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Lung Hydatid Cyst Surgery Conservative Treatment or Anatomical Resection: About 153 Patients

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Abstract:
Hydatidosis is a parasitic condition caused by contamination of humans by the larval form of *Taenia echinococcus granulosus* . The lung is the preferred location after the liver. The disease is characterized by the development of one or more cysts within the parenchyma. All cysts should be operated on, whether they are symptomatic or not. The goal of treatment is to eradicate the parasite while preserving as much functional parenchyma as possible. Surgery includes conservative techniques and anatomical resections (Lobectomy; segmentectomy and pneumonectomy).
We report the surgical results of retrospective work; analytical and monocentric study on lung damage caused by hydatid disease in 153 cases collected in our department, between January 2019 and June 2022. The average age was 43 years, and all patients underwent open surgery. open ; the parameters studied are demographic data, the concept of contagion, clinical manifestations, paraclinical results; surgical management (technique) and complications.
The objective of our work is to analyze the role of surgical treatment in the management of pulmonary hydatid cyst, the different conservative and radical surgical techniques, and to evaluate the incidence of postoperative complications as well as the recurrence rate in depending on each technique used.
The results of our study confirmed the correct surgical strategy for each indication which allowed us to obtain zero mortality and very low morbidity.

Keywords: - Hydatid Cyst - Lung - Surgery - Lobectomy - Conservative Treatment - Recurrence.

INTRODUCTION

Human echinococcosis is a zoonosis transmitted to humans from animals. Caused by parasites, tapeworms of the genus *Echinococcus* . It is an endemic disease in the Mediterranean region, South America, Australia, it occurs in rural regions where sheep and goat farming is widespread, and constitutes a real public health problem (1-4) .
The Goals of Surgery: remove the parasite; avoid dissemination; preserve as much functional lung parenchyma as possible and resect irreversible lung lesions.
The objective of our work is to analyze the role of surgical treatment in the management of pulmonary hydatid cyst, the different conservative and radical surgical techniques, and to evaluate the incidence of

postoperative complications as well as the recurrence rate in function of each technique and to arrive at decision criteria while knowing that surgery is the reference treatment.

Materials and methods

We report the surgical results of retrospective work; analytical and monocentric study on lung damage caused by hydatid disease in 153 cases collected in our thoracic surgery department at the Mustapha university hospital center, Algiers, between January 2019 and June 2022.

We included in this study all patients admitted for lung KH and the parameters studied:

- demographic data,
- The notion of storytelling,
- clinical manifestations,
- paraclinical results,
- surgical management (technical) and complications.

Results

We have recorded 153 cases. The notion of contact with dogs in 86% of cases (132 cases). The average age was 43 years (02 years to 85 years). Children: 32 (21%) 60 patients under 25 years old with a male predominance (67 Women 86 Men).

Clinical symptoms: cough 136 cases (88%), chest pain 124 cases (81%), hemoptysis 90 cases (59%), exertional dyspnea in 46 cases (30%), hydatid vomit in 30 cases (20%) and recurrent sputum in 30 cases (20%).

Clinical examination: normal in 75%; fluid effusion syndrome in 11% condensation syndrome in 5%. The radiological assessment made by chest x-ray (Fig 2) supplemented by chest computed tomography (CT) in all our patients. (Fig 3)

Lesions of the left lung in 80 cases while those of the right lung in 63 cases and bilateral lesions were visible in 10 cases. Healthy cysts 73 complicated cases 55 cases and multiple 25 cases.

Bronchoscopy was performed accidentally for suspicion of another diagnosis in 02 cases (1.3%) and confirmed the diagnosis by visualizing the hydatid membrane. Hydatid serology (Elisa and immunoelectrophoresis) was performed in 98 patients (64%) and was positive in 71 cases (46%).

OUR PRACTICE

After a preoperative evaluation our patients were treated surgically (100%) ; Intubation by a selective probe in 03 patients made it possible to avoid flooding of the contralateral bronchial tree. The approach was a posterolateral thoracotomy for all our patients (Fig 1) ; The first surgical step was adhesiolysis; exposure of the hydatid cyst, protection of the operating field hypertonic serum (scolicidal solution).

