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PULMONARY HYDATIDOSIS IN CHILDHOOD. REVIEW OF 21 CASES

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Spain is one of the countries with a very high incidence of hydatidosis in the childhood. It represents 16.8 % of all cases intervened for thoracic surgery for hydatidosis cysts in our department during the last ten years with a total of 21 children (inferior to 14 years) operated due to hydatidosis. Cough and pain were the symptoms more frequently encountered. The ratio unruptured/ruptured cysts was 3/1, higher than in the adults, with an average of 2.62 cysts per patient. Specific immunoglobulin E and histamine liberation test were the most useful tests in the laboratory. The usual surgical technique was a cystopericystectomy with total extirpation of the parasite of its rests. No recurrence was found in the follow-up of our patients.

INTRODUCTION

Spain is one of the countries with the highest incidence of hydatidosis in the world /l/. This disease results endemic to the Mediterranean region (particularly in Algiers and Morocco), South America, Australia and New Zaeland /2/.

In its adult stage, this parasite lives in the intestine of dogs, while man represents an intermediate host who contracts the disease from water or food or from direct contact with dogs. The embryos may later overcome the hepatic obstacle and may become lodged in the lung.

The present study reviews the patients who underwent surgery for pulmonary hydatidosis in their childhood during the last ten years in our department.

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J. Zapatero et al.

MATERIALS AND METHODS

We review the casuistic of the Thoracic Surgery Department of the Hospital Ramon and Cajal in Madrid, finding 21 children, who were surgically intervened for pulmonary hydatidosis in the last ten years. This group represents 16.8 % of the total of 125 patients operated for this disease in our Thoracic Surgery Department.

The mean age was 10.9 years (S.D. 2.76). The highest number of cases were between 12 and 14 years (42.9 %) with a total of 15 boys (71.4 %) and 6 girls (28.6 %).

The two symptoms more frequently registered were cough and pain followed by fever and hemoptysis. Four children were found asymptomatic, being discovered only after an X-ray was taken for another problem (Table I). In 7 cases (33.3 %) there was a prior contact with dogs.

TABLE I

	Cases	20
Cough	10	47.61
Pain	9	42.85
Fever	6	28.57
Hemoptysis	4	19.04
Asymptomatic	4	19.04
Dyspnoea	3	14.28
Vomica	1	4.76

Symptomatology

From the radiological study based on conventional methods and CT, 15 cases presented unruptured cysts (71.4 %) and 6 ruptured cysts (28.6 %) (Fig. 1, 2, 3). 13 cases were constituted by single cysts (61.9 %) and 8 by multiple cysts (38.1 %), with an average of 2.6 cysts per patient (4 with unilateral multiple cysts and 4 bilateral), (Table II), with the typical images of ruptured and unruptured cysts (Fig. 4, 5, 6).



Fig. 1. P-A X-Ray: image of three cysts in the right lung



Fig. 2. Lateral view of the same case of Figure 1



Fig. 3. Thorax CT: unruptured cyst in the right lower lobe.

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Rad	iology	
l. Cyst type:	Cases	0,
lloruntured	15	71.4
Ruptured	6	28.6
2. Number of cysts:		
Single	13	61.9
Multiple	8	38.1



Fig. 4. P-A X-Ray: bilateral unruptured cyst.



Fig. 5. P-A X-Ray: ruptured cyst in the right lower lobe



Fig. 6. Tomography (5, 5-6 cms.): same case of Figure 5.

Both inferior lobes were most often affected, with the left inferior lobe in high proportion. Reference should be made additionally to the presence of a child with 5 cysts in the mediastinum, who had been operated previously for a ruptured cyst in a different hospital (Table III).

TABLE III

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	Cysts	9/0
Upper right lobe	5	14.3
Middle lobe	2	5.7
Lower right lobe	9	25.7
Upper left lobe	2	5.7
Lower left lobe	12	34.3
Mediastinum	5	14.3

The most sensitive tests were in the ruptured cysts (p inferior to 0.005) in comparison with the unruptured cysts, showing the high specificity obtained with specific IgE and histamine liberation test. In unruptured cysts indirect hemagglutination was positive in 10/15 cases (66.6 %), indirect immunofluorescence in 9/15 cases (60 %), immunoglobulin E (specific) in 12/15 (80 %) and histamine liberation in 13/15 cases (86.7 %). In ruptured cysts, indirect hemagglutination was positive in 4/6 cases (66.6 %), indirect immunofluorescence in 3/6 (50 %), immunoglobulin E (specific) in 4/6 (66.6 %) and histamine liberation in 5/6 cases (83.3 %) (Table IV).

