

Bilateral Pulmonary Hydatid Clinical Profile and Management Our Experience at Tertiary Care Hospital

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Abstract

Background: Hydatid disease is a zoonotic disease caused by larval stages of echinococcosis and the lung is the second most commonly affected organ. Bilateral pulmonary hydatid is not that rare. **Aims and Objective:** To study the clinical profile and management of bilateral hydatid lung. **Material and Methods:** All patients with bilateral pulmonary hydatid disease operated in the department of CVTS SKIMS between 2017 and 2020 were included in the study. Total of 18 patients with bilateral pulmonary hydatid cysts were operated during this period. **Conclusion:** Bilateral one-stage mini thoracotomies are very much safe and acceptable with regards to morbidity rates and duration of hospital stay for the treatment of bilateral hydatid lung.

Keywords: Bilateral hydatid; Thoracotomy; Lung; Capitonage

Introduction

Hydatid disease is a zoonotic disease caused by larval stages of echinococcosis. This health problem is common in developing countries of Asia, Mediterranean region, the Middle East, Australia and Africa. In some countries of South East Asia the disease may be considered endemic. Echinococcosis may often be diagnosed accidentally because the individual may remain asymptomatic for a long time due to the silent nature of the pathogen. [1] Although it may involve any organ, liver is the most affected organ. [2] The lung is the second most commonly affected organ after the liver. The incidence of lung hydatid is in the range of 10% to 40%. [2,3] In 4%–26.7% of all cases of pulmonary hydatidosis the involvement is bilateral. [4] Chest X-ray and computer tomography of the chest supplemented with serology is the investigation modality for this disease. Peripheral blood smear showing leukocytosis, eosinophilia, and raised erythrocyte sedimentation rate are nonspecific parameters observed in patients with this infection. [3] Medical management with oral benzimidazoles group of drugs like mebendazole and albendazole has been used, and it is the preferred treatment option in children. [4,5] Surgical treatment is the generally accepted treatment of choice for lung hydatidosis. [6] But operating on bilateral pulmonary hydatidosis is still controversial. [7,8] The aim of this prospective study was to evaluate the results of surgical treatment in bilateral pulmonary hydatid disease with single stage bilateral anterolateral thoracotomy.

Materials and Methods

Prospective Study on cases of bilateral pulmonary hydatid disease operated in the department of CVTS SKIMS between 2017 and 2020. 18 patients with bilateral pulmonary hydatid cysts were operated during this period. Clinical examination, chest X-ray, and computed tomography scan of the chest were the mainstays of diagnosis and an abdominal ultrasound was performed in all cases to rule out hepatic hydatid cysts.

Preoperative evaluation, baseline investigations, lung function tests and electrocardiogram were also carried out routinely in all cases. Serologic testes (ELISA for hydatid) were done

routinely in all cases. Single-stage bilateral anterolateral mini thoracotomy was carried out under general anesthesia with double-lumen endotracheal tubes. Operative field was isolated with Povidone-iodine soaked pads for protection. In all cases enucleation of the hydatid cyst with capitonage of the residual cavity with bronchial opening closure (if any) with conservative parenchyma preservation. A 16 guage canula connected to a suction tip was inserted into the cyst. After needle aspiration, the cyst was aspirated and its fluid removed completely and the top of the cyst was opened and the all cyst membrane was removed with sponge holding forceps. Injection of scollicidal into the cystic cavity was avoided as severe bronchial irritation may occur. All adhesions were divided after evacuation to facilitate exploration and re-expansion of the lung; this method decreases the risk of rupture of cysts. The cavity was then irrigated with saline solution and checked for bronchial air-leaks. Any airleaks detected were repaired. The cavity was obliterated with capitonage. Oral albendazole (10 mg/kg) was given to patients on second post-operative day and continued for 3 months with a gap of two weeks after every three weeks to avoid hepatotoxicity. Liver function tests were monitored during the course of albendazole. The patients were followed with a chest X-ray before discharge at six week, 3 months and 6 months regularly.

Results

Of all 18 patients of bilateral hydatid lung that were managed surgically the most frequent symptoms were cough, and dyspnea [Table 1].

Most of the cysts were located in the right lower lobe, left lower lobe, and right upper lobe. Enucleation with capitonage was the most common approach in all of the patients. Others surgical procedures such as wedge resection, decortication, and

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Table 1: Symptoms of patients.

Symptom	No. of cases (n=18)	(%)
Cough	14	77.7
Dyspnea	10	55.5
Fever	6	33.3
Chest Pain	11	61.1
Hemoptysis	3	16.6
Purulent Sputum	3	16.6
Expectoration of laminated membranes	2	11.1
Allergic symptoms/urticarial	2	11.1
Anaphylactic reaction	1	5.5

Table 2: Post-operative complications

Post op complications	No. of patients (n=18)	Percentage (%)
Wound infection	1	5.5
Atelectasis	3	16.6
Empyema	4	22.2
Prolonged air leak	4	22.2
Haemothorax	1	5.5

debridement of necrotic tissues were performed in 12 patients. After evacuation completely the contents of cysts, the lung was reinflated, and the remnant cavity was filled with saline normal and checked all occulted bronchial opening.

