

PULMONARY HYDATID CYST DISEASE IN SOUTH OF IRAQ: SHORT TERM OUTCOME AFTER SURGICAL INTERVENTION

Fouzi Abdul Ameer Ahmad Al-Hassani¹, Abdul Khalik Zaki Benyan²

ABSTRACT

Objective: To discuss the clinical presentation, diagnosis, surgical treatment and outcome of 300 patients.

Methodology: A retrospective study of 300 patients with pulmonary hydatid cyst disease was conducted, who were treated surgically at cardiothoracic surgical department in Basra teaching hospital from June 2005 to June 2011. The records of all patients were reviewed taking in account the complete clinical history, clinical examination and chest radiology. All the patients were treated surgically.

Result: There were 225 (75%) patients of age, 18 years and above, with 149 (66%) males and 76 (34%) females, while 75 (25%) patients were below 18 years of age, including 36 (48%) boys and 39 (52%) girls. The cough was the common presenting symptom (56.6%). Chest radiology was diagnostic in 95.7% of patients, the right lung was the common site (60%), and 20% presented with associated extrapulmonary hydatid cysts. Only 12.3% have postoperative complications.

Conclusion: Surgery is the treatment of choice for pulmonary hydatid cysts, with very low mortality and morbidity.

Key Words: Hydatid cyst, Pulmonary hydatid cyst disease, Echinococcus granulosus.

This article may be cited as: Al-Hassani FAAA, Beyan AKZ. Pulmonary hydatid cyst disease in South of Iraq: Short term outcome after surgical intervention. J Postgrad Med Inst 2013; 27(2):200-7.

INTRODUCTION

Hydatid disease is a major economic and health problem in Iraq and Middle East¹⁻³ and it is still endemic and enzoonotic in nature in central and southern part of Iraq (particularly, rural)^{1,4,5}, Middle East, Central Asia, Netherland, Australia, and South America^{2,6-8}. Hydatid disease is caused by cestode, Echinococcus Granulosis, due to close association of humans with sheeps and dogs, especially in rural area¹. Echinococcus Multilocularis can also cause the disease forming multilocular cysts⁹. Hydatid disease can involve every organ of the human body. Hepatic manifestation is the most common followed by

lung involvement^{1,4,10}. The disease can remain asymptomatic for a time and may be discovered accidentally during investigation for other problems^{11,12}. However it might cause symptoms of cough, shortness of breath, hemoptysis and fever; or present as a feature of its complications especially when it gets ruptured or infected^{2,11,13}.

Surgery remains the treatment of choice for pulmonary hydatid cyst^{8,14,15}, and it is associated with low morbidity and mortality^{11,14,15}.

The aim of our study was to assess retrospectively the patients with pulmonary hydatid cysts who underwent surgical treatment at Basra cardiothoracic center and to discuss their clinical presentation and investigations. It was also aimed to assess the outcome of surgical treatment and its postoperative results, and highlight the risks associated with the use of antihelminthic drugs.

METHODOLOGY

This retrospective study of 300 patients with pulmonary hydatid cyst disease was conducted at cardiothoracic surgical department in Basra teaching hospital from June 2005 to June 2011. All these were treated surgically. The records of all patients were reviewed taking in account the complete clinical history, clinical examination, laboratory investigations and chest radiology to reach the diagnosis of pulmonary hydatid cyst.

^{1,2}Department of Cardiothoracic and Vascular Surgery, Al- Sader Teaching Hospital & College of Medicine, Basra - Iraq

Address for Correspondence:

Dr. Fouzi Abdul Ameer Ahmad Al-Hassani,
Specialist Cardiothoracic & Vascular Surgeon,
Department of Cardiothoracic and Vascular
Surgery, Al- Sader Teaching Hospital, Basra -
Iraq
E-mail: fouzi.76@hotmail.com

Date Received: June 8, 2012

Date Revised: January 1, 2013

Date Accepted: January 14, 2013

The radiological investigation included combination of chest X- ray , thoracic computed tomography and thoracic & abdominal ultrasonography to assess for intra-abdominal cysts (particularly hepatic & splenic) {Figure 1}.

