

Surgical Management of Hydatid Lung Disease – Experience in Gulab Devi Hospital

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ABSTRACT

Introduction: Echinococcosis or Hydatid disease is caused by larvae, which are the metacestode stage of the tapeworm Echinococcus. Disease is widely spread especially in sheep growing areas. Rural population handling with animals usually suffers from the disease. Four species are recognized and belong to the family Taeniidae. Taenia Ecchinococcus involves human beings as an accidental host. Liver is affected most commonly. Lungs are effected less commonly as compared to liver but enormous size of cyst markedly compromises normal pulmonary function. Routine chest x-rays can indicate presence of a cyst and CT scan can give a considerable support in diagnosis. Objective: The cyst needs a definite surgical management. Because most of the cyst in lungs are enormous in size, surgical management is not simple. To evaluate the success of surgical intervention along with its safety we conducted this study. Methods: Gulab Devi hospital is a tertiary care hospital dealing with cardiothoracic diseases. During Jan 2007-Dec 2009 we operated upon 72 cases of Hydatid lung disease. All patients were worked up for surgical fitness and only those were excluded who were declared unfit for surgery or anesthesia. Results: Male female ratio was 40/32 and most of them belonged to age group 30-50 yrs. 56 patients were symptomatic at presentation while in rest cyst was found on routine radiography. Multiple unilateral cysts were seen in 15 and 12 had bilateral cysts. Ruptured hydatid encountered in 24. Cystectomy and obliteration of space was done in 58, lobectomy in 10 and wedge resection in 4 patients. Postoperative course was uneventful in 60, complications in 11 and 1 mortality. Conclusion: It is concluded that surgery for hydatid lung disease is safe in majority of cases as it involves very little morbidity/ mortality and provides complete cure of the disease.

Key words: Ecchinococcus, Hydatid cyst, Tapeworm

INTRODUCTION

Echinococcosis or Hydatid disease is a disease of animals which involves human beings accidentally. It is caused by larvae, which are the metacestode stage of the tapeworm Echinococcus. Four species are recognized and belong to the family Taeniidae. The vast majority of infestations in humans are caused by *E. granulosus*. *E. granulosus* causes cystic echinococcosis, the pastoral form, which has a worldwide distribution and is concentrated in sheep-raising areas. Dogs and other canines are the definitive hosts while sheep, cattle, horses and pig are intermediate hosts. Humans exposed less frequently to *E. multilocularis*, which causes alveolar Echinococcosis. Its infestation usually occurs in colder areas (Northern Hemisphere - Central Europe, Russia, western China, northern Japan, North America, North Africa) and is associated with animals especially foxes. *E. vogeli*

and *E. oligarthrus* are rare species and cause polycystic Echinococcosis.

Hydatid Cyst can be found virtually in any organ (primary Echinococcosis) and 85–90% show single organ involvement. The liver is the most common site of cyst formation, followed by the lung and other sites (spleen, kidney, orbit, heart, brain and bone). The cysts have to be operated because their size can compromise the lung to a great extent. Furthermore their rupture can lead to death of a patient either due to anaphylactic shock or obstruction in respiratory passage due to coughing out of cyst. Surgery is considered the treatment of choice since the parasite can be completely removed and the patient cured. Surgical options for lung cysts include Cystectomy, lobectomy, Decortication and THP (1). Cystectomy is safest possible procedure. It involves incision and dissection of pericyst without opening the cyst capsule and enucleating the cyst in Toto. Large

cysts harm the lung parenchyma due to their compression effect. In such cases the consolidated which is usually a lobe or a segment has also to be taken out and lobectomy or segmentectomy has to be performed. Rupture of cyst in to pleural space can produce an empyema which if not managed properly may lead to a thick pleura requiring a decortication. In some cases the cysts are multiple converting major part of the lung functionless. In such cases the residual space after removal of cyst and consolidated lung is compromised in a way that viable lung is unable to fill the chest cage. Because empty space is a potential source of infection, in these cases Thoracoplasty i.e. removal of ribs is performed. From January 2007-December 2009, we operated upon 72 cases of Hydatid disease

MATERIAL AND METHODS

Study design: Cross sectional study design was used

Settings: This study was completed at Thoracic surgery department, Gulab Devi hospital Lahore.

Duration: All data was taken which was collected from 2009 to 2011.

Sample size: All 72 cases meeting objective of study were taken.

Sample collection criteria

- **Inclusion criteria**
- Patients of any age of either gender for thoracic surgery for Hydatid diseases.
- **Exclusion criteria**
- **Patients unfit for general anaesthesia**

Data Collection methods

All 72 cases were taken after informed consent from patients/parents/attendants. Basic demographic history like age and gender along its clinical presentation and surgical management was taken from Thoracic surgery department, Gulab Devi hospital Lahore.

Investigations

- X-ray chest PA & lateral view
- Ultrasound abdomen & chest
- CT Scan thorax
- Haemagglutination test

Haemagglutination test was done in all the patients because it is claimed to be positive in cases of hydatid cyst.

Surgical procedure

Statistical analysis

All data was entered and analyzed using SPSS 20 version. Frequency and % were used for qualitative data while mean \pm S.D was used for quantitative data.

