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A DOCUMENTATION OF ECHINOCOCCOSIS CASES IN BATMAN BETWEEN 2010-2022

2010-2022 YILLARI ARASINDA BATMAN'DA EKİNOKOKKOZ OLGULARININ DÖKÜMANTASYONU

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Abstract / Özet

Objective: Echinococcosis is characterized by cystic structures formed by Echinococcus parasites in various organs, particularly the liver, lung, and spleen. Our aim is to document echinococcosis cases detected in Batman province in Turkey. **Materials and Methods:** Clinicopathological data of all echinococcosis cases with histopathological diagnosis in Batman province between 2010-2022 were retrospectively recorded. Descriptive analyses of the data were made using the IBM SPSS 22.0 package program. **Results:** A total of 55 echinococcosis cases, 23 male (41.8%) and 32 female (58.2%) were identified. The average age is 30 (3-77). Of 33 cases with known clinical complaints, 22 (66.7%) had abdominal pain, two (6.1%) had chest pain, two (6.1%) had cough, and seven (21.2%) had other complaints. One case was diagnosed incidentally in the post-traumatic examination. The mean diameter was 8.5 cm (2.8-25 cm) in 43 lesions of known diameter. The localization was liver in 36 (65.5%) cases, lung in 10 (18.2%) cases, and spleen in three (5.5%) cases. In three cases (5.5%), there was more than one organ involvement. In addition, echinococcosis was detected in the brain, kidney, and arm in three cases (5.5%). Of 45 cases with known data, 32 (71.1%) were unifocal and 13 (28.9%) were multifocal. Excision was performed in 34 (61.8%) cases, resection in 20 (36.4%), and aspiration in one (1.8%) case. **Conclusion:** Echinococcosis can be seen in all age groups and presents with a variety of findings depending on the organ involvement. It should be kept in mind in the differential diagnosis of cystic lesions in Turkey, which is among the endemic countries.
Keywords: echinococcosis, hydatid cyst, Batman, pathology

Amaç: Ekinokokkoz, özellikle karaciğer, akciğer ve dalak gibi çeşitli organlarda Echinococcus parazitleri tarafından oluşturulan kistik yapılarla karakterizedir. Amacımız, Türkiye'nin Batman ilinde tespit edilen ekinokokkoz olgularını belgelemektir. **Materyal ve Metot:** Batman ilinde 2010-2022 yılları arasında histopatolojik tanısı konmuş tüm ekinokokkoz olgularının klinikopatolojik verileri retrospektif olarak kaydedildi. Verilerin tanımlayıcı analizleri IBM SPSS 22.0 paket programı kullanılarak yapıldı. **Bulgular:** Toplam 55 ekinokokkoz olgusu, 23'ü erkek (%41,8) ve 32'si kadın (%58,2), tespit edildi. Ortalama yaş 30 (3-77) idi. Bilinen klinik şikayeti olan 33 olgudan 22'si (%66,7) karın ağrısı, ikisi (%6,1) göğüs ağrısı, ikisi (%6,1) öksürük ve yedisi (%21,2) diğer şikayetlere sahipti. Bir olguda travma sonrası yapılan muayene sırasında tesadüfen teşhis konuldu. Çapı bilinen 43 lezyonda ortalama çap 8,5 cm (2,8-25 cm) idi. Lokalizasyon, 36 olguda (%65,5) karaciğer, 10 olguda (%18,2) akciğer ve üç olguda (%5,5) dalak idi. Üç olguda (%5,5) birden fazla organ tutulumu mevcuttu. Ayrıca, üç olguda (%5,5%) beyinde, böbrekte ve kolda ekinokokkoz tespit edildi. Mevcut verilere göre 45 olgudan 32'si (%71,1) unifokal, 13'ü (%28,9) multifokaldi. Otuz dört olguda (%61,8) eksizyon, 20 olguda (%36,4) rezeksiyon ve bir olguda (%1,8) aspirasyon uygulandı. **Sonuç:** Ekinokokkoz tüm yaş gruplarında görülebilir ve organ tutulumuna bağlı olarak çeşitli bulgularla kendini gösterebilir. Endemik ülkeler arasında yer alan Türkiye'de kistik lezyonların ayırıcı tanısında akılda bulundurulmalıdır.
Anahtar kelimeler: Ekinokokkoz, kist hidatik, Batman, patoloji.

