study the efficacy of metronidazole in naturally infected pigeons with T. gallinae.

MATERIALS AND METHODS
Prevalence:
325 domestic pigeons (77 males, 123 females, and 125 squabs) were collected from different areas of Qualiobia governorate during a year (from March 2007 to February 2008). These pigeons were examined macroscopically and microscopically for T. gallinae infection.

Macroscopical examination:
The buccal cavity, esophagus, proventriculus, liver and spleen were examined for any gross lesions. Also the clinical signs were recorded.

Microscopical examination:
The microscopical examination was adopted as following:
(1)- a cotton swab was first prepared according to Diamond (1957) by dropping it into a solution of cellulose acetate in amyl alcohol and allowing it to dry in order to prevent the entrapment of the flagellates between the cotton fibers.
(2)- Smears were obtained by these swabs from the oral cavity of the bird particularly beneath the tongue as well as from the crop mucosa. The swabs were put into a small clean bottles containing sa-
line solution.

(3)- Direct smears were prepared from the previously taken samples on a clean slides, then covered with cover slips to be examined microscopically using the high power lens (10 X 40) to detect the flagellated parasite movement.

(4)- A drop of freshly prepared samples was obtained on a clean slide, let to dry in air and just before complete dryness, it was fixed in absolute ethyl alcohol for few minutes (5-10 minutes). The slides were arranged in staining jar containing 10% buffered Giemsa stain for 30 minutes. Then they were washed with distilled water and left to dry in slanting position at room temperature. It was examined under oil immersion lens of microscope (Soulsby, 1986) for the presence of *T. gallinae*.

**Treatment trial:**

The design of this experiment was shown in table (2). Thirty naturally infected pigeons with *T. gallinae* and five pigeons free from *T. gallinae* infection were used in this trial. The pigeons were divided into three groups. The first group was regarded as a negative control (contained the five non infected pigeons), the second group contained 15 naturally infected pigeons with *T. gallinae* (positive control) and the third group contained 15 naturally infected pigeons with *T. gallinae* and treated with metronidazole (Flagyl® produced by Sanofi-aventis Egypt, under license of Sanofi-aventis / France) in a dose of 100 mg / pigeon in the drinking water for seven successive days according to Aydin *et al* (2000). Mortality rates during treatment period and the responded birds to treatment were recorded.

The population density of the living *T. gallinae* in the crop of naturally infected pigeons after treatment with metronidazole was estimated daily for seven successive days by taking swabs from the crop, preparing direct smears and counting the parasite(s) microscopically per high power field (H.P.F.), and then scored according to Diamond (1954).

Specimens were obtained from the crop, esophagus, proventriculus, liver and spleen of the three groups and fixed in buffered formal saline 10% for histopathological examination according to Bancroft *et al* (1996).

The data obtained in the present study were analysed according to Duncan (1955) using the computer software program called SPSS (2001, Version 11) and means were compared using the level of significance of 0.05%.
RESULTS

The incidence of *T. gallinae* infection among the collected domestic pigeons of various districts of Qualibiya governorate was summarized in table (1). It was found that 224 out of 325 total pigeons examined were positive for *Trichomonas gallinae* infection (68.92 %). Concerning the sex of pigeons, 47 out of 77 males were positive (61.04 %), whereas 89 out of 123 females were positive (72.36 %). Among squabs 88 out of 125 examined were positive (70.40 %). Seasonally, the percentage of infection was 87.06 %, 49.33 %, 60.98 % and 75.90 % in spring, summer, autumn and winter, respectively.

The main clinical signs recorded in the diseased pigeons were depression, inappetance, offensive odour fluid drilling from mouth, opened beak, respiratory distress (Fig., 2), watery greenish diarrhea, watery discharge from conjunctival sacs, the squabs were stunted and poorly feathered.

Grossly, yellowish white focal caseated mass of variable sizes were seen in the buccal cavity, esophagus, crop and sometimes proventriculus of freshly died and diseased pigeons (Fig., 3). The liver was friable, dark red, slightly enlarged and showed small yellowish necrotic patches (Fig., 4). Most of the examined adult pigeons, that were positive for trichomoniasis, were apparently healthy and showed no clinical signs or PM lesions. The clinical signs lesions were similar to that observed in diseased squabs but milder.

