DISTRIBUTION OF CRYPTOSPORIDIUM SPP INFECTION IN WILD PIGEONS IN BAGHDAD CITY -IRAQ

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ABSTRACT

This study revealed the prevalence of Cryptosporidium parasite by using 120 fecal sample from wild pigeons in Baghdad city during the period Jounuary2013 to December 2013. The total infection rate was 40% [48/120] which divided in to 38.18% [21/55]in males and 41.53%[27/65] in females. A high infection rate 76.66% [23/30] was recorded in winter season, while a low infection rate 16.66%[5/30] was found in Autumn. The three Cryptosporidium species oocysts were detected varied from small (Cryptosporidium meleagridis ) , medium ( Cryptosporidium baileyi ) and large size( Cryptosporidium galli ).

INTRODUCTION

Protozoa of the genus Cryptosporidium are apicomplexan parasites that complete their biological cycle in the surface of epithelial cells of digestive and respiratory system of wide variety of vertebrates[1]. Once considered rare and irrelevant, Cryptosporidium spp. are now known to be important pathogens with a widespread distribution in livestock, wildlife and human [2]. Cryptosporidiosis has been reported in more than 30 species of birds in many countries [3] . Transmission of the infection occurs via the oocysts."Many human infections have been traced to the contamination of drinking water with oocysts from agricultural run-off (i.e., drainage from pastures) so it is considered a zoonotic diseases[4]. Most mammals, birds, reptiles and fish are susceptible to Cryptosporidium infection. The aim of this study was the investigate the presence of of Cryptosporidium spp. in wild pigeon in Baghdad city.

MATERIALS AND METHODS

A total of120 wild pigeons been Caught from the houses roofs in Baghdad city during the period Jounuary2013 to December 2013 . The classification of the species of pigeon according to [5] , the pigeon below Columba livia .The samples were returned to the laboratory parasitology in College of Veterinary Medicine in Baghdad.

Fecal examination for cryptosporidium oocysts: Fecal samples were collected from the rectum of all dissected pigeons and store at 4 c in 2.5%(w/v) potassium dichromate solution until they were used. Thin smear were made of all concentrated fecal samples. And screened for cryptosporidium oocysts by using modified Ziehl-Nielsen stain[6]. After staining, the slides were examined under a light microscope
(100x ) show the oocysts of cryptosporidium. calibrated the size of oocysts by evaluating 50 oocysts with ocular micrometer[7].

Statistical analysis: The data were analyzed with the Chi – square test [8].

**RESULT AND DISCUSSION**

1- Total infection rate :

The total infection rate was 40% [48/120] which was divided into 38.18% [21/55] in males and 41.53% [27/65] in females [table, 1].

Table (1). The total infection rate of cryptosporidium spp. in wild pigeon according to the gender.

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of birds examined</th>
<th>Infected</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>55</td>
<td>21</td>
<td>38.18</td>
</tr>
<tr>
<td>Females</td>
<td>65</td>
<td>27</td>
<td>41.53</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>48</td>
<td>40</td>
</tr>
</tbody>
</table>

The extent of Cryptosporidium oocysts invasion in pigeons in this study was found to be 40% these finding was higher than [5.9% and 0.24%] detected by [9] in pigeon from canary islands and [10] in pigeons from Iran. The variation in the invasion extensities of Cryptosporidium oocysts in pigeons examined during the present. Study and those previously surveyed are probably attributed to the number of birds examined, time of feces collection and examination and its surrounding environment. On the same approach, [11] and [12], also proved that the variation in Coccidian oocysts incidence in birds was climatic conditions, stresses exposed by birds was associated with the age and sex of the birds examined, the methods used to make the diagnosis. The results also showed that sex of the pigeon under this study have no significant effect on the prevalence of Cryptosporidium infection wild pigeons The results were similar to [13,14].

