

The Epidemiology Of Hydatid Cysts Liver Diagnosis In Najaf Governorate

Mona Adel Ismail^{1,a)}, Sarmad Jassem Mohammed^{2,b)} and Noor Hadi Hassan^{3,c)}

¹*Al-Furat Al-Awsat Technical University, Technical Institute / Kufa, Department of Medical Laboratory Techniques/Iraq.*

²*AL-Mustaqbal University college /Department of Medical Laboratory Techniques/Iraq.*

³*Al-Furat Al-Awsat Technical University, Technical Institute / Kufa, Department of Nursing Techniques/Iraq.*

^{a)}*Corresponding author: mona.almontafaki@atu.edu.iq*

^{b)}*sarmad.jasim@mustaqbal-college.edu.iq*

^{c)}*noor.hassan@atu.edu.iq*

Abstract. In Iraq and many Mediterranean countries, hydatid disease is endemic from a long time. The disease causes health, economic, and social disasters. Iraq has become one of the most endemic areas for this disease, particularly in the central as well as southern regions. Particularly in the areas between the Euphrates and the Tigris rivers. Many farmers and sheep breeders live in these areas. The purpose of this research is to determine the relationship between hydatid disease and various variables such as the differences in infection rates between males and females, age, and geographical distribution of patients. This study included patients with hydatid disease who were admitted to the "Al-Sadr" General Hospital between January 1, 2020 and December 31, 2020 and there were 58 patients in total. According to the findings, the most affected areas of this disease are rural areas, and the peasantry is the most affected group of females. The reason for this is due to the nature of their work with crops and animals. The findings also revealed that females are infected at a higher rate than males.

Keywords. Hydatid cyst, Najaf, Iraq, gender and age distribution

INTRODUCTION

Hydatid disease is one of the oldest known diseases in humans. It was first described by Hippocrates in 379 BC as being caused by a "water-filled bladder" in the Talmud it was describes as a liver filled with water(1).Hydatid disease is an epidemic disease that causes health, economic, and social disasters in Iraq and many other Mediterranean countries. Iraq is now one of the most epidemic areas for this disease .Hydatidosis is a worldwide infection caused by the larva of a parasite belonging to the tapeworm class known as Echinococcus(2). The areas where sheep and cattle breeding are prevalent are the most endemic with parasitic worms in the world, particularly in southern Australia, New Zealand, the northern part of Africa, and some South American countries.(3).Furthermore, human infection occurs on a regular basis in Europe, Siberia, Mongolia, northern China and southern Japan, Vietnam, the Philippines, Syria, Lebanon, Iraq, and Saudi Arabia(4).

Hydatid disease is a health, social, and economic issue in the eastern Mediterranean region and the spread of infection is common in those areas because dogs are widely used in the care of cattle and sheep herds. This animals have direct contact with humans. This contact resulting in the continuation of the infection chain that includes dogs, sheep, cattle, camels, goats, and other animals (meat eaters)(5).In Iraq, the disease is epidemic and considered a serious health problem, particularly in the central and southern regions between the Euphrates and the Tigris. This areas are inhabited by many farmers who produce grains and raise sheep, as well as the presence of factors that contribute to cyst disease spread and the presence of the intermediate host as a disease. Extensive studies on the disease's prevalence in Baghdad for example have been carried out in the last decade.It was found that Hydatid disease was shown in 8 out of every 1000 patients treated at the Baghdad Medical City Teaching Hospital for a variety of ailments.. The study's aim was to identify out how common hydatidosis parasite disease was in the

province of Najaf governorate. Hydatid cysts in Iraq(6). There are no local comprehensive epidemiological surveys in Iraq, however despite this, several Iraqi researchers have completed multiple studies on the prevalence and epidemiology of "cystic hydatid disease" (CHD) in various cities, including Baghdad, during varied time periods. Studies have shown that hydatid disease infections are common in urban populations, with a disproportionate number occurring in rural areas(7).

It has been shown that this disease is still an enormous public health concern in Iraq as demonstrated by the research of Saeed and colleagues . According to these studies, illness incidence in Iraq may even be greater than in other nations. A reliable source of data for local investigations on human hydatid disease was hospital records. These records were used to confirm the infection by surgery. Dogs are often used as farm guardians and to follow livestock on pastures because of the prevalence of hydatid diseases seen across Iraq, according to these research. This is not the only way to become infected, however, since direct contact with domestic dogs who have the adult worm in their intestinal tracts may also result in infection via eating worm eggs(8). There are no strong restrictions to prevent road slaughters even in urban areas (unauthorized slaughters). The failure to prevent stray dogs from devouring the sick organs of these animals is also to be responsible for spread of the disease. Increasing numbers of stray dogs and a lack of veterinary and health inspections might give an additional source of infection. Sadly, there are no initiatives established by local government to monitor the situation. WHO contributed also by educating local populations about the disease's danger and the most important ways to prevent infection as well as how they may lessen or eradicate their own illness(9). There have been a number of epidemiological and retrospective investigations in Iraq prior to the present research. Several research conducted in Iraq includes city of Baghdad, as well as some other governorates, to estimate the frequency and severity of unilocular hydatid disease in these areas (7).

