



ORIGINAL ARTICLE

Cystic echinococcosis in the middle region of the Nile Delta, Egypt: Clinical and radiological characteristics



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Received 6 March 2014; accepted 5 May 2014

Available online 7 June 2014

KEYWORDS

Cystic echinococcosis;
Ultrasonography;
CT;
Classification;
Hydatid

Abstract *Background:* Cystic echinococcosis (CE) is a parasitic disease characterized by cystic lesions mainly in the liver. The diagnosis relies on clinical, laboratory, and radiological examination.

Aim: To explore the clinical, radiological, and biological features of patients with CE in the middle region of the Nile Delta, Egypt.

Patients and methods: From March 2012 to February 2014, this study was conducted on 45 patients, aged 20–65 years. Patients were subjected to clinical, laboratory, and radiological assessment using conventional X-ray chest, ultrasound and multi-detector CT of the abdomen and chest.

Results: This study identified the epidemiological, clinical, laboratory, and radiological characteristics of patients with CE in the middle Delta region, Egypt. The CT may display the same findings as US in diagnosing and staging of most cases; however, CT is more superior to US in the evaluation of heavily calcified cysts, small inaccessible cysts, and pulmonary hydatid cysts.

Conclusion: Biological markers seem neither sensitive nor specific, whereas the serological tests, preferably two different techniques, are useful. Ultrasound showed high accuracy rate, but CT, whenever possible, should be employed as it provides additional diagnostic value.

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Abbreviations: MDCT, multi-detector computed tomography; US, ultrasonography; CE, cystic echinococcosis; WHO, World Health Organization; ESR, erythrocyte sedimentation rate; IHT, indirect haemagglutination test; ELISA, enzyme-linked immunosorbent assay.

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Peer review under responsibility of Egyptian Society of Radiology and Nuclear Medicine.

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1. Introduction

Cystic echinococcosis (CE), also called cystic hydatid disease, is a parasitic infection caused by the larva of dog tapeworm, *Echinococcus granulosus*, and is characterized by cystic lesions in the liver, lungs, and rarely, in other parts of the body. The infection is acquired via ingestion of eggs of *E. granulosus* (1). Cystic echinococcosis is one of the common diseases in tropical countries, and it is also endemic in many countries, including those around the Mediterranean basin, Latin America and Central Asia. The disease causes severe public health problems in some endemic foci (2). Certain people such as slaughterers, tanners, stockbreeders, shepherds, butchers, veterinarians and all whose job makes them to work closely with animals are at higher risk of the infection (3).

The disease primarily affects the liver (in 52–77% of cases) and shows typical imaging findings. However, the clinical presentations vary widely and are mostly nonspecific. Therefore, imaging plays an important role in the diagnosis of CE (4). The uncomplicated hydatid cysts of the liver are frequently asymptomatic. The symptoms, if present, may be related to a toxic reaction due to the presence of the parasite, and the local and mechanical effects depending on the location and nature of the cysts as well as the presence of complications (5). Typically, many patients present first by complications which occur in about 40% of cases. The most common complications in order of frequency are infection, rupture to the biliary tree, rupture to the peritoneal cavity and rupture to the pleural cavity (6).

Recent advances in imaging modalities play an important role in diagnosis, classification and evaluation of response to treatment of CE. Imaging techniques have led to the development of both Gharbi's and WHO's classification systems of CE. Those can provide markers of cyst activity and can help to determine the best therapeutic strategy. In addition, the immunological tests complement the clinical and radiological diagnostic work-up of CE and, by combining two immunodiagnostic techniques, the diagnostic accuracy of laboratory tests is excellent (7).

Hepatic echinococcal cysts may be classified into five types according to the widely accepted imaging classification of Gharbi et al. (8) which applies to ultrasonographic examination. More recently, the classification of WHO groups the hepatic echinococcal cysts into active, transitional and inactive. This classification is intended for use in field epidemiological studies as well as for clinical investigators. The WHO classification aims to follow the natural history of CE, and its use will facilitate the application of uniform standards and principles of treatment currently recommended for each cyst type (9,10).

Translation of the ultrasound-based classification of CE into computed tomography (CT) imaging deserves attention since there are pitfalls of great significance for the diagnosis and management of patients with CE. With an increasing use of CT-imaging even in middle income countries, of which many are endemic for CE, the advantages and disadvantages of these imaging modalities deserve greater attention (11). The CT appearance of a simple hepatic cyst consists of a well-circumscribed, homogeneous mass with no discernible wall. It has a near water attenuation value and shows no enhancement after intravenous contrast material administration (12).

The aim of this study was to characterize the epidemiological, clinical, radiological, and laboratory features of patients with CE in the middle region of the Nile Delta, Egypt.

2. Patients and methods

2.1. Patients

This study was conducted on (45) patients who had hepatic echinococcal cysts (26 males and 19 females), aged from 20 to 65 years with mean age of 37.8 years over a period of two years starting from March 2012 to February 2014. Those patients were referred to Diagnostic Radiology Department at Tanta University Hospital from the different medical and surgical departments as well as the oncology unit of Tanta University Hospital.

This study was conducted according to the guidelines of the ethics committee of our university and was approved by our institutional review board. All patients gave written informed consent to be imaged in our study. All patients were subjected to clinical, radiological, and laboratory investigations.

2.2. Clinical evaluation of patients

This includes careful history taking with emphasis on the onset, course, and duration of the presenting complaint. Demographic data were also recorded. Thorough clinical examination was performed including general, abdominal, and chest examination.

2.3. Radiological and imaging evaluation

2.3.1. Plain chest radiography

Postero-anterior chest X-ray in the erect position was routinely done for all patients with hydatid liver disease for inspection of the associated forms of hydatid cysts.

2.3.2. Ultrasonography (US)

Ultrasonographic examination was done for patients having cystic hepatic lesions. The patients were positioned in a supine position, using the curvilinear transducer (3.5–5 MHz), and the liver was examined in all various planes with screening of the whole abdomen.

2.3.3. Multi-detector CT (MDCT) of the abdomen

The examination was done for all patients at the CT unit of Tanta University with 16-detector row CT scanner with scan time about 3 min. In general, the liver was evaluated using the standard technique CT of the abdomen, but triphasic CT was done in the cases with heterogeneous and multi-septated cystic hepatic lesions. Oral contrast preparation was performed before the examination. All patients were examined in supine position.

2.3.4. Multi-detector CT of the chest

MDCT of chest was done for seven patients who showed abnormal shadowing opacity in the conventional X-ray chest.

Patient position: Patients were examined in the supine position and the field of view was adjusted to obtain complete anatomical imaging of the chest. Each patient was instructed

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