Casoni intradermal test and other serological tests were not done due to lack of specificity and presence of false positive and false negative results^{16,17}. All the patients were treated surgically.

Patients presenting with hydropneumothorax and empyema were treated initially by chest tube and under water seal drainage and heavy antibiotics according to culture and sensitivity, appropriate surgical procedures were performed after stabilization of the patient's condition.

RESULTS

The total number of patients was 300 representing 7% of patients admitted to cardiothoracic surgical center in Basra.

A total of 312 surgeries were done on 300 patients with a total number of 330 hydatid cysts. All the patients had posterolateral thoracotomy. Four patients had right thoracotomy and phrenotomy because the cyst site was at the dome of the liver. Twelve patients required bilateral

thoracotomies which were not performed in the same session; rather the second procedure was performed at least 28-30 days after the first one. No laprotomy or sternotomy was done in our series.

In 190 patients with complicated hydatid cysts the majority (166 patients) were treated by cystotomy, evacuation of the cyst membrane and obliteration of the residual cavity after closure of bronchial fistulae. In 15 patients, segmental resection of the lung was done. Fifteen needed decortications while lobectomy was performed in 7 patients and bilobectomy and pneumonectomy in one patient each (Figure 2).

The age of the patients ranged from 3-75 years with an average age of 40 years. The age and sex of the patients are shown in Table 1.

Majority of the patients (74%) were from rural areas particularly areas near or around the marshes (Diaqar, Maysan and north of Basra governorates). The distribution is given in Table 2.

The most common symptoms were cough (both dry and productive) in 56.6% of patients, followed by dyspnea, chest pain and hemoptysis. Thirty two patients were asymptomatic and diagnosed accidentally on routine checking for other diseases. The details are shown in Table 3.

Table 1: Age and sex Distribution

Age	Number of Patients	Percentage	Male	Female
≥18 years	225	75%	149 (66%)	76 (34%)
<18 years	75	25%	36 (48%)	39 (52%)
Total	300	100%	185 (61.6%)	115 (38.4%)

Table 2: Distribution of patients according to geographical areas

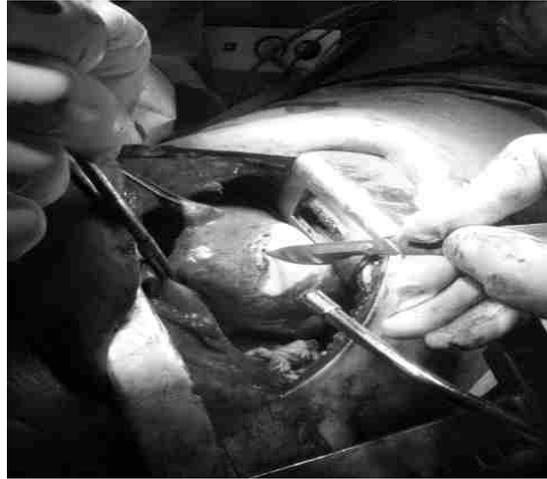
Location	Number of Patients	Percentage
Diaqar	150	50%
Basra	70	24%
Maysan	52	18%
Muthana	11	3.6%
Karbala	6	2%
Najaf	2	0.8%
Wasit	2	0.8%
Qadesya	2	0.8%
Total	300	100%

Figure 2: Description of the procedure to remove the pulmonary intact hydatid cyst

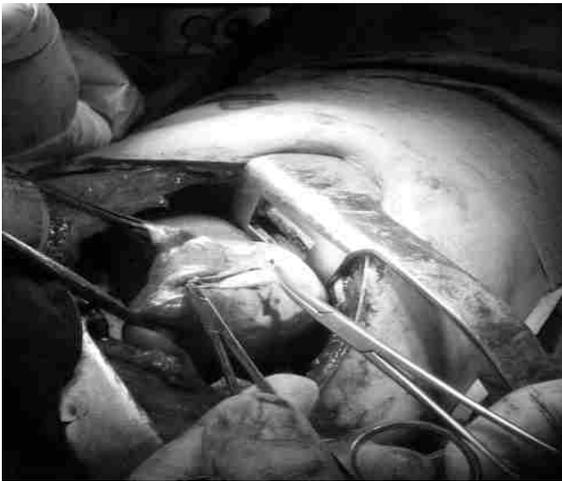
A: Intact hydatid cyst in right lower lobe



