

Tanaffos (2004) 3(12), 43-48

©2004 NRITLD, National Research Institute of Tuberculosis and Lung Disease, Iran

## Hydatid Pulmonary Disease in Children: a Nine-Year Study

Soheila Khalilzadeh <sup>1</sup>, Nooshin Baghaie, Bita Ghafarzadeh <sup>1</sup>, Mohammad Behgam Shadmehr <sup>2</sup>, and Ali Akbar Velayati <sup>1</sup>

<sup>1</sup>Department of Pediatrics, <sup>2</sup> Department of Thoracic Surgery, NRITLD, Shaheed Beheshti University of Medical Sciences and Health Services, TEHRAN-IRAN.

### ABSTRACT

**Background:** Hydatid disease is the most common serious infection in human beings caused by cestods and Iran is one of the endemic regions of this infection. This research has been performed to evaluate and analyze the cyst location, its diagnosis and treatment.

**Materials and Methods:** This descriptive study was performed on the patients suffering from hydatid infection who were admitted in the pediatric department of Massih Daneshvari Hospital from March 1996 to April 2004. Data in regard to age, sex, clinical signs and symptoms, radiographic findings (location and number of cysts) and type of treatment (medical or surgical) were collected and analyzed statistically.

**Results:** A total of 11 patients suffering from hydatid cyst were evaluated in this study. Among these, 10 were male and 1 was female. Age range of patients was between 0 to 16 years of age and the mean age was 13 years. The results of this study show that pulmonary hydatid cyst in children is more common in boys.

Cough (100%), sputum (100%), and hemoptysis (54.5%) were the most common symptoms. Chest x-ray and lung CT scan were obtained in all patients. CT scan diagnosed hydatid disease in 100% of the patients. Common locations of the cyst were in the lower lobes of both lungs in 81% of the patients while in 54% it was in the lower lobe of the left lung. In 2 patients we found hydatid cyst in both lung and liver.

Surgical treatment was performed in all 100% of the patients. Among these, one patient underwent pulmonary lobectomy while in the remaining 10, surgical approach with evacuation of the cyst was performed.

**Conclusion:** Hydatid disease is hyperendemic in Iran, and usually patients do not seek medical advice on time. It causes high mortality in patients even with proper treatment along with high costs of management. Therefore, it is necessary for the authorities and researchers to pay more attention in this regard. In this survey, CT scan was the best and the most definitive method of diagnosis and surgical treatment along with evacuation of the cyst was the selective method of treatment in 90% of the patients in this study. (Tanaffos 2004; 3(13): 43-48)

**Key Words:** Hydatid cyst, Lung, Children

Correspondence to: Khalilzadeh S.

Tel: +98-21-22803550 Fax: +98-21-22285777

E-mail address: skhalilzadeh@nritld.ac.ir

## INTRODUCTION

Hydatid cyst infection or echinococcosis is caused by *Echinococcus granulosus* which is a member of the subclass cestoda or tapeworms (1). The human being is the incidental intermediate host in the life cycle of the parasite, during the larval stage.

A wide variety of symptoms and paraclinical findings are mainly due to different organs affected by the cystic lesions of the disease (2). *E. granulosus* is a parasite which often infects human beings during the childhood period in endemic regions. However, the cysts in the liver need many years to reach sufficient size or cause patients to become symptomatic.

In children, lungs are the most common site of involvement but in adults in 70% of the patients, the cysts are in the right lobe of the liver. Cysts are also seen in bone, urinary system, intestines, subcutaneous tissues, and brain (3).

In a research performed in Turkey in the year 2002 on 145 children and adult patients suffering from hydatid cyst, the most common site of pulmonary involvement was detected to be mostly in the right lung (62.9%) and in the lower lobes of the lung (70.4%) (4).

In another research performed in Kuwait in the year 2003, 64 children and adult patients affected by hydatid cyst were evaluated in a 4-year period. Mean age of patients in this study was 28 years; surgery was the preferred method of treatment in these patients. After surgery, medical treatment with Albendazole was recommended for 3 months (5).

In a similar research on pulmonary hydatid cyst in 40 children performed in Mashad, 75% of cases were seen in boys.