Postoperative complications such as prolonged air leaks, atelectasis, and empyema were observed in 13 of 18 patients. 4 patients prolonged air leak. 4 patients developed empyema and in one patient cyst ruptured into the pleural cavity. The patients with prolonged air leak and empyema received conservative management. Atelectasia occurred in 3 patients and in one patient was managed with bronchoscopy. Others were shown in [Table 2].

The mean pain score was 6.^[9] (Range 3-8) as measured on Visual analogue scale. The mean hospital stay was 5 days (Range 8-12 days). No deaths occurred in hospital stay. Oral albendazole was started on the second postoperative day, the dose of 10 mg/kg and was continued for 3 months with a gap of 2 weeks after each 21 days. No recurrences occurred during the follow-up period.

Discussion

Surgery is the treatment of choice for pulmonary hydatid cysts. The surgical approaches for patients, who have bilateral pulmonary hydatid cyst, include bilateral one-stage thoracotomies, bilateral two-staged thoracotomies, median sternotomy, and Clamshell incision.^[10] In the literature, pulmonary function loss has not been shown in cases when a large number of cysts were removed from a lung.^[11] No radiological or clinical problems were seen in the postoperative period. Many thoracic surgeons have reported one-stage bilateral thoracotomies for bilateral lung echinococcosis. In our patients parenchymal compression will disappear after removal of the huge cysts, and thus, providing a higher lung volume after surgical treatment. Postoperative parenchymal space and pulmonary compression effect will disappear, and ventilation/perfusion mismatch will improve. Therefore, removal of cysts

provides a higher lung volume. Aggressive surgical treatment for widespread hydatidosis is associated with morbidity. We recommend minimal surgical treatment with preservation of maximal pulmonary parenchyma. However, the effectiveness of medical treatment is very limited, and it has potential side effects. We use medical treatment in patients with cardiovascular problem, multiple organ involvements, and avoidance of patient of surgery.

Bilateral two-stage thoracotomy is an appropriate surgical option with acceptable morbidity rates and duration of hospital stay for the treatment of bilateral widespread lung hydatidosis. Probably two-stage thoracotomy and median sternotomy are the most common approaches in the surgical treatment of bilateral lung hydatidosis which provides optimal exposure of each hemithorax and avoids the longer operative and anesthetic time associated with one-stage bilateral thoracotomies.^[12,13] A disadvantage of this two-stage thoracotomy is the potential for delay between the first and second thoracotomies due to slow because of postoperative complications. This may allow progression of disease, rupture and infection of cysts, making eventual surgery more difficult.^[12]

Some surgeons^[12-14] prefer median sternotomy because this approach causes less pain and is better tolerated than bilateral thoracotomy. Therefore, median sternotomy provides high postoperative patient comfort and shorter duration of hospital stay.^[15] Bilateral lung cysts should be resected in one or two stages; therefore, some study avoided applying bilateral thoracotomies as a single stage. In a case of bilateral involvement, one-stage surgery is superior to a classic two-stage operation as it decreases the morbidity, hospital stay, and cost.^[16] In a patient with an uncomplicated lung cyst in one and a ruptured cyst in another lung, the intact cyst should be removed first to prevent its rupture.^[17] The contralateral lesions then resected 2-4 weeks after the first operation.^[2-4] In our study, we used one-staged anterolateral thoracotomy in all patient below than 50 years older. We did not use median sternotomy, Clamshell incision, and bilateral two-stage thoracotomy. Median sternotomy is a potentially effective approach, but we did not use this approach in our study because it has been reported in the literature that mediastinal infections may have high mortality consequences.

Accesses to all portion lung and pleural space and cysts were possible with anterolateral thoracotomy, and supine position decreased the risk of aspiration during surgery despite single-lung ventilation. Postoperative thoracotomy pain is not more than other approaches. Surgical treatment of pulmonary hydatid cysts may cause potential complications as rupture, aspiration, and anaphylaxis, especially in patients who have multiple bilateral pulmonary cysts. The possibility of occurring life-threatening complications in one-staged bilateral thoracotomy and may increase the mortality rates.^[18] In our study, we have not life-threatening complications or mortality as others study. Prolonged air leak, postoperative lung, and pleura infections are more likely to occur in cases of complicated cysts in such condition two-stage thoracotomy is a preferred approach in some study. However, we used one-staged bilateral thoracotomy in complicated and intact cysts without more complication than others study. No mortality or recurrence in the follow-up period

was observed in our study.

In our experience, bilateral one-stage anterolateral thoracotomy is an appropriate surgical approach with acceptable morbidity rates, post-thoracotomy pain and duration of hospital stay for treatment of bilateral pulmonary hydatid cysts. In literature reviews, we found that two-stage thoracotomy after the first thoracotomy increases the total hospital stay and complications can occur in the other lung between intervals period for second thoracotomy, median sternotomy, and Clamshell incision for complicated cases may produce mediastinitis.

Conclusion

Bilateral one-stage mini thoracotomy is very much safe and acceptable with regards to morbidity rates and duration of hospital stay for the treatment of bilateral hydatid lung.

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