B: Creation of an incision in adventitial membrane of the cyst



C: Opening of the cyst (cystotomy)



D: Completion of cystotomy



E: Removal of the cyst by the hand



F: Intact hydatid cyst



Table 3: Clinical features

Clinical features	Number of Patients	Percentage
Asymptomatic	32	10.6%
Productive cough	75	25%
Dry cough	95	31.6%
Shortness of breath	68	22.6%
Chest pain	65	21.6%
Hemoptysis	32	10.6%
Fever	36	12%
Chest wall swelling	4	1.3%
Neck swelling	1	0.3%

Table 4: The diagnostic investigations

Investigation	Number of Patients	Percentage
Chest X-ray	212	70.7%
CT-scan	75	25%
Bronchoscopy	5	1.6%
During operation	8	2.7%

Chest radiology was diagnostic in 287 patients (95.7%) including simple chest X-ray and computed tomography, while 5 patients were diagnosed by bronchoscopy when the membrane of the cyst was noticed in bronchi. Eight patients were misdiagnosed (before surgery) as lung tumors or solitary pulmonary nodule or tuberculoma. The diagnosis was reached during surgery (Table 4).

Two hundred seventy five patients (91.7%) had solitary pulmonary hydatid cyst and 25 patients (8.3%) had multiple cysts (2-5 cysts). Out of these 25, 12 (48%) had bilateral pulmonary hydatid cysts.

Sixty patients (20%) had associated extra-pulmonary hydatid cysts. Liver was the most common site (66.6%) {Table 5}.

Right lung was most commonly involved with 180 patients (60%) having right lung hydatid cyst only. The left lung was affected in 108 patients (36%) and bilateral lungs involvement occurred in 12 patients (4%). The right lower lobe was most frequently involved (27.3%).

One hundred ninety patients (63.3%) had complicated cysts. Cyst ruptured into bronchus occurred in 180 patients (60%) causing bronchitis and pneumonia, while in 10 patients (3.33%) the cysts ruptured into the pleural cavity causing

hydropneumothorax and empyema.

Postoperative complications occurred in 37 patients (12.3%). The details are given in Table 6.

Hospitalization time ranged from 3-30 days (Average 7 days). No recurrence occurred in our series during the follow up period.

DISCUSSION

Pulmonary hydatidosis constitutes about 7% of our pulmonary surgical work load. The diagnosis of this disease is based on chest radiography and computed tomography which can show both intact and ruptured cyst^{2,12,18}. In our study 60% of the patients had hydatid cyst in the right lung and 36% in the left lung which is in accordance with the findings in other studies^{6,19}. The right lower lobe was the commonest site which is also similar to the findings in the other studies^{1,6,15}.

Despite that medical therapy for hydatid disease has shown good results^{6,20,21}, Albendazole and mebendazole were not used in our series as we considered it to be an unreliable way of controlling the disease with high failure rate^{14,22}. In addition, rupture of the cyst occurs during medical treatment as albendazole and mebendazole weaken the cyst wall leading to its perforation²³. We preferred to

Table 5: Associated extra-pulmonary hydatid cysts

Site	Number of Patients	Percentage in 60 patients	Percentage in 300 patients
Liver	40	66.6%	13.3%
Spleen	6	10%	2%
Brain	3	5%	1%
Spine	3	5%	1%
Peritoneum	3	5%	1%
Pericardium	3	5%	1%
Kidney	1	1.7%	0.33
Neck	1	1.7%	0.33
Total	60	100%	20%