Hydatid cyst involved the right lung in up to 62.5% of the cases and lower lobes of the lung in up

to 62.5%; the preferred treatment was surgery (6).

We do not have accurate data in regard to the prevalence of pulmonary hydatid cyst in Iranian children and further evaluation and research in this field is needed. However, by considering the process of the disease, its diagnosis, location of the cysts and choosing appropriate treatment, we can decrease its mortality and morbidity drastically.

The aim of performing this study was to evaluate pulmonary hydatid cysts in children and find a proper method for its diagnosis and treatment.

## MATERIALS AND METHODS

This was a descriptive study performed on children less than 16 years of age affected by hydatid disease who were admitted in pediatrics department of Massih Daneshvari Hospital from March 1996 to April 2004.

In this study data were evaluated in regard to age, sex, clinical symptoms, radiographic findings and treatment methods.

The diagnosis of hydatid disease was made according to the history, physical examination, clinical signs as well as pulmonary and abdominal CT-scan. The type of medical or surgical approach was evaluated in these patients.

## RESULTS

A total of 11 patients affected by hydatid cyst were evaluated in this study. Among these, 10 were male and 1 was female. The age range of the patients was between 0 to 16 years of age.

One child was in the age group of below 10 years and the remaining 10 were between 10 to 16 years of age.

The mean age of patients was 13 years; 10

children were Iranian and one was Afghan.

The most common symptoms were cough (100%), sputum (100%), hemoptysis (54.5%), chest pain (54.5%), chills and fever (54.5%), weight loss (18%) and dyspnea (9%) (Table1).

In regard to the clinical signs, decreased breath sounds in the affected lung in 36% of the patients and RUQ (Right Upper Quadrant) tenderness in 18% of the patients were detected.

**Table 1.** Common clinical signs and symptoms in patients

Symptoms	Incidence rate
Cough	100%
Sputum	100%
Hemoptysis	54.5%
Chest pain	54.5%
Weight loss	18%
Dyspnea	9%

Chest x-ray and abdominal and pulmonary CT-scan were obtained in all patients.

Radiographic findings in regard to the location of the pulmonary involvement were: LLL (Left Lower Lobe) (54%), RLL (Right Lower Lobe) (27%), LUL (Left Upper Lobe) (27%), and RUL (Right Upper Lobe) (9%).

In 2 children multiple cysts were located in LUL and LLL, and in another 2 children pulmonary and hepatic cysts existed concomitantly, which was diagnosed and confirmed by sonography and CT-scan.

The best and the most definitive method of diagnosis in children under study was pulmonary CT-scan (Fig.1).

In this research, surgical approach was performed in all patients. In 90% of the cases surgery with evacuation of the cyst was performed. In one case, pulmonary lobectomy was done because of the number of cysts and its spread in LUL.



**Figure1.** Radiographic and CT scan images in an 11-year old child. The location of the cyst is seen in the lower lobe of the right lung.

## DISCUSSION

Hydatid cyst has a high incidence in communities in which humans, dogs and domestic animals are in a close contact with each other.

Iran has been announced as a hyper endemic region by World Health Organization (WHO).

In a research performed in Imam Reza Hospital in Mashad in the year 1991, 40 children suffering from hydatid cyst were evaluated. Among those, 30 patients were male (75%) and 10 were female (25%) (6).

Out of 11 patients in this study, 10 were male and 1 was female. Hydatid cyst was more common in boys than girls.

The age range of patients in this research was between 0 to 16 years and the mean age was 13 years. Meanwhile, in Imam Reza Hospital research (Mashad) in 1991, the age range of patients was between 1 to 16 years and the highest incidence was seen in the age group of 5 to 10 years (6).

In the Kuwait study (2003), the most common symptoms were: cough, chest pain, fever, and hemoptysis (5).

In the study performed in Medical College of Turkey in the year 2004, in most cases hydatid cyst was intact and the disease was found either incidentally or the patients had the symptoms of cough, dyspnea and chest pain (7). In the study performed in Imam Reza Medical center in Mashad in the year 1994, a wide range of complaints and clinical findings were noted, the most common complaint was productive cough, while the least complaint was dyspnea (8).

