PREVALENCE OF PATHOGENIC PARASITES IN RIVER WATER IN DIYALA PROVINCE

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ABSTRACT
The current study was designed to determine the incidence of pathogenic parasites found in the river water in Diyala province. The study was extended from June to September 2017. All samples were subjected to microscopic examination using traditional examination. The results of the present study showed water contamination of the Tigris River in Diyala province with the following parasites: Rabditae larve (40%), Strongyloides stercoralis (25%), Cryptosporidium (60%), Acanthamoeba (50%) and Entamoeba coli (40%).

KEYWORDS: Raw Water; Cryptosporidium; Tigris River, Zeal Nelson stain, Strongyloides, protozoa.

INTRODUCTION
Contamination from waste material discharges and wild or farm animals is important supply for untreated water (Dube, 2005). Waterborne diseases occur worldwide and outbreaks caused by the contamination of community water systems have the potential to cause malady in large number of shoppers (Barwick et al., 2000) a minimum of 325 water associated outbreaks of parasitic protozoan diseases have been reportable worldwide (Kramer et al., 2001). Possible sources of water contamination together with human and animals sources are best-known to be necessary within the introduction of protozoa to a water system (WHO 2004). Some contaminants end in acute effects. There’s an on the spot relation between the prevalence of some parasitic diseases and also the prevalence of that etiologic agent in water (Yousefi et al., 2009). Parasitic diseases are quite common in aggregation countries. In Iraq, the parasitic infection is wide current with variable distribution in numerous areas. Helminth and Protozoa parasites are found in varied water sources particularly within the water of rural villages of marsh land showed the next prevalence of contamination, this higher prevalence of water supply contamination may be explained by poor sanitation and hygiene, low socio-economic standing and in acceptable health and biological process education, contamination of water with animal and human waste material (Jarallah, 2009) The aim of this study is to watch and confirm the prevalence of water contamination with parasites.

MATERIALS & METHODS
Twenty water samples were collected from Tigris River in Diyala province when sewage discharge expel in Tigris River during the period from June to September 2017. All the samples were collected in special bottle of 250 ml that was tagged with place and date of collected. In the laboratory water examination was performed by centrifuge (about 2300 rpm) for one min (Chatterjee, 1952). Decant the supernatant fluid and take a drop of the deposit by pipette, put it on a clean slid and cover with a cover slip (AI-Joobori, 1952). All samples were examined by low power magnification 10x, high power magnification 40x, 100x, and stain method. The methods used Zeal nelson stain and iodine stain and examined under microscope. Measurements images of oocysts were taken after ocular micrometer calibration (Thienpont et al., 1986). This work was conducted at the Center for Research and Natural History Museum, University of Baghdad.

RESULTS
Five genera and species of pathogenic parasites were identified in fresh water in the Tigris River: Strongyloides sp (25%), Cryptosporidium sp (60%), Acanthamoeba sp (50%), Rabditae larve (40%) and Entamoeba coli (40%) as shown in Table (1). The identification of parasites was illustrated in Figures (1-5).

**TABLE 1:** The percentages of parasites species in the fresh water samples

<table>
<thead>
<tr>
<th>Species of parasite</th>
<th>No. of sample Examined</th>
<th>No. of sample positive</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongyloides sp</td>
<td>20</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>Cryptosporidium sp</td>
<td>20</td>
<td>12</td>
<td>60%</td>
</tr>
<tr>
<td>Acanthamoeba sp.</td>
<td>20</td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td>Rabditae larve</td>
<td>20</td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td>Entamoeba coli</td>
<td>20</td>
<td>8</td>
<td>40%</td>
</tr>
</tbody>
</table>
Pathogenic parasites in river water in Diyala province

FIGURE 1. *Strongyloides* sp

FIGURE 2. *Cryptosporidium* sp with Zeal nelson stain

FIGURE 3. *Cryptosporidium* sp

FIGURE 4. *Acanthaeoba* sp
DISCUSSION

Worldwide, freshwater diseases area unit among the leading killers of kids below 5 years old and a lot of individuals die from unsafe water annually than from all kinds of violence, as well as war (WHO 2002). Several water-related diseases are the results of poor quality water that's used for drinking, washing and other. This research included five of genera and species parasites from fresh water of Tigris River are risk of health particularly for swimmers in these areas of these parasites were recorded in Republic of Iraq previously in their hosts however during this study include infective parasite in the waters of the Tigris River water that might be mentioned with rates of infection in Iraq. Water-based diseases come back from hosts that either live in water or need water for a part of their life cycle. These diseases are passed to humans once they are eaten or acquire contact with skin. This study was recorded infection with Strongyloides stercoralis in the rate of (25%), agreed with (Hadi & Makawi 2013). There are two vital stages within the life cycle of the worm, the rhabditiform stage and also the filariform stage. The Strongyloides life cycle is a lot of complicated than that of most nematodes with its alternation between independent and parasitic cycles and possibility autoinfection and multiplication inside the host (James, 2007), that current study discovered adult and larvae of this worm cause acute diarrhea may be a vital public pathological state in Iraq, drinking raw or municipal water and hot seasons. Free living amoebae are nonparasitic protozoans that exist in fresh water. These amoebae were found infective to man inflicting a fatal malady touching the central nervous system (Fowler & Carter 1965). The genus Acanthamoeba are best known to cause eye infection and inflammation (Jogwuwes et al., 2000; Hansen & Kronborg, 2003; Speer et al., 2003). These amoebae thrive in enough numbers to cause infection once their environmental temperature is fairly high (Carter 1972), totally different shapes of free amoebae were appeared in freshwater of Tigris River. This study showed the water contamination of the river with pathogenic parasite, this study agreed with (Al- Fahdawi 2002; Hadi & Makawi 2013; Zahraa, 2013; Makawi, 2016), they showed contamination of Tigris river with different parasites.

CONCLUSION

The study concluded contamination of river water (Tigris River) by pathogenic parasite and it considered source of human and animal infection.

REFERENCES