Table 6: Post-operative complications

Complication	Number of Patients	Percentage in 37 patients	Percentage in 300 patients
Continuous air leak >10 days, needing surgical intervention (broncho-pleural fistula)	7	19%	2.3
Continuous air leak < 10 days resolve spontaneously	8	21.6%	2.7
Empyema	5	13.6%	1.7
Hemoptysis	3	8%	1
Pneumonia	2	5.4%	0.7
Wound infection	7	19%	2.3
Lung abscess	3	8%	1
Bronchobiliary fistula	1	2.7	0.3
Death (respiratory failure)	1	2.7	0.3
Total	37	100%	12.3%

use the medical therapy postoperatively to prevent recurrence especially if there is doubt about the spillage of hydatid fluid during surgery^{14,24}.

Surgical treatment of pulmonary hydatid cyst remains the most appropriate way of treatment with lung preservation as is obvious from the findings of the other studies^{11,25,26}. In majority of the patients, similar to other studies, the removal of the cyst was done with obliteration of the cavities after closure of bronchial fistulae^{1,3,11,25,27-29}. However, complicated pulmonary hydatid required more aggressive surgery like segmental resection in our study. This is similar to the findings by

Aribus et al (6.7%)³⁰ but less than found in other studies^{28,31}. Lobectomy and Decortications were also required in a few patients which is similar to the study by Bilal et al (7.5%)²⁵, but was less than the study by Kuzucu et al (24.2%)¹¹.

CONCLUSION

Surgery is the better way of treatment for pulmonary hydatid cyst in both complicated and intact cysts. Best result is obtained if surgical treatment performed before the rupture of the cyst. Medical treatment should be preserved for postoperative period to prevent the recurrence.