Mortality rate during treatment period was 13.33 % (2 out of 15) in the treated group and 66.67 % (10 out of 15) in the infected and untreated group. The recovery percentage of birds after treatment was 100 % on the 7th day of treatment.

The morphological feature of *T. gallinae* isolated from the crop of naturally infected squab was flagellated pear shape and the average dimensions of the body was $11.02\mu \pm 0.035 \times 8.12\mu \pm 0.017$, ($n=10$) for the fresh form of the parasite (Fig, 1).

Table (3) showed the count and population density of the living *T. gallinae* parasite in the crop of infected pigeons during treatment period. The population density of *T. gallinae* was gradually decreased reaching the lowest degree (+) starting from the 4th day of treatment till the 6th day. It became (0) on the 7th day of treatment.
The histological sections of the crop of pigeons naturally infected with *T. gallinae* showed necrosis with inflammatory cells infiltration mainly heterophils and mononuclear cells in the submucosa (Fig., 6-B). Esophagus of pigeon squab naturally infected and not treated showing necrosis of the epithelial cells and leukocytic infiltration in the mucosa (Fig., 5-D), and also showing infiltrated inflammatory cells mainly eosinophils in the mucosa (Fig., 6-A). Proventriculus of pigeon squab naturally infected with *T. gallinae* and not treated showing desquamation in the epithelial cells of the mucosa (Fig., 6-C). While, the proventriculus of naturally infected pigeon squab and treated with metronidazole showing mild congestion in the blood vessels with mild leukocytic infiltration mainly eosinophils in the submucosa (Fig., 6-D). Liver of pigeon squab naturally infected with *T. gallinae* and not treated showing an increase of necrosis in the hepatocytes (Fig., 5-A). While, the liver of naturally infected pigeon squab and treated with metronidazole showing degenerative changes in the hepatocytes with leukocytic infiltration in the hepatic tissues (Fig., 5-B). Spleen of pigeon squab naturally infected with *T. gallinae* and not treated showing hemosiderosis in the splenic tissues (Fig., 5-C).

Negative control group remained within normal during the whole experiment.

<table>
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<tr>
<th>Seasons</th>
<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
<th>Winter</th>
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<tr>
<td></td>
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<td>16</td>
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<td>80.00</td>
<td>41.18</td>
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<tr>
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<td>93.33</td>
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<td>64.71</td>
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<td>75</td>
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<td>87.06</td>
<td>49.33</td>
<td>60.98</td>
<td>75.90</td>
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</table>

Note: The table shows the number of pigeons tested and the percentage of positive results for each season and type of pigeon.
Table (2): Design of a treatment trial of pigeons naturally infected with *T. gallinae*.

<table>
<thead>
<tr>
<th>Groups of pigeons</th>
<th>Non infected and non treated (Control -ve) (1)</th>
<th>Infected and non treated (Control +ve) (2)</th>
<th>Infected and treated with Metronidazole (Flagyl®)* (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of birds</td>
<td>5</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Age of birds</td>
<td>Variable</td>
<td>Variable</td>
<td>Variable</td>
</tr>
<tr>
<td>Duration of treatment</td>
<td>---</td>
<td>---</td>
<td>Seven successive days</td>
</tr>
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</table>

*=The dose was 100 mg/pigeon in the drinking water.

Table (3): Count and population density of living *T. gallinae* parasites in the crop of naturally infected pigeons during the treatment period. (Mean ±SE, n=5)

