

Epidemiology of cystic echinococcosis in Al-Najaf province

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Abstract

Cystic echinococcosis (CE) is a zoonosis disease of worldwide distribution caused mainly by the metacestode *Echinococcus granulosus*. In Najaf, its distribution reaches endemic levels. This is results of this study were to investigate the trends in suspected cases of human CE recorded in Al-Sadder Medical City, Al-Hakim General Hospital and Al-Zahraa Teaching Hospital in Najaf city during a period November 2013 to September 2014 and to study demographic and clinical characteristics of cases together with epidemiological factors associated with the disease. Clinical records of operated and/or diagnosed patients were reviewed with regard to this disease. 217 cases (68% female; mean age 21-30 years and 32% male; mean 21-30) were included in this retrospective study, 79% of which lived in rural areas. Indirect Haemagglutination (IHA) test to detect anti *Echinococcus granulosus* antibody, and ultrasonography were used to diagnose the disease. Lung infection is the most common and most cases frequently

Key words: Cystic echinococcosis, *Echinococcus granulosus*, Epidemiology, IHA test ..

وبائية داء الاكياس المائية في محافظة النجف

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الخلاصة :

يعتبر داء الاكياس المائية حيواني المنشأ واسع الانتشار يسببه طفيلي *Echinococcus granulosus* و العائدة الى صنف metacestode . يعتبر داء الاكياس المائية من الامراض المتوطنة في النجف. هدفت الدراسة الى تشخيص الحالات المشكوك فيها الاصابة بالاكياس المائية الواردة الى مدينة الصدر الطبية و مستشفى الحكيم العام و مستشفى الزهراء التعليمي في مدينة النجف خلال الفترة من تشرين الثاني 2013 الى ايلول 2014 حيث تناولت الدراسة المظاهر السريرية مترافقة مع العوامل الوبائية المرتبطة بالمرض. تم الاعتماد على العوارض السريرية او الاختبارات المختبرية لتشخيص المرض . وقد كانت عدد الحالات 217 حالة متمثلة بـ 68% نساء ضمن الفئة العمرية 21-30 سنة و 32% رجال ضمن نفس الفئة العمرية حيث تركزت الاصابة في المناطق الريفية بنسبة 79% . اعتمدت اختبار التلازن غير المباشر الخاص بالاكياس المائية و الموجات فوق الصوتية في تشخيص المرض . و قد كانت الاصابة بالرئة هي اكثر الحالات شيوعا و الاكثر تكرارنا.

Introduction:

Echinococcosis is a zoonotic disease that occurs throughout the world and causes economic losses and public health problems in many countries. Domestic intermediate hosts (sheep, goats, and cattle) are major reservoirs for the disease in humans [1]. Infection of humans occurs during the natural transmission of the parasite between the definitive hosts and domestic livestock intermediate host [2]. The disease is widespread globally. It causes a series of health problems for humans and animals in many countries in the world. Hydatidosis is one of the important and serious diseases in the world because the migration of infected people and exchange of livestock, and more prevalent in rural areas because of a closer relationship between intermediate hosts and final hosts such as dogs [3]. Diagnosis of Cystic Echinococcosis is based currently on identification of the parasite's structures by imaging techniques, including ultrasound, computerized tomography and magnetic resonance imaging[4]. However, imaging techniques are relatively complex, do not always offer a good prospect for early diagnosis, and produce data that are sometimes difficult to interpret, being often confused with those from abscesses and neoplasm. In addition, imaging technology is not always available in developing countries with inadequately equipped medical facilities [5,6]. Serological techniques are very

useful for the follow-up of patients after surgical or pharmacological treatment [7,8]. In many countries including Iraq hydatidosis is important both to human and animal health, because of the morbidity and occasionally mortality cases by the infection of humans with this disease.

Material And Method:

After achieving agreement of the ethical committee, three major hospital in An Najaf were selected for the study. A prospective study of 217 patients were infected with hydatid cysts in three major hospital in An Najaf (Al-Sadder Medical City, Al-Hakim General Hospital and Al-Zahraa Teaching Hospital) was accomplish in the period November 2013 to September 2014, data were recorded for each patients by using special form designed for the purpose of the study. Diagnosis of Cystic Echinococcosis is based currently on identification of the parasite's structures by imaging techniques, including Serological tests, ultrasound and surgery.