The results has shown that there hasn't been any major or active epidemiological programme for the World Health Organization in Iraq curb to the spread of the disease , and the illness remains prevalent in the country. Epidemiology investigations must be planned and carried out on a regular basis(10). In addition, a local database for the foci of infection helps produce a key disease control programme. In order to prevent the spread of this illness, it is necessary to address all of the elements that influence it. We conducted this research to present an overview of recent epidemiological data about instances of Hydatid Cysts in Najaf city. Medical data and information from major hospitals in Najaf were used in the research..

MATERIALS AND METHODS

STUDY SAMPLE

This study included patients who were admitted to the "Al-Sadr" General Hospital for the period from 1/1/2020 to 12/31/2020, who had hydatid disease. The study was conducted on the basis of:

- 1- A study of the number of cases with hydatid cysts for patients who were treated surgically in Al-Sadr Teaching Hospital during the initial diagnosis.
- 2- A study of the number of cases actually infected with hydatidiform cysts in the liver after their surgical operations in "Al-Sadr" General Hospital, where the confirmatory diagnosis was made.
- 3- The initial diagnosis of the cases was made based on:
 - a) Clinical examination by a doctor
 - b) X-ray examination
 - c) Ultrasound examination and other type of tests.

STUDY PLACE AND SITTING

Al-Sadar Hospital is an effective medical center in Al-Najaf city in Iraq which serves up to 1200 patients.

INCLUSION AND EXCLUSION CRITERIA

all relevant studies on the assessment of therapeutic methods for hydatid cysts of the liver were considered for analysis. Information from editorials, letters to publishers, low quality review articles and studies done on animals were excluded from analysis. Additionally, well-structured abstracts from relevant articles were selected and accepted for analysis.

DATA COLLECTION

58 patients were diagnosed with liver hydatid cyst at "Al-Sadr" General Hospital . Data collection was realized by consulting the patients' observation sheets, followed by organizing a database of clinical, paraclinical and treatment parameters. Age, gender, place of origin, year and duration of admission, symptoms and signs at admission, paraclinical serological tests relevant for liver function and E. granulosus infection, imaging investigations performed and their results, type of treatment received and post-treatment progress with the complications that occurred were taken in account

STATISTICAL ANALYSIS

A computer program was used for data analysis. The descriptive data was given as a mean \pm standard deviation (SD). The chi-squared test and Student t-test were used for the analytic assessment. The differences were considered to be statistically significant when the p-value obtained was less than 0.05

RESULTS

In the following tables is the main result of the research.

Table(6,1):: Shows the relationship between the age and sex of the Infected patients

Age Years	Sex				Total	
	Female		Male		No:	%
	No	%	No	%		
0-10	2	5	3	5	5	5
11-20	3	5	3	6	5	10
21-30	8	13	5	8	13	24
31-40	9	15	4	8	12	23
41-50	4	8	4	7	11	26
51-60	3	5	2	4	5	5
61-70	2	4	3	5	4	6
70- more	-	-	3	5	3	4
	31	52%	27	48%	58	100%

It is clear from the above table, which shows the relationship between the age and gender of the infected people. It shows that the age group in which the disease is infected more, is the group whose ages range between (21) to (40) years of females and males. The most age group infected ranged from 21-40 year. The females are more infected than males

Table (6,2): Explains the relationship between the sex of the patient and the affected organ

The injured part in the human body	Females		Males		Total	
	No	%	No	%	No	%
liver	12	20	9	17	21	37
lung	6	13	5	6	12	23
Kidney	4	9	4	9	12	19
spleen	5	3	4	5	7	9
abdominal cavity	4	7	2	4	6	12
Total	31		27		58	100%

Table No. (4,2) above , shows the relationship between the patient's sex and the location of infection in the body, revealed that the liver is the most affected organ, with females having a 20% infection rate and males having a 17% infection rate, which is consistent with the study (11).

Table (6,3):explain the multiplicity of hydatid cysts and single infection among the sample.