Conservative treatment : A cystectomy or enucleation using the Ugon technique was performed in 65 cases (Fig 7) . An evacuation puncture was carried out in 83 cases (54%); Removal of The membrane proliferates sutured bronchial fistulas (resorbable suture) and resection of the pericyst.

A radical treatment by anatomical resection : in **28** patients (18%) for the following reasons:

- cyst destroying more than 50% of the lobe in 18 cases.
- cyst with destruction and hepatization of the entire lobe or segment in 08 cases.
- Infection 02 cases

In the 10 cases (7%) of bilateral polycystosis, we preferred to operate on the patients in two stages with an interval of 2 months between interventions, while starting first with the symptomatic location or the largest or the most threatening of rupture. .

Procedures associated with the treatment of the cyst: decortication 04 cases (pleural thickening) and parietal resection 01 cases

The average length of hospitalization was 5 days and a zero mortality rate for our series. We regularly monitored our patients in consultation mainly on chest radiography at a rate of 15 days, 3 months, 6 months, 1 year, then every year. CT is reserved for doubtful cases of recurrence or complication.

The absence of recurrence after a 21-month follow-up of the last patient; demonstrates and promotes the excellence of the surgical strategy adopted in the management of pulmonary hydatid cysts while knowing that well-conducted surgical treatment avoids recurrences but not re-infestations!

DISCUSSION

Hydatidosis is a parasitosis that still occurs in endemic mode (1). Cystic lesions evolve very slowly, becoming symptomatic after several years. Surgery is the only radical treatment and the strategy depends on several criteria. All cysts should be operated on, whether they are symptomatic or not. (2)

The choice of surgical technique is most often influenced by the condition of the patient, the state of the cyst and adjacent pulmonary parenchyma and that of respiratory function. As a general rule, the lung parenchyma should be preserved as much as possible (benign and slow growing).

The parasite is treated by protecting the operating field (sterilization) with the scolicide solution which helps prevent the spread of the parasite, as well as the risk of recurrence. The treatment of the pericyst and the cavity can be done using 02 conservative or radical methods. (6-7)

Regulated resection or radical treatment of pulmonary KH (segmentectomy, lobectomy or pneumonectomy) is justified for: large KH or multiple cysts destroying more than **50%** of the adjacent lobe or lung. (Cyst is enormous, its size exceeds 10 cm) or a KH with suppuration and severe and persistent pulmonary inflammation, sometimes a KH of centrilobar location, or close to the hilum (Fig 4-5-6) . And KH complicated by bronchiectasis, pulmonary fibrosis or severe hemorrhage. Several surgical techniques arise from these requirements. (4-8)

However, according to certain authors (11-12), the great flexibility of lung tissue in children and especially the possibilities of recovery of damaged lung parenchyma after treatment encourage surgeons to be very sparing when it comes to pulmonary hydatidosis.

As a general rule, the lung parenchyma should be preserved as much as possible in patients with this benign and slowly progressive lung pathology. (5) Treatment of the cyst can be done using two methods, conservative (flattening and blinding the bronchial fistulas or rarely dimpling) or radical (lobectomy; pneumonectomy; segmentectomy).

For the majority of authors, it is necessary to ensure good aerostasis by controlling bronchial fistulas and managing the residual cavity to avoid postoperative complications. Another equally important Imperative it is the posterior and anterior drainage of the free pleural cavity ensures good reexpansion of the pulmonary parenchyma under cover of post-operative physiotherapy immediately started in the first hours following the surgical procedure. (13)

Postoperative complications are rarely serious, dominated by atelectasis (respiratory physiotherapy and effective analgesic treatment). Other complications are dominated by pulmonary detachment and bronchopneumonopathy; empyemas and residual cavities source of aspergillus graft, superinfection and hemoptysis (rare). For our series we have 6 cases of atelectasis (physiotherapy) and 3 cases of post-operative pneumonia (ATB) and 03 cases of prolonged blistering by bronchial fistula requiring surgical revision.

