



Epidemiology of Hydatidosis in Iraq: A Subject Review

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Abstract

intermediate hosts (Saida & Nouraddin 2011 and Abdulhameed *et al.* 2018) ^[8, 1].

Epidemiology of hydatidosis in Iraq is related to livestock production systems. Sheep are the most important intermediate host as they are highly susceptible to infection; sheep are the most abundant livestock species in many governorates in Iraq. Domestic and stray dogs are important definitive hosts, cattle, goat, buffaloes and camels are also contributing factors in maintaining the parasite life cycle. Infected dogs can spread eggs to the environment and soil, vegetables and water, thus allowing the transmission of the infection to humans and animals (Deplazes *et al.*, 2017; WHO, 2023) ^[4].

To establish this, a retrospective epidemiological study was carried out in Baghdad Province, which showed that about 70% of all cases were female, and that the most common age group was 31-40. Housewives were the largest occupational group affected, indicating that activities within the household and close contact with domestic animals may be risk factors for exposure. The predominant organ affected was the liver, followed by lungs, kidneys and spleen (Al-Yasari *et al.*, 2020) ^[2].

In contrast, a hospital-based back-calculation study in the Basrah Province concluded that CEC is still a significant public health issue. The majority of patients were female and the majority of infections were in adults aged 21-30 years. Nearly half of the cases diagnosed were hepatic cysts and about one-quarter were pulmonary. Abdulhameed *et al.* (2018) ^[1] noted that underestimation of the actual burden of disease in southern Iraq is likely due to incomplete surveillance systems.

Previous epidemiological studies in northern Iraq showed that levels of infection were high in stray dogs and that these dogs were very important in maintaining the transmission of parasites. Adult *E. granulosus* worms were found in almost half of the stray dogs examined and infections occurred most frequently among farmers, laborers and housewives. The present results further confirm the significance of controlling the infection of the dog as an integral part of hydatidosis control in Iraq (Saida & Nouraddin, 2011) ^[8].

lack of health education and lack of routine dog deworming programs. Exposure is higher in rural areas due to the tendency of livestock to be kept close to people within households, thus offering more opportunities for transmission from dogs to livestock and livestock to people. Limited veterinary infrastructure and poor public awareness also impede disease control, due to socioeconomic conditions (Budke *et al.*, 2006; Deplazes *et al.*, 2017)^[3, 4].

Nevertheless, despite modern advances in diagnostic imaging, surgery and anti-parasitic chemotherapy, hydatidosis remains a significant cost to Iraq's livestock sector and healthcare system. Human disease may cause extended hospital stays and surgery, while livestock infections typically lead to loss of productivity and edible organs at slaughter due to condemnation. The results highlight the importance of implementing integrated surveillance programmes that incorporate a One Health approach and integrate veterinary medicine, public health, environmental sanitation and community education to limit transmission and enhance disease control (Budke *et al.*, 2006; WHO, 2023)^[3].

Public Health and Economic Impact

Hydatidosis is a serious public health problem in Iraq due to its chronic nature, the prolonged clinical course and need for surgical intervention in many patients. Hepatic and pulmonary cysts often require hospitalization, further imaging, antiparasitic treatment, and surgical removal, making these cysts a significant burden on our health-care system. The disease burden is underestimated as the cysts grow slowly and are not detected until years after infection, resulting in a delay in symptom recognition. The economic impact is not limited to human diseases. The effects of hydatid infection in the livestock include condemnation of infected livers and lungs at meat inspection, loss of carcass value, decrease in productivity and losses for the farmers and meat industry. These losses are exacerbated by health care costs, loss of productive labor force, and surveillance and control expenses on a national level. Economics has also been reported to be affected in other endemic Middle Eastern countries, and therefore hydatidosis is an both a veterinary and public health problem (Budke *et al.*, 2006; Torgerson & Macpherson, 2011; WHO, 2023)^[3, 9].

Control Strategies

programs will provide greater knowledge of disease transmission and help guide evidence-based control measures.

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