

Original Research Article

Prevalence of Human Cystic Echinococcosis in Basrah Province/South of Iraq

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Abstract: Human cystic echinococcosis is one of the greatest significant neglected tropical diseases. It develops and transmits from canines to human. The purpose of this study was to assemble information on the occurrence of human cystic echinococcosis in Basrah province /south of Iraq. Thirty samples of clinical diagnosed patients and the same as control, attended different hospitals, obtained during the period from August 2023 to June 2024. The majority of patients were in age group 10-19 while only 9% were with age group of 60-69. The study concluded that infections in female were about 19(63.3%) while in male were 11(36.7%), Most patients were inhabitant of rural area 16(53.3%) compared to14(46.7%) patients of urban area. Cystic echinococcosis is a condition that is mostly ignored. Medical specialists must work to reduce human cystic echinococcosis by advising people about its prevention and control.

Keywords: Human echinococcosis, Human, Hydatidosis.

INTRODUCTION

Endemic and emerging infections have increased recently owing to modern life styles, such as nutrition and consumption of immune suppressor drugs. Studies investigated bacterial, fungal, viral, and parasitic infections. (Khanoo N.M. *et al.*, 2023) Human cystic echinococcosis is a parasitic infection that triggered by ingestion of Echinococcus egg (Al Samir *et al.*, 2024). The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have listed echinococcosis as one of the 20 neglected tropical diseases. The disease's worldwide burden is further compounded by the fact that over a million cases are afflicted with it. (Aldhaher and Alsamir, 2020). The Mediterranean region is notably impacted by the echinococcosis disease group, which is regarded an significant prevalent zone worldwide (Borhani *et al.*, 2020; McManus *et al.*, 2003; Zeghir-Bouteldja and Touil-Boukoffa, 2022).

Currently, the genus Echinococcus is responsible for three identified types of the illness (Vuitton *et al.*, 2020). The most common types of echinococcosis are brought on by *E. multilocularis* and *E. granulosus*, respectively (Štimac and Martinković, 2021; Tamarozzi *et al.*, 2014). The regions with the highest frequency of human echinococcosis include the Mediterranean, China, South America, North Africa, Central Asia, Southern and Central Russia, and Eastern Europe (Deplazes *et al.*, 2016; Grosso *et al.*, 2012). Since it is either non existent or very rare in the Balkan countries.

The lack of local facilities for human echinococcosis inhibition, diagnosis, or handling have proven inefficient in preventing, diagnosing, and treating this illnesses.

The fecal–oral mode of transmission for human echinococcosis is shared by domestic dogs, and ungulates, primarily livestock, primarily sheep. Most frequently, it is accidentally consumed by people by the consumption of parasite eggs that are released from the dog's intestines in its feces, infecting the surrounding area. Following human consumption of echinococcal eggs, the parasite grows into fluid-filled cysts, or metacestodes, in a variety of tissues and organs, most commonly the lung and liver and (Casulli *et al.*, 2019). Since echinococcal cysts grow slowly in people, the condition is

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frequently misdiagnosed during physical examinations, most commonly during abdominal ultrasonography or a pulmonary x-ray (Brunetti *et al.*, 2018; Tamarozzi *et al.*, 2019). Rupture of the cyst may result in anaphylaxis and death, also its development impairs organ function or causes discomfort (Moro and Schantz, 2009).

Four types of therapy options are found for the treatment of echinococcosis: First, medication therapy (benzimidazoles); second, percutaneous methods; third, surgery; and fourth, waiting it out (Butt and Khan, 2020). Treatment decisions are frequently based on the size, location, and cyst stage (WHO, 2001; Dekhordi *et al.*, 2019). Though, discernment in handling devices based on a cyst feature is still not completely applied in several countries and is often limited to echinococcosis treatment centers, which are not found in BandH (Stojković *et al.*, 2018).

Due to their unique membership in the dog family (Lattidae), the definitive hosts chosen by the parasite exhibit a high degree of specificity. Humans are greatest unusual intermediate hosts for the parasite since *E. granulosus* has poor specificity for intermediate hosts (Lightowlers, 2013; Štimac and Martinković, 2021).

The reported echinococcosis numbers are probably estimates and frequently may not accurately represent the real disease burden. Underreporting at the national and supranational levels is a significant issue because, according to estimates, just one in four instances are recorded (Budke *et al.*, 2006). In Europe, various nations have varied CE notification requirements, and these criteria are applied differently (ECDC, 2020).

The fact that more than a million individuals globally are afflicted with human echinococcus at any given moment is proof of the disease's significance. In surgical patients with infection, the average post-operative mortality rate is 2.2%, and around 6.5% of cases recur following an intervention, necessitating a longer recovery period (WHO, 2022). This assessment highlights the need for more oversight and worldwide control for human hydatidosis.

