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Characteristics and outcomes of liver and lung hydatid disease in children

Muazez Çevik¹, Irfan Eser² and Mehmet Emin Boleken¹

Abstract

Our study retrospectively evaluates and compares the characteristics of lung and liver hydatid disease (HD) in children. This retrospective study was performed between 2007 and 2012 using the medical records of patients aged ≤ 17 years of age who had liver and/or lung HD. They were evaluated using the demographic characteristics of the patients, clinical presentation, hospital stay and outcome. A total of 252 cysts were identified in 152 of the patients. The incidence of HD increased with age and the majority of patients were older than 9 years. Overall, lung HD was more complicated and symptomatic than liver HD on initial admission.

Keywords

Hydatid disease, lung, liver, children

Introduction

Hydatid disease (HD) is an endemic zoonosis disease in humans and dates back to the time of Hippocrates.^{1,2} The prevalence of HD in humans differs according to the location and, although it is most frequently seen in the liver and lungs,^{1,3} it is also seen in other anatomic locations (bone, kidney, spleen, etc.).⁴ Symptoms of HD are not characteristic and clinical findings depend on the size, localization and complications.^{1,5} The ultimate goal of treatment is to manage HD, prevent tissue damage and decrease the risk of complications. Thus, it is important to improve the management of HD and to make an early diagnosis.

The aim of this study was to evaluate and compare the outcomes of data between liver and lung HD in children. Subsequently, the study was publicized in order to increase the awareness of the outcomes of liver and lung HD.

Materials and methods

The medical data were retrospectively collected from the files of 152 patients aged ≤ 17 years admitted for liver and/or lung HD from January 2007 to December 2012. All medical records were reviewed for the following parameters: characteristics of enrolled children; symptoms; diagnosis; cyst features; management;

hospitalization details; complications; and outcomes. Patients were categorized into two groups according to HD location: the liver or lung. HD was diagnosed based on clinical, serological and suitable radiologic studies.

Data analysis was performed using SPSS version 11.5 statistical software. Data on the diseases were collected and a descriptive statistical analysis of demographic characteristics and features of HD were performed. Data were analysed using the Pearson chi-square test and one-way ANOVA.

Results

Data from a total of 152 patients were obtained and analysed. In total, 252 cysts were identified. Multiple cysts were more frequently found in the lung than in the liver. There was no statistically significant difference between the two groups, with regard to multiple cysts,

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Table 1. The distribution in age of patient with liver or lung hydatid disease.

Age (year)	Lung	Liver	Co-involvement liver and lung
0–4	4	1	5
5–9	34	6	6
10–13	32	13	9
>13	25	11	6
Total	95	31	26

in terms of age and gender ($P > 0.05$). The characteristics of patients are detailed in Tables 1 and 2.

Patients exhibited different types of symptoms. In those with cysts in the lungs, the most common symptom was cough and in those with cysts in the liver it was abdominal pain. Those in the lung group were more symptomatic than the liver group. There were statistically significant differences between the two groups related to complicated HD ($P < 0.05$). Anaphylactic shock was observed in 1.3% patients; one received medical treatment and the other underwent surgery.

Prior to the operation, the correct diagnosis was made in 87.9% of the patients by ultrasonography (USG) and computed tomography (CT). In the remaining patients, the diagnosis was made intraoperatively. Serological tests were performed in 46.05%; 70.1% were positive.

A total of 138 patients underwent surgery. Visser resection was performed (segmentectomy) in three patients in the lung group and none in the liver group. The remaining 14 were treated with albendazol (6–24 months) alone.

There were statistically significant differences between the groups in terms of the hospitalization period ($P < 0.05$). Five patients postoperatively developed bile leakage for more than 14 days and underwent sphincterotomy by endoscopic retrograde cholangiopancreatographic (ERCP) examination. The most common postoperative complication in the lung group was prolonged air leak, which occurred for more than 14 days in three patients and required a second operation related to bronchopleural fistula. Recurrences of HD were detected in four patients; one in the lung group occurred after medical treatment and the other three occurred after surgical treatment. Recurrences were treated surgically.

Discussion

The global incidence of HD in children is unknown and differs geographically.⁶ The incidence of HD increased

Table 2. The demographics and clinical features of patients.

	Lung	Liver	Co-involvement liver and lung
Cysts	142	47	63
Gender			
Boys	48	14	16
Girls	47	17	10
Recurrences	3	1	0
Complicated hydatid disease (ruptured or infected)	51	5	0
Hospitalization time (days $\pm$ standard deviation)	7.2 $\pm$ 3.06	4.5 $\pm$ 4.63	5.9 $\pm$ 2.6
Fistula	22	9	3
Surgery	95	18	25

with age.⁷ In this study, most patients were older than 9 years and male. Older and male children have an increased chance of being infected by *Echinococcus granulosus* during their life and clinical findings of HD may appear with age as the disease progresses.^{4,7} In our study, patients with liver HD were older than those with lung HD as these patients easily become symptomatic and can experience increased growth of the cyst due to its compressible nature, vascularization and negative pressure.⁸ Cysts grow more slowly in the liver than in the lung due to the reduced elasticity of the lung, which may delay symptom presentation.^{7,9}

The symptoms of HD depend on the organs affected as well as the size and grade of the cyst.⁷ Most patients with HD are asymptomatic and the diagnosis is usually made incidentally during clinical or radiological examination for unrelated reasons.⁷ The most common symptom is pain or cough but some patients may be asymptomatic or present with allergic skin rashes.¹⁰ The most common symptom in lung HD was cough, while liver HD presented mostly as abdominal pain.⁷ In this study, HD of the lung was more frequently complicated than HD of the liver.

At present there is no standard medical treatment for HD and it may be medical, surgical or a combination of both.⁶ Albendazol, mebendazol and praziquantel are commonly used the treatment of HD.¹ In our study, albendazol was used for 6–24 months. Surgical interventions consist of conservative, radical and laparoscopic approaches¹ and in our study most of the patients who underwent surgery also received combined albendazol treatment for 3 months. In the lung group, three patients underwent radical surgery (segmentectomy) but in the liver group no patients

received radical surgery. Recently, the best procedure for treatment of HD has been proposed to be medical treatment combined with surgical or percutaneous treatment.^{3,6} In our study, 90.7% received the combined treatment. A total of 9.3% received medical treatment (the diameter of the cyst did not affect the treatment) and the pre- and post-treatment morbidity rates were high in lung HD compared to liver HD.

This study had some limitations. For example, as the study was retrospective, only the information in the records was available and not all the data could be evaluated.

Conclusion

The organ most commonly involved in children was the lung. Both liver and lung HD responded well to treatment. Therefore, tissue should be preserved as much as possible.

Declaration of conflicting interests

None declared.

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