Type of hydatid disease	Gender	No	Percentage	Total	Mean and S.D
Single	Male	10	24	Ratio: 62%	M=16
	Female	21	38		S.D=3.5
Multiple	Male	11	18	Ratio:38%	M=11.3
	Female	16	20		S.D=0.7

According to the above table, the multiplicity of hydatid cysts in patients with a single infection is higher, reaching a rate of 62 %, with a mean of (16) and a standard deviation of 3.5, whereas the percentage of multiple infection was 38 %, with a mean of 11.3, and a standard deviation of (0.7).

Table (6,4): The relationship between age groups and multiplicity of multiplicity of hydatid cysts.

Age Categories	The Multiplicity Of Hydatid Cysts	
	Single	Multiplicity
0-10	4	-
11-20	3	1
21-30	7	2
31-40	8	2
41-50	7	4
51-60	4	5
61-70	2	2
70- above	2	2
	40	18

The above table shows the nature of the relationship between age groups and the number of hydatid cysts. Single hydatid cysts appear to affect people between the ages of 40 and 21 the most. Furthermore, those aged 41-60 years are the most affected by the multiplicity of hydatid cysts. It has also been noted by (8,17) that females between the ages of 21 and 50 had a greater risk of infection than men in the same age range. This may be related to the social life in In the Iraqi culture where the females aged 21-50 are restricted to home working and this would make people more vulnerable to the source of infection particularly in rural region.

Table (6,5): The table shows the percentage of infection by area of residence

Residential Area	Number Of Cases
urban areas	22=37%
Rural areas	36=63%

The above table shows the number of infected people according to the residential area, and it is clear that there are 22 cases infected in Urban areas and 36 cases in the rural areas. As a result, it is clear that the casualties are more prevalent in the rural areas than in the city.

Table (6,6): The table represents the relationship between the patient's gender and the type of work

Type of work	Female	Male	Total
House wife	12	3	15
Farmer	10	9	19
Student	7	6	13
civil servant	4	2	6
Another type of work	3	2	5

The table above represents the relationship between the patient's gender and the type of work. The results for patients with hydatid disease revealed that the majority of infected females were housewives, with the number of infected totaling (12) . The researcher used the results of the above table and with SPSS program results and P=value <0.02.

DISCUSSION

These findings show that hydatid disease is still a problem in Iraq, despite advances in science and technology after 2003. Furthermore, because the majority of those infected are females, it takes more attention and effort to discover the disease for them than for males by conducting health education campaigns to inform them of the disease's symptoms and how to prevent it. Teaching women how to wash vegetables and fruits, particularly leafy vegetables, which must be washed and sterilized before consumption. Because women are more responsible for cooking than men, attention must be paid to hygiene and food preservation rules. In addition, women are encouraged to thoroughly cook meat in order to kill any worms that may be present. In addition, medical examination campaigns should be carried out in order to detect the disease early(14). This result indicates that the treatment of this disease necessitates a surgical procedure to eradicate it and reach the stage of recovery, and that this matter necessitates large sums of money in order to eliminate this disease. The spread of these diseases imposes significant costs on both the family and the state(15).

In most cases, it was discovered deep surgery needed to eradicate this disease and its presence in the liver. This type of surgery may necessitate the use of advanced technology in some cases. Furthermore, surgical operations are sometimes ineffective because the disease spreads to large areas of the liver, which is difficult to eradicate, leading to a deterioration in the patient's condition and death. Therefore, it requires intensive campaigns in educating the community about the likely members of the body and the places most affected by the disease, so that people realize that they have to detect the disease early(16). As a result, it is critical to focus on early detection and treatment of patients before they develop a plethora of hydatid cysts. This may be difficult to treat. It may result in death. As a result, examinations should be performed as soon as possible in cases where there is a high suspicion of infection in order to detect the disease early(17).

In light of these findings, educational campaigns focusing on the age groups (21-40 years) must be prioritized in order to educate them about the disease and inform them of the symptoms of the disease in order to detect it early before it develops into a multitude of hydatid cysts. This age group represents the future generation, and they must

be cared for. As a result, it is critical to focus educational campaigns on students in institutes and universities because they are in this age group(18).The reason for this is a lack of disease awareness in the rural areas, as well as the nature of their living near animals. In addition, people in the rural areas are unaware of proper methods for washing vegetables and fruits to protect themselves from infection of this disease. Also, people's lack of knowledge about how to prevent it, which necessitates more focus on these areas in educating communities about the disease and how to avoid infection.