<table>
<thead>
<tr>
<th>Days during treatment</th>
<th>Non infected and non treated (Control -ve) (1)</th>
<th>Infected and non treated (Control +ve) (2)</th>
<th>Infected and treated with Metronidazole (Flagyl®) (3)</th>
<th>F Value</th>
<th>LSD at P ≤ 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.00 c ±0.00 (-)</td>
<td>14.20 a ±14.04 (+++)</td>
<td>80.80 b ±3.20 (+++)</td>
<td>74.570</td>
<td>62.40*</td>
</tr>
<tr>
<td>2</td>
<td>0.00 c ±0.00 (-)</td>
<td>141.60 a ±7.61 (+++)</td>
<td>33.00 b ±5.17 (+++)</td>
<td>193.457</td>
<td>33.00*</td>
</tr>
<tr>
<td>3</td>
<td>0.00 b ±0.00 (-)</td>
<td>147.61 a ±13.56 (+++)</td>
<td>14.20 b ±1.88 (+++)</td>
<td>106.088</td>
<td>133.40*</td>
</tr>
<tr>
<td>4</td>
<td>0.00 b ±0.00 (-)</td>
<td>135.80 a ±8.87 (+++)</td>
<td>0.80 b ±0.45 (+)</td>
<td>233.015</td>
<td>135.80*</td>
</tr>
<tr>
<td>5</td>
<td>0.00 b ±0.00 (-)</td>
<td>129.60 a ±5.13 (+)</td>
<td>0.60 b ±0.25 (+)</td>
<td>632.807</td>
<td>129.00*</td>
</tr>
<tr>
<td>6</td>
<td>0.00 b ±0.00 (-)</td>
<td>133.62 a ±5.25 (+)</td>
<td>0.40 b ±0.25 (+)</td>
<td>338.192</td>
<td>133.20*</td>
</tr>
<tr>
<td>7</td>
<td>0.00 b ±0.00 (-)</td>
<td>115.40 a ±5.16 (+)</td>
<td>0.00 b ±0.00 (-)</td>
<td>499.518</td>
<td>115.40*</td>
</tr>
</tbody>
</table>

* ( * ): Significance at P ≤ 0.05. • Data were analysed by One Way ANOVA.

abc Values within a row followed by different superscript letter were significantly different (P ≤ 0.05), while values within a row followed by the same superscript letter were not significantly different (P ≤ 0.05). •LSD = Least Significant Difference.

- = no living parasite (s) /H.P.F.  + = one living parasite/H.P.F.  ++ = 2-50 living parasites/H.P.F.  +++ = 51-100 living parasites/H.P.F.  ++++ = 101-200 or more living parasites/H.P.F.
Figure (1): *Trichomonas gallinae* parasite from buccal cavity of naturally infected pigeon squab stained with Geimsa stain (X 1000).

Figure (2): Pigeon naturally infected with *Trichomonas gallinae* showing depression and opened beak.
**Figure (3):** Pigeon naturally infected with *Trichomonas gallinae* showing yellowish caseous material occupied the oral cavity.

**Figure (4):** Liver of pigeon naturally infected with *Trichomonas gallinae* showing small numerous yellowish necrotic foci.
Figure (5)

(A): Liver of pigeon squab naturally infected with *T. gallinae* and not treated showing focal necrosis in the hepatocytes. H&E stain (X 200).

(B): Liver of pigeon squab naturally infected with *T. gallinae* and treated with metronidazole showing degenerative changes in the hepatocytes and leukocytic infiltration in the hepatic tissues. H&E stain (X 200).

(C): Spleen of pigeon squab naturally infected with *T. gallinae* and not treated showing hemosiderosis in the splenic tissues. H&E stain (X 200).

(D): Esophagus of pigeon squab naturally infected with *T. gallinae* and not treated showing necrosis of the epithelial cells and leukocytic infiltration in the mucosa. H&E stain (X 400).
(A): Esophagus of pigeon squab naturally infected with *T. gallinae* and not treated showing infiltrated inflammatory cells mainly eosinophilis in the mucosa. H&E stain (X 400).

(B): Crop of pigeon squab naturally infected with *T. gallinae* and not treated showing necrosis in the submucosa. H&E stain (X 400).

(C): Proventriculus of pigeon squab naturally infected with *T. gallinae* and not treated showing desquamation in the epithelial cells of the mucosa. H&E stain (X 400).

(D): Proventriculus of pigeon squab naturally infected with *T. gallinae* and treated with metronidazole showing congestion in the blood vessels with mild leukocytic infiltration mainly heterophilis in the submucosa. H&E stain (X 400).
Trichomoniasis is a common disease of pigeons, causing high losses among pigeon squabs. The severity of disease and mortality in squabs may be due to a high susceptibility in squabs or to a highly pathogenic strains of *T. gallinae* (Charlton et al, 1991 and McDougald, 2003). Trichomoniasis is not only a world-wide, but also occur all over the seasons of the year.