In this research, the most common symptoms were cough (100%), sputum (100%), hemoptysis (54.5%), chest pain (54.5%), weight loss (18%) and dyspnea (9%).

In a study performed in Yazd Medical University between the years 1991 and 1998 in regard to diagnostic means, sonography was used in 47.8%, CT-scan in 23.9% and radiography in 20.9% of the cases. Therefore, most of the diagnoses of the disease were made by sonography (2).

In our research, CT-scan was the best and the most definitive way of making the diagnosis; the location and number of the cysts were identical with

what was found at the time of surgical intervention in 100% of the cases.

Although sonography has been recommended for diagnosis of hydatid cyst in endemic and hyperendemic regions, in this study only in 36% of the cases the results of sonography matched the results of CT scan.

Our findings as well as the results of the Turkish study in 2002 confirm the fact that only CT-scan can show the exact details of the lesion which is not seen in simple radiographies.

Therefore, CT-scan is recommended before the operation to differentiate the cyst from other tumors of the lung and show its exact location as well as decrease in the size of the cyst after the operation (9).

In another research performed in Turkey in 2002, in most patients hydatid cyst was detected in the right lung (62.9%) and in the lower lobes of the lung (70.4%) (4).

In researches performed in Mali and India in the year 2002, right lung had the highest incidence of involvement by hydatid cyst (10,11).

In Imam Reza Hospital research performed in Mashad in the year 1991 in 62.5% of the cases the right lung and in 62.5% the lower lobes of the lung were involved (6).

However, in this research the common location of the cyst was proved to be in lower lobes of both lungs in 81% and in lower lobe of the left lung in 54% of the cases.

## CONCLUSION

The results show that pulmonary hydatid cyst in children is more common in boys. CT scan was the best and the most definitive method of diagnosis in 100% of the cases. The common location of hydatid cyst was in the lower lobes of both lungs (81%) and in the lower lobe of the left lung (54%). Surgery as the choice method was performed in 90% of the patients in this pair study.

## REFERENCES

1. Ketabchi E, Ghodsi M. Hydatid cyst of the vertebrae. *Journal of Medical Council of Islamic Republic of Iran* 1992; 11(3): 136-9.
2. Shir-Yazdi M, et al. Characteristics of the patients affected by hydatid cyst in the province of Yazd between the years 1991-1998. *The Journal of Shaheed Sadoughi University of Medical Sciences* 1990; 8 (1): 25-9.
3. Blant on R: Echinococcosis (Echinococcus granulosus and E.Multilocularis) chapter 281, Text book of Nelson. 2004 p: 1173-74.
4. Aribas OK, Kanat F, Gormus N, Turk E. Pleural complications of hydatid disease. *J Thorac Cardiovasc Surg* 2002; 123(3): 492-7.
5. Ayed AK, Alshawaf E. Surgical treatment and follow-up of pulmonary hydatid cyst. *Med Princ Pract* 2003; 12(2): 112-6.
6. Ghaemi M. Evaluation of the pulmonary hydatid cyst in children in Imam Reza Hospital. *Medical Journal of Mashad University of Medical Sciences* 1991; 34 (36): 33-6.
7. Kuzucu A, Soysal O, Ozgel M, Yologlu S. Complicated hydatid cysts of the lung: clinical and therapeutic issues. *Ann Thorac Surg* 2004; 77(4): 1200-4.
8. Kakhi A, Rohani A. Review of hydatid disease and its 9-year follow up. *Medical Journal of Mashad University of Medical Sciences* 1994; 77-9.
9. Erdem CZ, Erdem LO. Radiological characteristics of pulmonary hydatid disease in children: less common radiological appearances. *Eur J Radiol* 2003; 45(2): 123-8.
10. Yena S, Sanogo ZZ, Keita A, Sangare D, Sidibe S, Delaye A, et al. Surgery for pulmonary hydatid cyst in Mali. *Ann Chir* 2002; 127(5): 350-5.
11. Beg MH, Mansoor T. Pulmonary hydatidosis—a surgical experience. *J Indian Med Assoc* 2002; 100(1): 22-3.