TABLE IV

Laborator	y tests
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	Unruptured	Ruptured
Indirect hemagglutination	10/15 66.6	4/6 66.6
Indirect immunofluorescence	9/15 60	3/6 50
Immunoglobulin E	12/15 80	4/6 66.6
Histamine liberation	13/15 86	5/6 83.3

RESULTS

The approach most often used was the posterolateral thoracotomy in 12 cases (57.1 %), followed by the axillary thoracotomy in 5 (23.8 %). In 4 patients with a bilateral hydatidosis we performed a sequential bilateral thoracotomy with a mean interval between both surgeries of 22.4 days. In these cases of second surgeries this approach was preferred to the median sternotomy.

J. Zapatero et al.

The surgical technique most frequently used was the subtotal cystopericystectomy with total extirpation of the cysts or its rests in the ruptured cysts followed by close of the bronchial leaks, washing the cavity with hydrogen peroxide 10 % during 3 minutes and subtotal extirpation of the pericyst leaving the hilar pole. In 4 cases it was necessary to perform a lung resection (19.1 %), 2 due to the size of the cysts and 2 due to the status of the distal parenchyma (Table V). In the cases of two surgeries, a total of 3 cystopericystectomies and one wedge resection were performed on the contralateral lung. The operative mortality was nil, while the postoperative morbidity was low. No recurrence was registered during the follow-up of our patients (Table VI).

TABLE V

Surgical technique

	Cases	%	Bilateral	surgeries %
Cystopericystectomies	17	81.0	3	14.2
Wedge resections	3	14.3	1	4.8
Lobectomy	1	4.8		

TABLE VI

Complications

	Cases	0/0
Atelectasia	2	9.5
Hydropneumothorax	2	9.5
Wound infection	1	4.8
Hemothorax	1	4.8

250

DISCUSSION

The clinical presentation of hydatidosis in children has some different aspects with regard to the adults. This disease rarely occurs before two years of age, and thus in our series the youngest case was a six-year-old boy.

Diagnosis is based in the X-ray and laboratory tests, while the clinic and the antecedents of contact with dogs prove also very useful. The presence of hydatidic cyst expectoration is lower than in the adults, as the ratio between unruptured and ruptured cysts was 3/1, inverse to the ratio found in the adults, due to an earlier diagnosis of thoracic hydatidosis in the childhood /3, 4/.

The lobe distribution between both lungs is similar to the adults, except for the predominance of the left lower lobe to the right lower lobe /5/.

The laboratory tests were more sensitive for the ruptured cysts. Specificity obtained in our experience with the indirect hemagglutination, immunoglobulin E specific or the histamine liberation tests should be pointed out /6/.

Surgery continues to represent nowadays the treatment of choice in the management of thoracic hydatidosis, despite the benefits apported by the chemotherapy in the last years. It is important to perform the surgical intervention immediately after the diagnosis has been made to avoid complications /7/. The results achieved were excellent, even though we tend to be more conservative than in the adults /8/.

The surgical techniques available for thoracic hydatidosis in the lung can be divided initially to: those involving conservation and those involving removal of the parenchyma /9/. Of the procedures conserving the lung, the most commonly used is the cystopericystectomy, with extirpation of the cyst or its rests, followed by partial resection of the pericyst, since total resection of the pericyst in its hilar pole is of highrisk /10/.

After the extirpation of the parasite, followed by closure of the bronchial air leaks, it is very important to perform a J. Zapatero et al.

lavage of the residual cavity during 3 minutes with hydrogen peroxide 10 % solution. This represents the perfect scolicid solution for children, as the complications that can arise from formol or hypertonic solution are well known nowadays and in the childhood these complications may be extremely grave /11/.

It must not be forgotten that for children, like in adults, complementary or preventive treatment with mebendazole may give good results in some cases to avoid recurrences /12/. Five of our cases were treated with adjuvant chemotherapy but no definitive conclusions have arrived in our study.

Due to the parasitic character of this disease, we always investigate the family and carry out a serological and radiological study with an X-ray and abdominal echography on family members who live with the patients. In this idea we have found an incidence of hydatidosis in asymptomatic members of 18.1 % /13/. It is important also to investigate in every patient the concomittance of a liver hydatidosis and we have found in our series 5 cases with hydatidosis cyst in liver who were operated by laparotomy posteriorly.

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252

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