For each patients, a questionnaire designed to obtain information regarding demographics data including age, sex, occupation and educational level. From each participant, 3ml. venous blood samples withdrawn

and transferred into conical centrifuge tubes, then centrifuged for 5 minutes at (450 rpm), the

obtained serum was labelled, and stored at -20 C° until used.

Name:	Age:	Address :
Place of birth :		
Cyst location :		

IHA test, using commercial kits prepared by (Echinococcus fumouze diagnosis – France). Reactions of IHA assessed as either;

1-Positive Reaction: Haemagglutination, Presence of a reddish-brown carpet in well bottom sometimes, presence of a thin peripheral ring.

2-Negative Reaction: No haemagglutination Presence of more or less wide ring in well bottom.

Statistical analysis:

The data were analyzed with (chi-square) test; the level of significance was set at $P < 0.05$.

Result :

A total of 217 patients with suspected Cystic echinococcosis were studies and 50 control , shown in :

Fig.1: Showed that 82 patients negative cases while 135 patients positive cases and 50 control diagnosis by IHA.

Fig.2: The Distribution of Cystic echinococcosis Cases According to Gender.

Fig.3: Distribution of the cases related to the age of patients .

Fig.4: Distribution of the cases related to residency .

Fig.5: Distribution of the cases relation to organs .

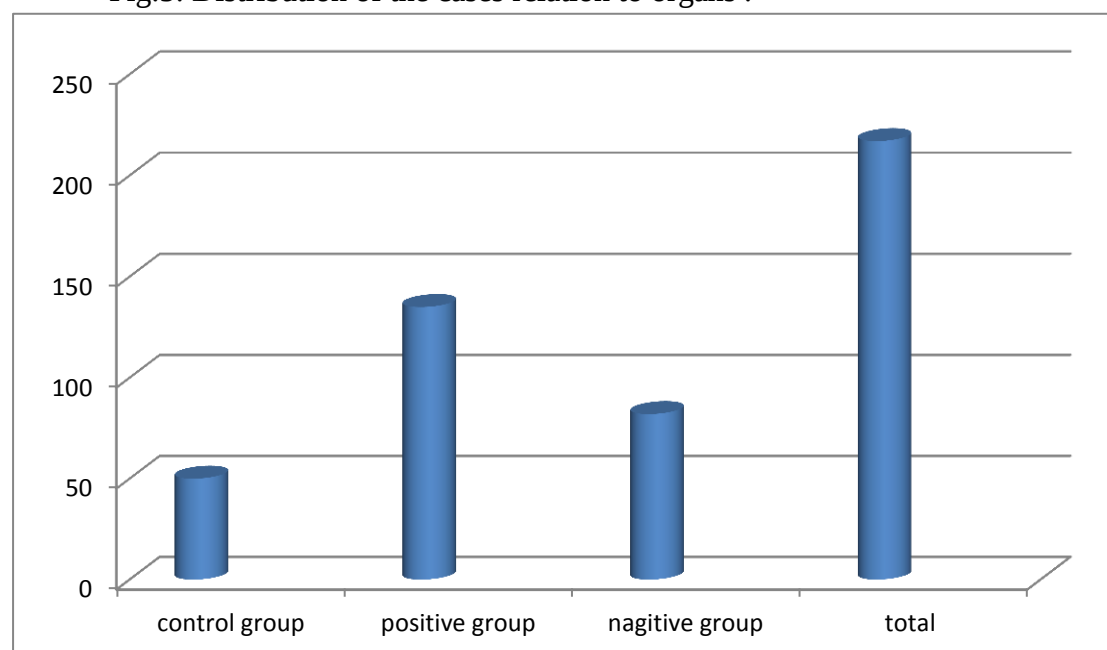


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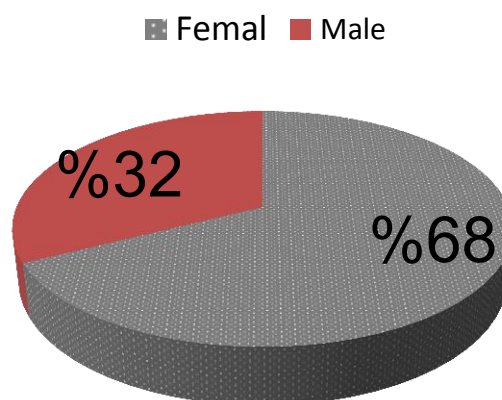


Fig.2: The Distribution of Cystic echinococcosis Cases According to Gender.