METHODS

During the period from August 2023 to June 2024, data on 30 positive CE cases with ages ranging from 10 to 60 years were collected after examination by the surgeon confirmed as hydatidosis from different Basrah hospitals (Alsadr Educational hospital, Basrah Educational hospital and diseases and surgery digestive system and liver hospital, in contrast, 30 samples were collected from individuals with no hydatid disease as a control group, whose ages ranged from (12 to 63) years. The questioner was filled out by both groups and included name, age, gender, occupation, cyst location, geographical regions, animals contact, medications, and association diseases finally all this information were the foundation for the current Arithmetical of human hydatidosis in Basrah province /south of Iraq

Statistical Analysis

The data were analysed by means of the Statistical Package for the Social Sciences (SPSS Statistics) software version 16 (IBM Corp., 2007). To compare between study groups, chi-square test was achieved and the "p value" less than 0.05 refereeing to a significant differences between study groups.

RESULTS

For Assessing human cystic Echinococcosis cases, 30 patients had been recorded with Age -Related Echinococcosis the CE patients. The age group of 60-69 exhibited the lowest percentage of patients(9%) , while the age group of 10-19 exhibited the higher percentage of patient (28.7 %), and the age group from 20-29were (16.7%)of patient ,followed by the age group30-39which showed (24.7%),also the age group of 40-49 have been showed (24.7%)of infections and finally the age 50-59 were (11%) of patients, also between age groups, there was a statistically significant difference (P =0.07) (Figure 1). With sex-related Echinococcosis the study was markedly recorded more female echinococcosis infections19(63.3%) than male echinococcosis cases 11(36.7%), (Figure 2).

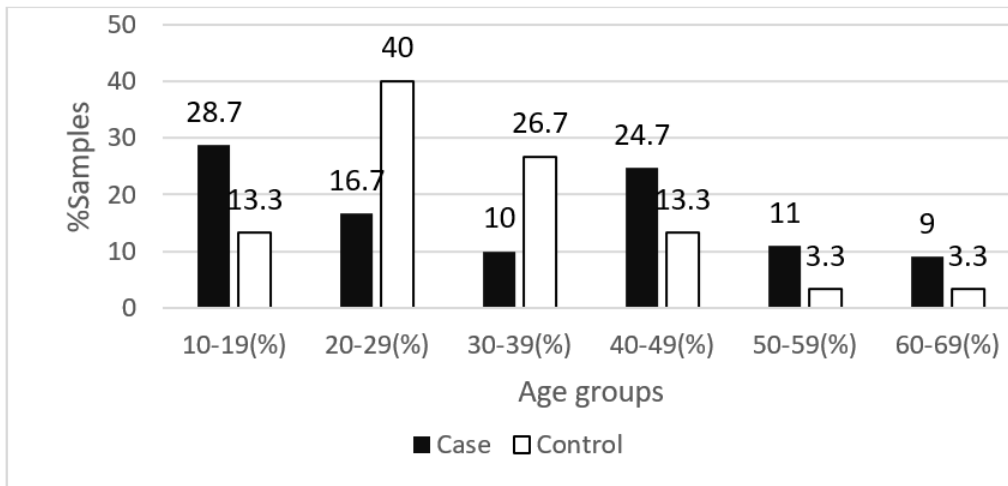


Figure 1: The percentage of samples categorized in age groups

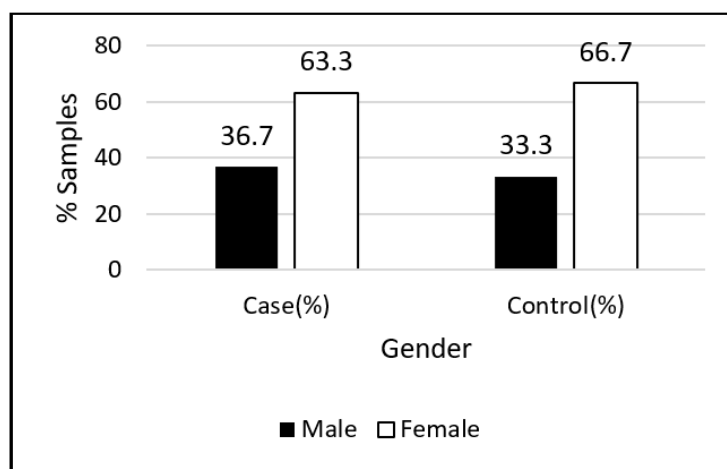


Figure 2: Human cystic Echinococcosis prevalence by gender

Also, with Area -Related Echinococcosis, the hydatidosis patients have been exhibited the highest infection perhuman hydatidosisntage in the Rural areas 16(53.3%) than the lower infection perhuman hydatidosisntage in the Urban areas 14(46.7%), there were a statistically significant difference detected in the prevalence of hydatidosis (P= 0.06) (figure3).