REFERENCES

1. Benyan AKZ, Mahdi NK. Pulmonary hydatidosis in man and his livestock in southern Iraq. *Saudi Med J* 1987;8:402-6.
2. Sharifi-Mood B, Fazaeli A, Markhtari S. Fifteen years experience with pulmonary hydatidosis in Zahedan, Iran. *Iran J Parasitol* 2007;2:7-11.
3. Isitmangil T, Sebit S, Tunc H, Gorn SR, Erdik O, Pocan O, et al. Clinical experience of surgical therapy in 207 patients with thoracic hydatidosis over 12 years period. *Swiss Med Wkly* 132;548-52.
4. Babero BB, Al-Dabagh MA, Al-Safar AS, Ali FM. The zoonosis of animal parasites in Iraq III hydatid disease. *Ann Trop Med Parasitol* 1963;57:499-509.
5. Mahdi NK, Benyan AKZ. Hydatidosis among Iraqi children. *Ann Trop Med Parasitol* 1990;84:289-92.
6. Ozvaran MK, Unver E, Uskul TB, Ersoy Y, Dilek Y, Yalçın E, et al. An evaluation of diagnosis and treatment of pulmonary hydatid cyst in patients over 50 years old. *Turk Respir J* 2000;1;11-3.
7. Burgos R, Varela A, Castedo E, Roda J, Montero CG, Serrano S, et al. Pulmonary hydatidosis: surgical treatment and follow up of 240 cases. *Eur J Cardiothorac Surg* 1999;16:628-35.
8. Shitogullar A. Our result in surgical treatment of hydatid cyst of the lung. *Eur J G Med* 2004;4:5-8.
9. Al Atar H. Clinical case report of multilocular hydatid in the liver of women, 1981. *Iraqi Med J* 1983;31:148-83.
10. Petrov DB, Terzinacheva PP, Djambazov VI, Plochev MP, Goranov EP, Minchev TR, et al. Surgical treatment of bilateral hydatid disease of the lung. *Eur J Cardiothorac Surg* 2001;19:918-23.
11. Kuzucu A, Soysal O, Ozgel M, Yologlu S. Complicated hydatid cyst of the lung: clinical and therapeutic issues. *Ann Thorac Surg* 2004;77:1200-4.
12. Moraitaki P, Roussi P, Emmanuli V, Pelchivanidu R, Bitsakou C, Konstantinou M, et al. Pulmonary echinococcus presenting as a pulmonary mass with fever and hemoptysis: a case report. *Pneumon* 2010;23:180-3.
13. Tuncer R, Orhan S, Sen N, Arslan R, Aydogdu I, Okur H, et al. Pulmonary hydatid cysts in children. *Ann Med Sci* 2000;9:59-62.
14. Topçu S, Kurul IC, Taştepe I, Bozkurt D, Gülhan E, Cetin G. Surgical treatment of pulmonary hydatid cysts in children. *J Thoracic Cardiovasc Surg* 2000;20:1097-101.
15. Bagheri R, Haghi SZ, Hmini M, Fattahi AS, Hafiees N. Pulmonary hydatid cyst: analysis of 1024 cases. *Gen Thorac Cardiovasc Surg* 2011;59:105-9.
16. Harris DF, Van Vuuren WM, Augustyn J, Rossouw GJ. Hydatid cyst fistula into aorta presenting with massive hemoptysis: case report and literature review. *J Cardiovasc Surg (Torino)* 2001;42:565-7.
17. Yeginsu A, Buyruk R, Koseahmetog WM. Surgical treatment of pulmonary hydatid disease in Kayseri state hospital, Turkey; ten years of experience. *Turk Respir J* 2003;4:3-4.
18. Lewall DB. Hydatid disease: biology, pathology, imaging and classification. *Clin Radiol* 1998;53:863-74.
19. Mirshemirani AR, Razavi S, Sadeghian S. Surgical treatment of pulmonary hydatid cyst in 72 children. *Tanaffos* 2009;8;56-61.
20. Keshmiri M, Baharvahdet H, Fattahi SH, Davachi B, Dabiri RH, Baradaran H, et al. Albendazole versus placebo in treatment of echinococcosis. *Trans R Soc Trop Med Hyg* 2001;95:190-4.
21. Mawhorter S, Temeck B, Change R, Pass H, Nash T. Non surgical therapy for pulmonary hydatid disease. *Chest* 1997;112:1432-6.
22. Doğan R, Yüksel M, Cetin G, Süzer K, Alp M, Kaya S, et al. Surgical treatment of hydatid cyst of the lung: report on 1055 patients. *Thorax* 1989;44:192-9.
23. Dhaliwal RS, Kalkat MS. One stage surgical procedure for bilateral lung and liver hydatid cyst. *Ann Thorac Surg* 1997;64:338-41.
24. Peleg H, Best I, Gaitini D. Simultaneous operation for hydatid cysts of right lung and liver. *J Thorac Cardiovasc Surg* 1985;90:783-7.
25. Bilal A, Saleem M, Nadeem A, Jan J, Nabil S. Surgical treatment of pulmonary hydatid disease. *J Postgrad Med Inst* 2007;17:94-8.
26. Barrie J. Thoracic surgery for hydatid disease. *World J Surg* 1998;23:1105-9.
27. Safioleas M, Misiakos EP, Dosios T, Manti C, Lambrou P, Skalkeas G. Surgical treatment for lung hydatid disease. *World J Surg* 1999;23:1181-5.
28. Balci AE, Eren N, Eren S, Ulku R. Ruptured hydatid cyst of the lung in children: clinical

- review and result of surgery. *Ann Thorac Surg* 2002;74:889-92.
29. Symbas PN, Aletres H. Hydatid disease of the lung. In: Shield WT, editor. *General thoracic surgery*. 4th ed. Philadelphia: William and Wilkins; 1994. p.1021-32.
30. Airbus OK, Kanat F, Gormus N, Turk E. Pleural complications of hydatid disease. *J Thoracic Cardiovasc Surg* 2002;123:292-7.
31. Sarsam A. Surgery of pulmonary hydatid cyst: review of 155 cases. *J Thorac Cardiovas Surg* 1971;62:663-8.

CONTRIBUTORS

FAAAA conceived the idea, planned and wrote the manuscript of the study. AKZB supervised the study and helped in the write up of the manuscript. Both the authors contributed significantly to the research that resulted in the submitted manuscript.