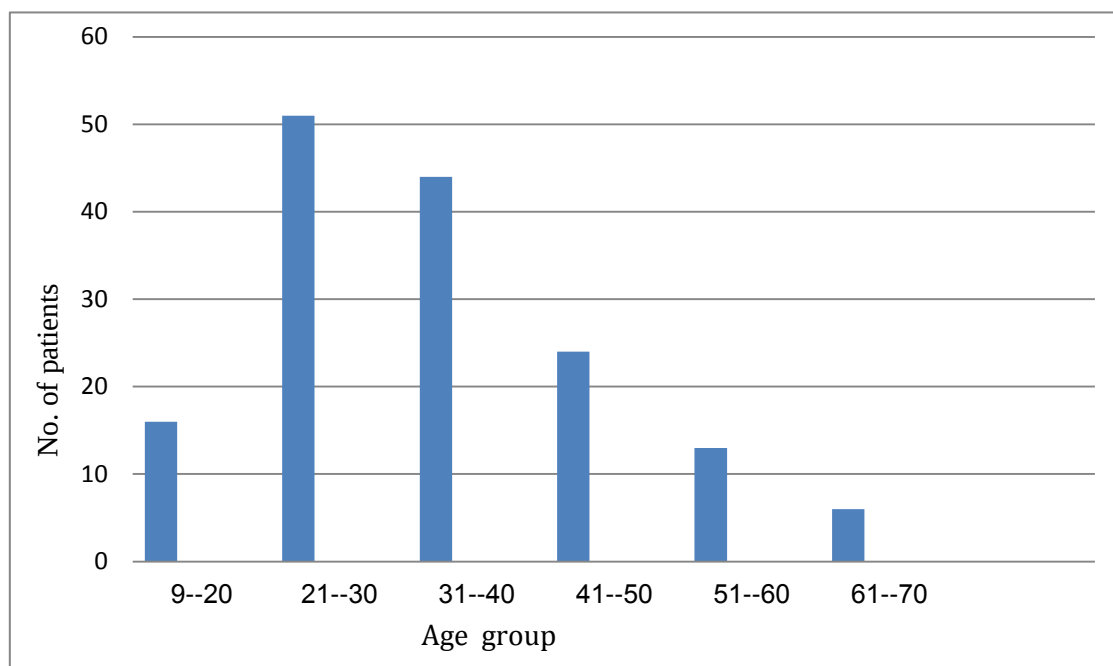


Fig.3: Distribution of the cases related to the age of patients .

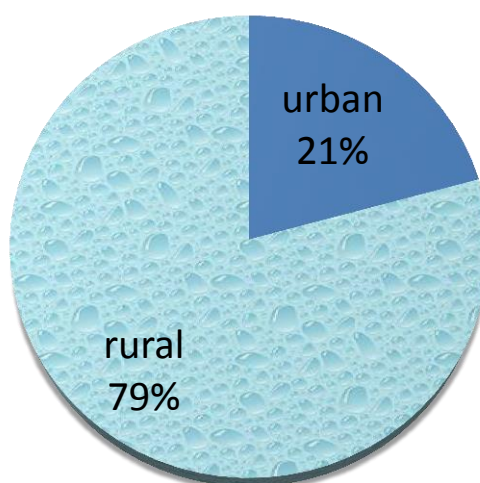


Fig.4: Distribution of the cases related to residency .