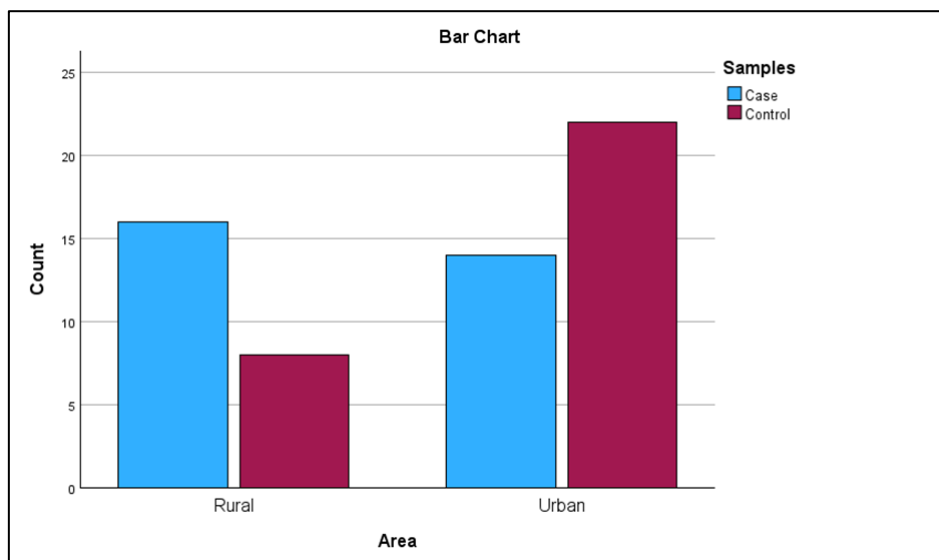


Figure 3: Human cystic Echinococcosis prevalence by Area

DISCUSSION

Due to its practically universal presence and propensity to remain as an endemic illness, the echinococcosis disease group is one of the most significant parasitic zoonotic diseases.

Our research indicates that CE is prevalent in the Basrah province /south of Iraq similar to it in the other Mediterranean regions as indicated by a study of (Rojo-Vazquez *et al.*, 2011). And also, our study suggests that number of cases have been not recorded about human CE, indicating an ongoing local transmission of the illness. One indicator that the parasite is endemic and that transmission of the parasite is still occurring in a particular area is the prevalence of CE infections.

The 10-19 age group accounts for 28.7% of all cases, which is consistent with research conducted in Iraq of (Mohanad F.A. *et al.*, 2017), where echinococcosis is already thought to be endemic and patients in this age group made up 4.5 cases per 100000 people

Women are much more likely than men to have CE in Basrah provinces and this is similar to a study of (Mohanad F.A. *et al.*, 2017) who concluded that female infection was (61.2%) compared to the male infection ratio (38.8%). According to the (Aksu *et al.*, 2013) different findings are noted in Turkey, where 47.05% of cases were female and 52.94% of cases were male. Since the published data of (Tamarozzi *et al.*, 2019) have been shown similar results to this study in the higher incidence of female echinococcosis. Although the incidence and prevalence of echinococcosis have decreased over the previous several decades, echinococcosis is still a significant public health concern in a number of nations. Insufficient reporting is a significant challenge to accurately appreciating the significance of echinococcosis. Due to the disease's delayed clinical presentation, patients mistakenly believe that it is a minor health issue due to official echinococcosis reporting short comings. surveying analysis of hospitalized patient data in Basrah revealed a far higher number of patients with echinococcosis than was formally reported by other studies.

There is a correlation between the risk of contracting echinococcosis and close contact with dogs, who are thought to be the primary shedders of *Echinococcus* eggs.

The primary issue, on the other hand, is that the dog population lacks preventative measures, such as those against echinococcosis.

CONCLUSION AND RECOMMENDATIONS

Avoiding human echinococcosis requires an understanding of the biology and epidemiology of parasites, including human transmission. One of the most important components of the initiatives to manage and eradicate echinococcosis is education. The general public has to be made aware of the dangers of CE, with dog owners, breeders, butchers, and vegetable breeders receiving particular attention.

We supposed that the number of recorded infections is likely lower than the real number of diseased due to inadequate reporting and the lack of National Report centers in Basrah province. A significant relationship between the quantity of sheep and the prevalence of human CE should serve as a warning that more aggressive disease management efforts are required.

The study information might be used to quantify the disease and address the issue of underreporting of CE in humans. Professionals in veterinary and human medicine must work together to reduce CE, and both human and animal-focused interventions must be put in place.

Health education about the prevention and control of CE while taking into account local customs and circumstances is a crucial preventative approach. Disposition of stray dogs, placing stray dogs under veterinary supervision, regularly deworming dogs with owners, immunizing goats and sheep, and the sanitary removal of diseased intestines from slaughterhouses are new possibilities for the management of CE.

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