2- Infection rate according to seasons:

Table (2). was showed a the high infection rate 76.66% [23/30] in winter season, while a low infection rate 16.66% [5/30] was found in Autumn[ table 2].
The total infection rate of Cryptosporidium spp in wild pigeons according to season.

<table>
<thead>
<tr>
<th>Season</th>
<th>No. of birds examined</th>
<th>Infected</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>30</td>
<td>23</td>
<td>76.66</td>
</tr>
<tr>
<td>Spring</td>
<td>30</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>Summer</td>
<td>30</td>
<td>8</td>
<td>26.66</td>
</tr>
<tr>
<td>Autumn</td>
<td>30</td>
<td>5</td>
<td>16.66</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>48</td>
<td>40</td>
</tr>
</tbody>
</table>

The results showed that high infection rates occurred in Winter probably due to climatic changes in moderate temperature and high humidity which many influence the life cycle of Cryptosporidium spp[13,15].

3 –Morphological analysis:

The measurements of detected Cryptosporidia oocyst in the examined pigeons feces revealed three Cryptosporidia species of spherical or ovid shaped oocysts. They were varied from small sized (Cryptosporidium meleagridis) oocysts of 4.0x5.2 µm dimension, medium sized (Cryptosporidium baileyi) oocysts of 6.2x4.5 µm dimension and large sized (Cryptosporidium galli) oocysts of 8.0x6.5 µm dimension [table 3, Fig 1].

Table (3). The dimension of Cryptosporidial oocyst detected in wild pigeon.

<table>
<thead>
<tr>
<th>Dimension (Mm)</th>
<th>species of Cryptosporidium</th>
<th>Shaped</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0x6.5</td>
<td>C. galli</td>
<td>Spherical</td>
</tr>
<tr>
<td>6.2x4.5</td>
<td>C. baileyi</td>
<td>Ovid</td>
</tr>
<tr>
<td>4.0x5.2</td>
<td>C. meleagridis</td>
<td>Spherical</td>
</tr>
</tbody>
</table>

Fig (1) Cryptosporidium spp in feces of wild pigeon (100x)
The three Cryptosporidial species (Cryptosporidium meleagridis, Cryptosporidium baileyi and Cryptosporidium galli) were detected in pigeons fecal smears in this study were morphological similar with the same species detected in birds in many previous studies [16,17, 18]. The *Cryptosporidium* spp. Identification was depending upon the conventional criteria, such as oocyst morphology and measurements, this opinion was agreed with[11], who cited that morphometric measurements for oocysts represents the cornerstone of *Cryptosporidium* taxonomy and is one of the requirements for establishing a new species[18]. Acoccidian parasites of humans and animals was first believed to be an opportunistic organism but now is recognized as a primary pathogen, several studies have implicated animals as a source of human infection [19,20] because strains *Cryptosporidium* detected in this study are cross-transmissible especially *Cryptosporidium meleagridis*, awareness of cryptosporidiosis as a potential zoonotic infection has emerged as a significant public health concern [21].

انتشر داء الإبواغ الخبيئة في الحمام البري في مدينة بغداد - العراق

أظهرت الدراسة انتشار طفيلي الكرتوسبورديوم بـ120 عينة براز من الحمام البري لمدينة بغداد خلال الفترات عدد كانون الثاني 2013 – كانون الأول 2013 بلغت نسبة الإصابة الكلية 40% (120/300) توزعت بواقع 38.18% (55/146) في الذكور و 41.53% (27/65) في الإناث. سجلت أعلى نسبة أصابة Cryptosporidium في فصل الشتاء 76.66% (30/39) ، و أدنى نسبة أصابة 16.66% (5/30) في فصل الخريف. تم الكشف عن ثلاثة أنواع من الكرتوسبورديوم بأحجام مختلفة الصغرى و الكبيرة الحجم Cryptosporidium baileyi والمتوسطة الحجم Cryptosporidium meleagridis

**REFERENCES**


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