The present survey in different districts at Qualiobia governorate revealed that the highest percentage of infection was in adult females (72.36%) followed by squabs (70.40 %), and then in adult males (61.04 %). The high infection rate among adult females is nearly similar to the results obtained by Abd El-Rahman (1991) who reported that the infection rate of trichomoniasis in adult females, squabs and adult males was 73.50%, 72.20% and 69.20%, respectively. Whereas, the results of the present study disagreed with that recorded by Helmy (1995) who stated that the infections with *T. gallinae* was 55.50% in adult females, 68.50% in squabs and 42.70% in adult males, and also disagreed with the findings of Eman (2005) who inferred that the infections with *T. gallinae* was 59.50% in adult females, 61.60% in squabs and 45.70% in adult males. These differences may be due to different localities.

Our study revealed that the highest incidence of trichomoniasis was in adult females in spring season (87.06 %) followed by winter (75.90 %), while the lowest incidence was recorded in adult males (carriers) in summer season (49.33 %). The high percentage of infection in spring may be due to the natural breeding season of pigeons in spring, and subsequent increase in squabs and susceptibility to infections. These results are nearly similar to that recorded by Baker (1986); Fouly (1990); Abd El-Rahman (1991); McKeon et al (1997); Eman (2005) and Bamburg et al, (2007).

In the present study, the morphological features of *T. gallinae* isolated from the crop of naturally infected squab was nearly similar to that described by Soulsby (1986) and Fouly (1990).

In the present study, the site of infection was the gastrointestinal tract from the mouth to the proventriculus, the liver and spleen. Whereas other authors demonstrated the lesions in other organs as bone marrow (Helmy, 1995); liver, brain and pericardium.
(Eman, 2005) and lungs and nasal sinuses (Lindtner, 1968). Meanwhile the sites of infection were observed in the gastrointestinal tract only from the mouth to the crop (Abd El-Rahman, 1991). The differences in predilection sites may be due to the differences in strains of the parasite or due to different localities.

In the present study, the main clinical sings of naturally infected pigeons were dullness, inability to eat, drink and fly, drilling of offensive odour fluid from mouth, opened beak and greenish diarrhea. Macroscopically, infected pigeons showed yellowish white caseated material varying in size in the pharyngeal mucosa, esophagus, crop and proventriculus. These results are similar to the findings of Pani-grahy and Grimes (1982); Soulsby (1986) and Helmy (1995). In the present study, the liver of some pigeons was dark red and slightly enlarged with small necrotic patches. These may be attributed to differences in virulence of the strains as suggested by Kocan (1969); Charlton et al. (1991) and McDougald (2003).

Oral administration of metronidazole (100 mg/ pigeon) daily for seven successive days in the drinking water, resulted in 100 % recovery (13 from 13). These results agreed with other authors (Fouly, 1990; Abd El-Motelib and Galal, 1993 and Helmy, 1995). On the other hand, Aydin et al (2000) recorded that the efficacy rate of metronidazole was 100% in pigeons naturally infected with T. gallinae at dosage of 100 mg/ kg B. wt. orally for seven successive days.

During the treatment period, the count and population density of living parasite in the crop of infected and treated pigeons were decreased gradually till the 6th day of treatment and became zero on the 7th day. These results were in agreement with the findings of Helmy (1995); Aydin et al. (2000) and Eman (2005).

In this study, the mucosa of crop and esophagus were greatly thickened in pigeons naturally infected with T. gallinae, while the thickness was decreased to somewhat in the treated pigeons with metronidazole. This may be due to response to the treatment which led to decrease of the inflammatory reaction. These agreed with the findings of Baker (1986) who reported that the crop and esophagus of the infected budgerigars were increased in thickness as a result of a great increase in the depth of the mucosa, the number and size of the cells, leading to gross exaggeration.
of the very slight folds normally present in the mucosa. Some increase in thickness of the wall was also as a result of inflammatory response, mainly of lymphocytes between the mucosa and muscular layers.

The histopathological findings in naturally infected pigeons in the present study revealed that the liver showed an increase of necrosis in the hepatocytes which surrounded by inflammatory cells. The liver of pigeon squab naturally infected with *T. gallinae* and treated with metronidazole showed degenerative changes in the hepatocytes and leukocytic infiltration in the hepatic tissues. These results were in agreement with those obtained by Levine (1985); Narcisi et al, (1991); Helmy (1995) and Eman (2005). The mucosa of esophagus, crop and proventriculus revealed infiltration of inflammatory cells mainly heterophils, necrosis in the submucosa, desquamation in the epithelial cells. These results were in agreement with those obtained by Honigberg 1978; Shihata, 1978; Narcisi et al, (1991); Charleton et al (1991) and Eman (2005).