Given this outcome, it is clear that the majority of those infected are farmers (female), and this issue requires more attention to this segment of society in order to prevent disease and preserve their health. This is due to the nature of their work, which is primarily based on work in the land and with animals, both of which are important means of disease transmission. To preserve their health and decrease the occurrence of disease, it is necessary to educate this segment of society and explain the ways of disease transmission and prevention, as well as educate them about the effect of stray dogs and how to get rid of them because they are one of the means of disease transmission(19).

ETHICAL APPROVAL

Written informed consent was obtained from the Department of Health and patient for publication of this paper.

FINANCIAL SUPPORT

financial support from the researchers themselves

CONCLUSION

E. granulosus can cause cystic lesions anywhere in the body. Thus, cystic echinococcosis has to be thought of as a differential diagnosis in patients presenting with cystic swellings anywhere in the body in endemic areas unless otherwise proved. Appropriate investigations have to be performed in order to arrive at an accurate diagnosis and in order to prescribe a specific treatment, which is essentially surgical

ACKNOWLEDGMENT

We are very much grateful to the departments of Surgery and Pathology in Al-Sadr" General Hospital for their valuable support

REFERENCES

1. Fischer, J.J. and H. Nguyen, *Standard mobile communication device distraction prevention and safety protocols*. 2016, Google Patents.
2. Yadollahpour, A., S.J.B. Rashidi, and P. Journal, *Therapeutic applications of electromagnetic fields in musculoskeletal disorders: a review of current techniques and mechanisms of action*. 2015. **7**(1): p. 23-32.
3. Vijay, S. and M.P. Choudhary. *Study on Health Effects of Mobile Tower Radiation on Human Beings*. in *Int*. 2017.
4. Panda, N.K., et al., *Audiologic disturbances in long-term mobile phone users*. 2010. **39**(1).
5. Epidemiology:, I.S.C.o., et al., *Epidemiology of health effects of radiofrequency exposure*. 2004. **112**(17): p. 1741-1754.

6. Martinez-Gonzalez, A., et al., *Practical procedure for verification of compliance of digital mobile radio base stations to limitations of exposure of the general public to electromagnetic fields*. 2002. **149**(4): p. 218-228.
7. Viel, J.-F., et al., *Residential exposure to radiofrequency fields from mobile phone base stations, and broadcast transmitters: a population-based survey with personal meter*. 2009. **66**(8): p. 550-556.
8. Bhat, M.A., V.J.J.o.P.S. Kumar, and Research, *Effects of Mobile Phone Tower Radiations on Skin and Blood Tissues of Human Body at Frequencies 800, 900, 1800 and 2450 MHz*. 2016. **8**(2): p. 59.
9. Food, U. and M.R.J. Drug Administration %J Silver Spring, *Radiation-emitting products: reducing exposure: hands-free kits and other accessories*. 2009. **18**: p. 2012.
10. Bahaodini, A., et al., *Low frequency electromagnetic fields long-term exposure effects on testicular histology, sperm quality and testosterone levels of male rats*. 2015. **4**(3): p. 195-200.
11. Gandhi, G., et al., *A cross-sectional case control study on genetic damage in individuals residing in the vicinity of a mobile phone base station*. 2015. **34**(4): p. 344-354.
12. Gulati, S., et al., *Effect of GSTM1 and GSTT1 polymorphisms on genetic damage in humans populations exposed to radiation from mobile towers*. 2016. **70**(3): p. 615-625.
13. Kim, K.-H., et al., *The use of cell phone and insight into its potential human health impacts*. 2016. **188**(4): p. 221.
14. Medeiros, L.N. and T.G.J.B.j.o.o. Sanchez, *Tinnitus and cell phones: the role of electromagnetic radiofrequency radiation*. 2016. **82**(1): p. 97-104.
15. Mostafa, R.M., et al., *Possible impact (s) of cell phone electromagnetic radiation on human sperm parameters*. 2012. **2**(2): p. 49-55.
16. Cancer, I.A.f.R.o. and F.I.A.f.r.o.C. World Health Organization %J Lyon, *IARC classifies radiofrequency electromagnetic fields as possibly carcinogenic to humans Press release no 208*. 2011.
17. Nahas, M., M.T.J.W.E. Simsim, and Technology, *Safety Measurements of Electromagnetic Fields Radiated from Mobile Base Stations in the Western Region of Saudi Arabia*. 2011. **2**(4): p. 221-229.
18. Haumann, T., et al. *HF-Radiation levels of GSM cellular phone towers in residential areas*. in *2nd International Workshop on Biological effects of EMFS*. 2002.
19. Group, B.W., C. Sage, and D.O.J.D. Carpenter, *BioInitiative Report: A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Radiation at www. bioinitiative. org*. 2012. **31**(2012): p. 1557.