1. INTRODUCTION

Echinococcosis is a parasitic disease caused by species belonging to the genus Echinococcus (E.) in humans and manifested by cystic structures in various organs, especially the liver (1–3). Currently, there are five putative species belonging to the Echinococcus genus: E. granulosus, E. multilocularis, E. oligarthrus, E. vogeli, and E. shiquicus (4–6). Echinococcus species are 2-8 mm long on average and consist of three parts: head, neck, and tail. There are four suckers in the head parts called scolex and a variable number of hook structures in their rostellum. The number of proglottids (segments) in the parasite's body part (strobila) is usually three but varies from two to seven segments. In intermediate hosts, cystic echinococcosis (CE) is the disease caused by E. granulosus larvae, alveolar echinococcosis by Echinococcus multilocularis larvae, polycystic echinococcosis by Echinococcus vogeli or Echinococcus oligarthrus larvae (2,7,8). Most cases are seen in unilocular form caused by E. granulosus (9,10).

All E. species have similar life cycles. They complete their biological development in two different mammalian hosts. The larval form of E. granulosus, the most common species in Turkey, inhabits herbivorous animals such as sheep, cattle, and humans. Dogs, which are the definitive hosts, play the most important role in transmission. Humans are the random intermediate host of the cycle between dogs and herbivorous animals. The parasite is transmitted through dog feces, infected foods, and close contact with the dog. The embryo that emerges from the egg taken orally disperses through the blood and forms a cyst when it finds a suitable implantation area. Cysts formed by larvae settle in various organs and tissues, especially in the liver. The inside of the cyst is filled with a colorless, odorless, clear liquid, in which millions of tiny larvae, called protoscolex, swim (3,8).

In Turkey, the prevalence of CE was reported as 50-400/100.000 and the incidence was 3,4/100.000 till 2019 (11). Within the scope of the "Cystic Echinococcosis Action Plan (2019-2023)" of the Ministry of Health of the Republic of Turkey, epidemiological studies conducted between 2009 and 2019 were compiled and the disease incidence rate was found as 8.7/100.000 between 2015-2019. The provinces reported with the highest incidence rate of CE were Van, Agri, Igdir, and Kirsehir (6). In the HERACLES Project, 53 of the 8,618 people (0.6%; 1/163) screened in six provinces of Turkey (Ankara, Aksaray, Balikesir, Bitlis, Edirne, Sanliurfa) were found to be infected with CE (12). These results indicate that CE is an important health problem in Turkey.

In our study, we aimed to retrospectively evaluate the cases that were histopathologically diagnosed as echinococcosis over 12 years in Batman.

2. MATERIALS AND METHODS

This study was approved by the Non-Invasive Clinical Research Ethics Committee of the Hospital with the decision number 293 on 12 January 2022. All patients gave informed consent at the time of surgical intervention.

We retrospectively recorded the clinical data of all echinococcosis cases with pathological diagnosis in Batman province between 2010-2022 using the hospital information system. We performed descriptive analyses of the data with the IBM SPSS 22.0 package program.