Several drugs were active against trichomoniasis in pigeons and turkeys. In the present results, metronidazole (100 mg/pigeon) was effective for treatment of *T. gallinae* in naturally infected pigeons when used in the drinking water for 7 successive days. These results were in agreement with that of Shihata (1978) and Aydin et al (2000) who recorded that the efficacy rate of meronidazole was 100% in pigeons naturally infected with *T. gallinae* in a dose of 100 mg/pigeon orally for 7 successive days. While Inghelbrech et al (1996) reported that dimetridazole (400 mg/liter) for at least 3 successive days was effective treatment against *T. gallinae* infection in pigeons.

It is concluded that the trichomoniasis (*T. gallinae*) in pigeons at Qualiobia governorate was 72.36% in adult females followed by squabs (70.40%) while in adult males was 61.04%. The infection was increased in the spring season. Treatment of trichomoniasis with metronidazole (Flagyl®) is effective and showed an improvement in the mucosa of esophagus, crop and proventriculus as well as the hepatocytes.

REFERENCES

Abd El-Motelib, J. Y. and Galal,


 بعض الدراسات على مرض الترباكوموناس في الحمام في محافظة القيروانية

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الملخص العربي

أجريت هذه الدراسة لتوضيح حالة الإصابة بطفيل الترباكوموناس جاليي في الحمام في محافظة القيروانية.

تم فحص 250 حماة من مراكز مختلفة من محافظة القيروانية خلال عام إبتداء من مارس 2007 وحتى فبراير 2008. وفحصت هذه الحمامة تحت الميكروسكوب ووجد أن نسبة الكلية للإصابة هي 18.92%، وقد لوحظ أن نسبة الإصابة في الإناث 33.27% وهي أكثر من الذكور (11.04%), ولكنها كانت 40.77% في الزهور، بالنسبة لفصول السنة وجد أن الربيع كانت الإصابة فيه أعلى مابين (11.04%) يليه الشتاء (10.73%) ثم الخريف (9.98%) وأقلهم الصيف (6.45%).

وبإجراء الحفوص البيولوجية أوضح النتائج وجود مادة صفراء متجمدة في تجوزيف الفم والحويدة، وكذلك تضخم الكبد والطحال مع وجود بقع تكرزة صفراء على سطح الكبد.

وقد استخدمت 30 حمامة مصابة إصابة طبيعية بطفيل الترباكوموناس جاليي، وخمسة حممات عرضية في عملية تحليق للعلاج. وتم تقسيمها إلى ثلاثة مجموعات بحيث تكون...
المجموعة الأولى ضابط سلبي مكونة من 5 حماسات غير مصابة بالطفل وغير معالجة، والمجموعة الثانية كانت مكونة من 10 حمامة مصابة بإصابات طبيعية بالطفل وغير معالجة، بينما كانت المجموعة الثالثة مكونة من 10 حمامة مصابة بإصابات طبيعية بالطفل وعولجت بالميترونيدازول (فلاجيل) بجرعة 100 مجم/حمامة في مياه الشرب لمدة 7 أيام متتالية. أثناء فترة العلاج تم أخذ مسحات يومية من حوصلة الحمام وفحصها ميكروسكوبيا لمرشح أدلة الإشتباه. وفي نهاية فترة العلاج تم عمل الدراسات الباثولوجية على المرء والحوصلة بالكبد والطحال.

وقد أوضحت النتائج أن نسبة النفوذ خلال تجربة العلاج 13.23% في المجموعة المعالجة، 11.17% في المجموعة المصابة والمخلصة، وقد وجد قلة كثافة الطفيل تدريجيا في المجموعة المعالجة حتى انعدامها تماما بعد اليوم السابع من العلاج بنسبة إسقاط 100%. وميكروسكوبيا وجد تنكرز وتأكل في الخلايا المبطنة للمرء والحوصلة مع وجود خلايا إلهاوية وكذلك وجود تفكيك واضح في خلايا الكبد للحمام المصاب، وبعد العلاج بالميترونيدازول (فلاجيل) تحسن الصورة الباثولوجية إلى حد ما.

المحكمون

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