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Review

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Abstract

Background: Cryptosporidium is a waterborne intestinal parasite that causes diarrhoea in low and middle-income countries worldwide. Reports from Mediterranean countries have documented the prevalence of cryptosporidiosis in children at various ages, also among cancer patients, and in cases of chronic kidney disease, haemodialysis, and organ transplant. Untill now, modified-acid staining preceded by stool concentration preparation remains the leading screening diagnostic test for the infection. In Jordan, few studies for cryptosporidiosis have been performed during the last 3 decades.

Aims: This paper reviewed the status of cryptosporidiosis in Jordan and tracked recent updates for this emerging protozoal infection among different population groups.

Methods: In this study, an online search was conducted on Google Scholar and PubMed databases using the keywords: Jordan, cryptosporidiosis and Cryptosporidium to inspect studies done on this parasite in Jordan.

Results: Only 9 articles were identified from 1994 to 2019. These were analysed in terms of population group, demography, clinical history and the diagnostic tools used.

Conclusion: Cryptosporidiosis is still neglected in Jordan as indicated by the low number of studies over the last 3 decades and the prevalence is diverse depending on the diagnostic test used and socioeconomic status.

Keywords: cryptosporidiosis, Jordan, diagnostic tools, identification

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Background

Cryptosporidium spp. are intracellular parasites of principal concern, especially in some Mediterranean countries with limited resources and in communities with low socioeconomic status (1,2). Globally, cryptosporidiosis has been ranked as the sixth most important foodborne parasitic infection of humans and domestic animals (3).

Human cryptosporidiosis was first reported in 1976; after that, it was identified as the major cause of chronic diarrhoea in HIV-positive patients and children and as a cause of zoonotic and waterborne diarrhoeal outbreaks (4). Later, Cryptosporidium infection prevalence was seen to be on the rise among malnourished children and a cause of premature death in low-resource settings (5–7). Cryptosporidium is acquired mainly via contaminated water and the ingested oocysts cause gastrointestinal symptoms before being shed in the stool and transmitted to another host via the faecal–oral route (8). Cryptosporidiosis causes acute diarrhoea in children (9), immunocompromised patients (3), cancer patients (10) and haemodialysis patients (11,12). The infection is usually self□limiting in immunocompetent individuals, however, it might be life□threatening in immunocompromised patients (2). The prevalence of cryptosporidiosis varies among different patient groups and this has been attributed to the endemicity of the parasitic

infection in the region of sampling along with environmental, climatic and sanitary factors (13).

Microscopic examination of stool using acid-fast staining, with or without stool concentration, is the most frequently applied screening technique for cryptosporidiosis. Acid-fast staining microscopy is cheap and accessible in poor rural settings; it is the best parasitological method in terms of sensitivity and specificity (14) and shows good performance when compared with immunological and molecular methods (15).

In Jordan, Cryptosporidium has been investigated either alone or along with other intestinal parasites in various population groups (10,16), in the environment (17) and in domestic animals (18). Prevalence ranges from 4% to 19%. Modified acid-fast staining microscopy has frequently been used as the diagnostic method of choice. Cryptosporidiosis risk factors have been reported in Jordan, including drinking groundwater that is exposed to contamination from sewage (17), immunosuppression (10), contact with domestic animals and eating unwashed vegetables (19,20).

This paper reviews the status of cryptosporidiosis in Jordan and tracks recent updates for this emerging protozoal infection among different population groups.

Literature review

The search was performed on Google Scholar and PubMed databases using the keywords: Jordan, cryptosporidiosis and Cryptosporidium. Only 9 articles were identified from 1994 until 2019 and were downloaded; this reflects the scarcity of studies on this parasite in Jordan.

The first study was published in 1994, it reported on the prevalence of various parasites in elementary school children in northern Jordan. Using various parasitological methods, Cryptosporidium spp. was detected in 40 out of 1000 stool specimens collected from symptomatic and asymptomatic elementary school children aged 6–14 years in northern Jordan (16). The same study reported a higher infection rate in the younger age group (