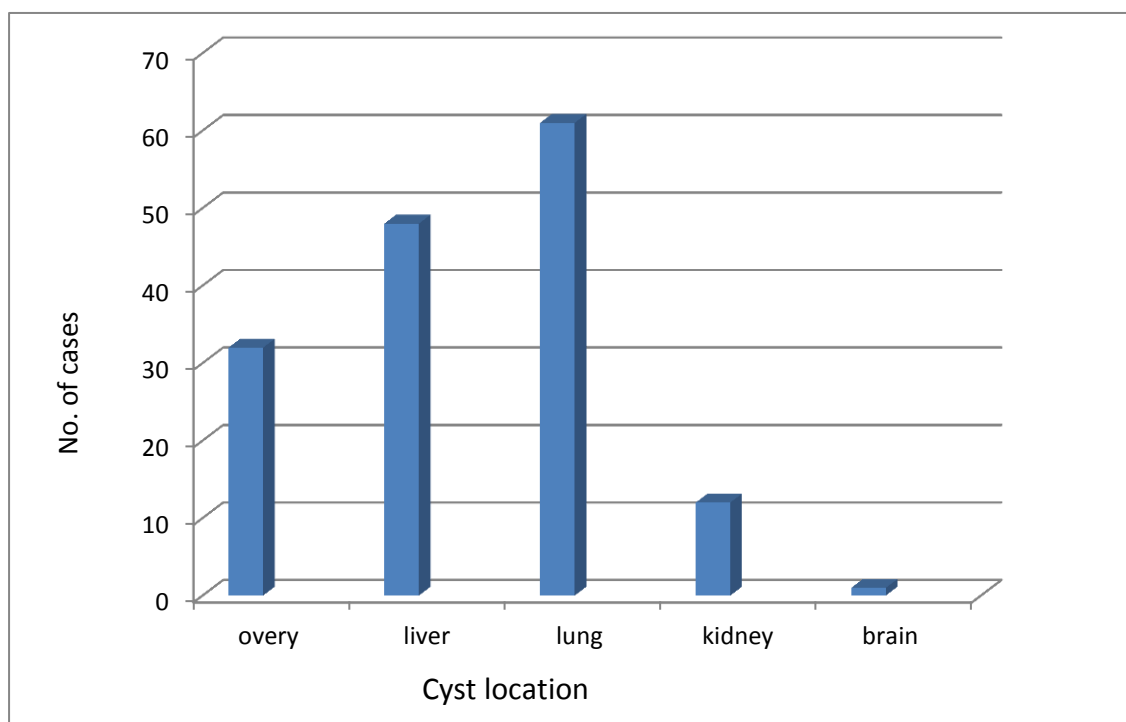


Fig.5: Distribution of the cases relation to organs .

Discussion:

Hydatid disease is a major economic and public health problem in Iraq causing a great morbidity and mortality which attributed in most of cases to the cyst[9,10] . The age of CE seropositive participants ranged from 9-70 years. There was no statistically significant difference between age groups. CE occurs in age groups from younger than 1 to over 75 years. In some areas of endemic infection, most hospital cases are recorded in the age groups between 21 and 40 years [11]. The highest incidence occurred in the age between 20-50 years ,which is agreement to other studies[12,13,14]. This is explained by the fact that these age groups were the most active worker group and most of their meals are from unhealthy sources outside their home. Females were affected more than males probably because in

the rural area ,females usually their job involves dealing with animals and they do not care to disinfect their contaminated food and vegetable . The study was conducted in 2 areas; (rural and urban) The prevalence of hydatidosis was (79% 21%) respectively, these results are much higher than this study, and the prevalence rates was high in a rural area, which is similar to this study [15]. CE is generally considered a rural disease because of the characteristics of its transmission cycle, which involves dogs and domestic herbivorous animals (cattle, sheep, pigs and so on)[16,17]. In this study, the seropositivity among female was significantly higher than in male probably because women are more involved in farming and herding livestock, as well as more likely to have contact with dogs or contaminated vegetables during food

processing and preparation, and increased susceptibility of female to *Echinococcus* infection [18]. CE is an emerging disease and the number of surgical cases in adult female is higher than in male [19]. In the present study, we observed that within the female group, most of the cases occurred in female who did household chores; while within the male group, retired workers presented most of the cases. More than a matter of gender, CE infection is closely related to people with high risk factors such as contaminated soil or contact with infected dogs with parasite eggs. Nonetheless, the transmission of this illness through water and inadequate washing of raw vegetables cannot be ruled out, since zoonotic parasites have been reported to be present in vegetables for human consumption [20,21]. The cysts had more frequently a pulmonary location followed by hepatic and other locations in agreement with other studies [22,23,24,25] and other countries throughout the world as Palestine, Australia, Chile, Jordan, China and Kyrgyzstan [26,27,28,29,30,31]. In reference to the liver/lung ratio found in this study, it is one of the highest values reported by [32].

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