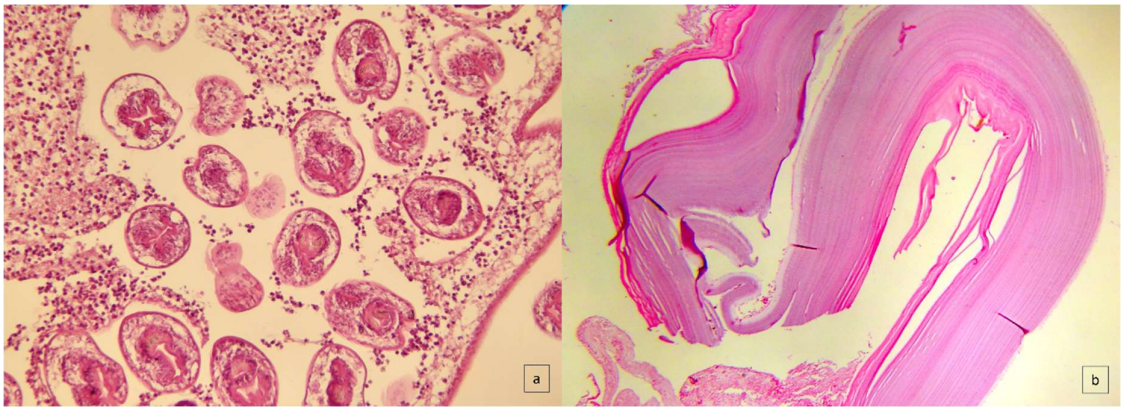
3. RESULTS

A total of 55 echinococcosis cases with histopathological diagnosis were identified including 23 males (41.8%) and 32 females (58.2%) (Figure). The average age was 30 (3-77). Of 33 cases with known clinical complaints, 22 (66.7%) had abdominal pain, two (6.1%) had chest pain, two (6.1%) had a cough, and seven (21.2%) had other complaints (ruptured cystic particles from the mouth, shortness of breath, headache, swelling in the abdomen, swelling in the arm). In addition, one case was diagnosed incidentally in the post-traumatic examination. The mean diameter was 8.5 cm (2.8-25 cm) in 43 lesions of known diameter. Echinococcosis was detected in the liver in 36 (65.5%) cases, lung in 10 (18.2%) cases, and spleen in three (5.5%) cases. Other localizations were the brain, kidney, and arm in three cases (5.5%). In addition, three cases (5.5%) had more than one organ involvement. Of 45 cases with known data, 32 (71.1%) were unifocal and 13 (28.9%) were multifocal. Excision was performed in 34 (61.8%) cases, resection in 20 (36.4%), and aspiration in one (1.8%) case.

4. DISCUSSION

Echinococcosis is one of the most important and overlooked public health problems in Turkey due to its prevalence, difficulty in treatment, and fatal course (13). It is more commonly reported in Southeast Anatolia, East Anatolia, and Central Anatolia regions where animal husbandry is prevalent (10). The number of surgeries performed for CE in Turkey is estimated to be 0.87-6.6/100.000. As a result of regional differences, the incidence of CE varies between 0.8-2.0/100.000 or 0.3%-0.087% according to some researchers. In the data of the Ministry of Health in 2017 for the province of Batman, which is located in the Southeastern Anatolia region, the incidence of CE cases is 1.5/100.000 (6). In our study, we identified 55 echinococcosis cases that were operated on in the province of Batman with an average population of 576.192 between 2010 and 2022. It was noted that CE can be encountered in almost any organ, causing quite a variety of complaints, diagnostic confusion, and treatment approaches depending on where it is located (14).

Figure 1: Parts of Echinococcus. a- Numerous scolices (H&E, 400X) b- Cuticular (laminated) layer (H&E, 100X).



Echinococcosis can be seen in all age groups. Although most of the hospitalized patients in some endemic regions are between the ages of 21 and 40; morbidity was found to be higher in younger individuals (6-20 years old) (15,16). The cases in our study were between 3-77 years of age and the mean age was 30 years. Most of the cysts (50-70%) formed by E. granulosus are located in the liver, 10-30% in the lung, and 10% in other organs or tissues of the body (17). In our study, in accordance with the literature, the most frequently involved organs were the liver, lung, and spleen, respectively. It has been reported that in 85-90% of cases, only one organ is involved, and in 70% of cases, a single cyst is found. In this study, most cases (%71.1) were also unifocal. CE may involve multiple organs or have atypical locations (18–20). In our series, there was more than one organ involved in three cases. In addition, three cases had atypical locations including the brain, kidney, and arm.