RESULTS

We observed that site of cyst was most commonly in lungs. The table below shows our observations. Among the Clinical manifestation, Cough, fever and haemoptysis were most common clinical manifestations. However nearly a quarter was diagnosed incidental on routine chest radiography. The approach for taking out the cyst was standard Thoracotomy in most of the patients. Sternotomy was done to take out cyst from both sides in one go on the patients choice. An abdomen-thoracic incision was used when cysts were present in right lung and liver. In majority of the patients it was possible to take out cyst intact (Cystectomy or enucleation and obliteration of space). A lobectomy or wedge resection had to be done where lung was found consolidated due to long standing pressure caused by the cyst. In two third of the patients we were able to take out cyst intact while in rest either the cyst was already ruptured or gave way during surgery. Post op complications were encountered in a few patients and most of them were successfully managed. All of the patients were given albendazole postoperatively for a month or so on and followed up for 01 year and no recurrence at the same site was observed in all the patients. We lost one patient unfortunately who had multiple cysts in lung and pericardium and probable reason was anaphylactic reaction due to rupture of pericardial cyst. Minor complications included prolonged air leak for more than three days while major complications were a bronchopleural fistula which needed surgical intervention.

Table 1: Demographical, clinical Presentation and management of patients

		No. of patients	Percentage
Age (years)	<10 years	4	5.5%

	10-20 years	6	8.3%
	20-30 years	9	12.5%
	30-40 years	32	44.5%
	40-50 years	18	25.0%
	> 50 years	3	4.2%
	Mean \pm S.D		
Sex	Male	40	55.5%
	Female	32	44.5%
Location & Site	Unilateral cysts	45	62.5%
	Bilateral cysts	12	16.7%
	Multiple cysts	15	20.8%
Clinical manifestation	Cough	56	77.7%
	Heamoptysis	24	33.3%
	Fever	42	58.3%
	Routine investigations	16	22.2%
Surgical Approach	Standard Thoracotomies	65	90.2%
	Sternotomies	3	4.2%
	Abdomino-thoracic	4	5.5%

Table 2: Procedure performed and operative findings

		F	%
Procedures Performed	Enucleation	58	
	lobectomies	10	
	Wedge Resection	4	
Operative findings	Intact cyst	48	
	Ruptured cyst	24	

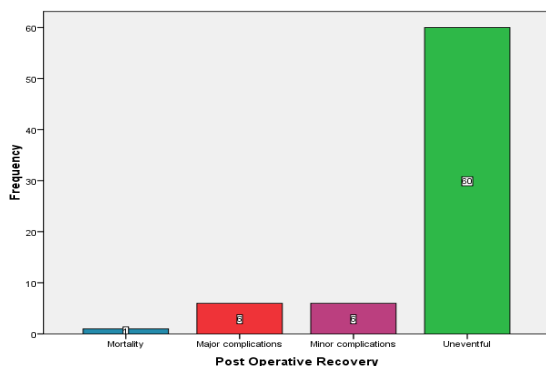


Fig 1: Post operative findings

DISCUSSION

Ever since Hippocrates described Hydatid disease, physicians all over the world have encountered it in various organs (1). Infrequently, the lung cysts

heal by spontaneous rupture and evacuation into the bronchus. Complications such as infection, abscess formation, bronchogenic spread, and anaphylactic shock occur more frequently.(2,3,4) Treatment with drugs like mebendazole , albendazole have been reported (5,6,7,8,9) but surgery is taken as the gold standard treatment. In 1884 Thomas suggested a technique that consisted of incising the lung parenchyma and removing the cyst(5). Enucleation was reported by Ugon et al in 1946(10) and Barrett in 1947(11) In the same year Allende described simple enucleation of the cyst without capitonnage of the residual cavity.(12) After cystotomy a potential cavity remains, which might permit abscess formation. Although some authors recommend leaving the cavity open' (2, 13) we prefer to obliterate it because of the risk of infection after hematoma formation. As a rule the lung

parenchyma should be preserved as far as possible in patients with pulmonary disease and radical procedures avoided. If, however, bronchiectasis or severe inflammation is present the affected lung should be excised. In our study the same principle was adopted and resection was done only when lung was fairly diseased. When bilateral cysts are present some surgeons prefer a two stage thoracotomy, operating on the side with the larger cyst first, but others perform simultaneous bilateral thoracotomies.(14) We performed Sternotomy for bilateral cysts on patients choice. The same has been recommended by Cetin G et al (15). Amer Bilal et al presented data of 200 patients operated in 10 years (16). This shows that the incidence of disease is almost similar in different parts of Pakistan. Larger number of patients in their series did not have to go for resection surgery and same stands good in our study too. However decortications in our study are nil. The reason for this could be that we received patients without pleural involvement. A simultaneous right lung and liver disease was managed by a single incision in our study. The same is supported by Riza Dogan et al (17). The successful treatment with surgical approach is documented by most people. We also received a 100% cure with no recurrence at the same site in one year follow-up. There was 1/72 mortality in our study. 4 out of 200 cases have been reported expired in contemporary study (16). This shows that surgical management is pretty safe in treating this disease. We conclude that surgical management is safe in a proper setup for hydatid lung disease. It has a little morbidity/mortality with 100% success.

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