Cases with echinococcosis may present with various signs and symptoms, as a benign or severe disease, chronic, subacute, or sometimes with an acute course that requires emergency treatment (11). Patients may have systemic findings such as anaphylactic reaction, rash, and eosinophilia due to cyst rupture, or may present with local symptoms depending on organ location. For example, abdominal pain is common in a case with liver involvement, while a lesion located in the bone may cause a fracture. Some cases may not show any symptoms or may be diagnosed incidentally (21). For instance, one of our cases was diagnosed in the post-traumatic examination. Occasionally, as in one of our cases, cyst fluid and membrane expectoration can be seen as a result of the opening of the cyst into the bronchial system (22).

Today, noninvasive imaging methods and serological tests are very helpful in the diagnosis of echinococcosis. The definitive diagnosis is made by demonstrating protoscolices or parasites in samples obtained by surgery or puncture (21). In the pathological examination, grossly, E. granulosus cysts are unilocular or multivesicular (in the form of a main cyst and daughter cysts outside) with a fibrous wall. It may contain multiple daughter cysts and may reach 30 cm in diameter or more. Microscopically, the cystic echinococcal structure has an outer eosinophilic, anucleated, acellular cuticular (laminated) layer, and an inner germinative layer. The outermost layer is the fibrous layer formed by the host. Brood capsules and protoscolices are attached to the germinal layer or floating in the cyst. In some cases, a part of these findings may go undetected. Inflammatory response, including granulomatous inflammation, to the cyst may develop (23,24). E. multilocularis, on the other hand, consists of multilocular and necrotic cystic cavities, the largest of which is 1 cm in diameter, containing thick pasty material, and does not contain a fibrous wall (adventitia). Although E. vogeli and E. oligarthrus are morphologically similar to other species, the larvae are polycystic with small chambers (8).

There is no gold standard treatment for echinococcal cysts. The treatment aims to eliminate the disease and its complications, and reduce mortality, morbidity rates, and recurrences. Treatment options include surgery, "puncture, aspiration, injection and reaspiration (PAIR)", chemotherapy, and "wait and see" approaches. The treatment approach is determined according to factors such as the localization, type, number, size, presence of recurrence, the general condition of the patient, the training of the surgeon, and whether the surgeon works in an endemic region (25). Patients with calcified lesions can be followed up without the need for treatment. In some patients, there may be active cysts that cause complaints and require intervention. In the last decade, the PAIR method has become widespread. With the developments in interventional radiology, percutaneous treatment and drainage can be performed with the help of ultrasonography and computed tomography. This method is more safely used in the liver and abdominal cysts and is successful in non-complicated patients (25). If surgery is contraindicated, mebendazole and albendazole drugs can be used. This treatment option

is more effective in young patients than in elderly patients (26).

Although this study was carried out in a single center, it reflects the results of Batman province since all echinococcosis cases operated throughout the province were collected in this center. The types of species of the Echinococcus genus were not determined in our cases. Since only the operated cases were reported in this study, the data for other cases that were diagnosed clinically, serologically, or without a histological examination were not available. In addition, postoperative follow-up data of the patients were unavailable

5. CONCLUSION

Echinococcosis is a parasitic cystic disease that is one of the important public health problems seen endemic in Turkey. The most common species are E. granulosus (the causative agent of cystic echinococcosis) and E. multilocularis (the causative agent of alveolar echinococcosis). Although it is most seen in the liver, lung, and spleen, it can also be localized in other organs of the body and may cause diagnostic difficulties. The treatment approach is determined according to the involved organ, type, number, and size of the cyst, overall condition of the patient, and surgical factors. Success in disease control depends on the development of a national strategy, sufficient funding, and education of risk groups. In addition, it is critical to limit the number of dogs that play an important role in transmission, to keep them from becoming infected and transmitting parasites, and to treat them with antiparasitic drugs (6).

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