The recurrence rate after conservative surgery for pulmonary hydatid cyst is low, demonstrating the reliability of this procedure, which has been supported by several studies. In the series by Doğan et al on 1055 surgically treated pulmonary hydatid cysts, only 8 cases had a recurrence, of which 7 cases had a complicated hydatid cyst before surgery and none in our series. (3)

Medical treatment is based on imidazoles (mebendazole or albendazole). This treatment is part of a non-surgical strategy and represents a therapeutic complement before and/or after surgery. Indications for medical treatment of pulmonary hydatid cyst include:

Operative contraindications with a high morbidity and mortality rate, refusal of surgery and multiple hydatidosis within the same organ or in different organs anatomically inaccessible to surgery . (13)

CONCLUSION

At the end of this work and in view of the results, we can conclude that KH surgery is the only effective treatment for hydatid cyst of the lung. Whether conservative or radical.

Conservative surgery remains the treatment of choice in the management of pulmonary hydatid cyst because it is simple, safe, effective, and which, in addition, allows the functional lung parenchyma to be preserved as much as possible. However, radical surgical resection remains reserved for certain very specific indications, either anatomical; infectious and lesional.

Give more importance to the consequences of hydatid disease (surgery + TRTmedical) and leave aside the causes of the problem so the only major weapon remains prevention

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13. Hydatid cyst of the lung: conservative surgery or radical resection? June 7, 201 Corresponding author: **Rachid Marouf*, Ihsan Alloubi.**

Conflict of interest: The authors declare no conflict of interest.

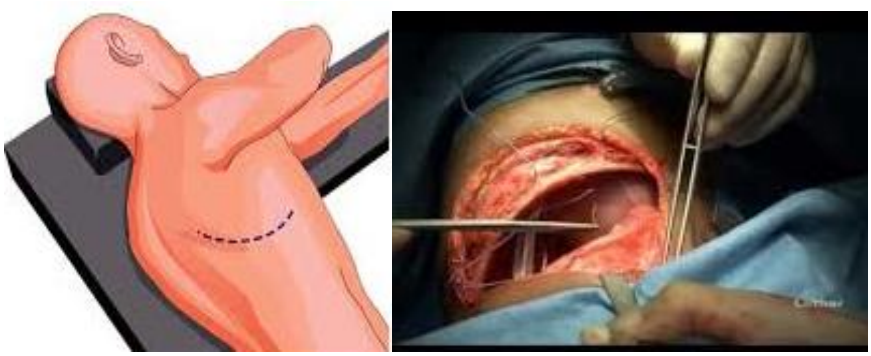

Fig 1: Approach: Posterolateral thoracotomy. (K..MESKOURI collection)

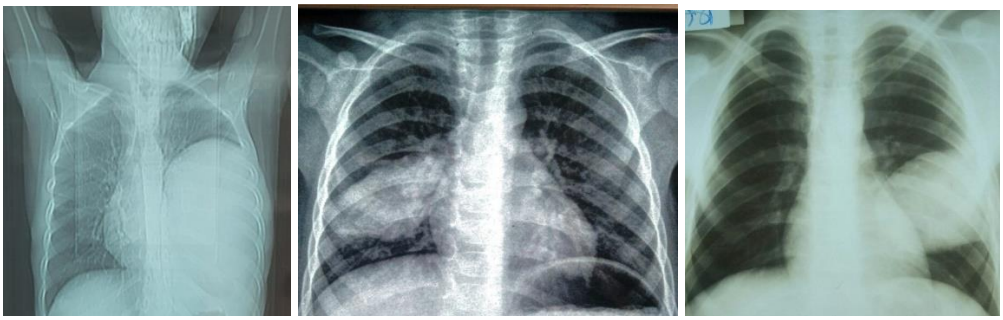

Fig 2: The different radiological aspects of the pulmonary hydatid cyst. (K..MESKOURI collection)

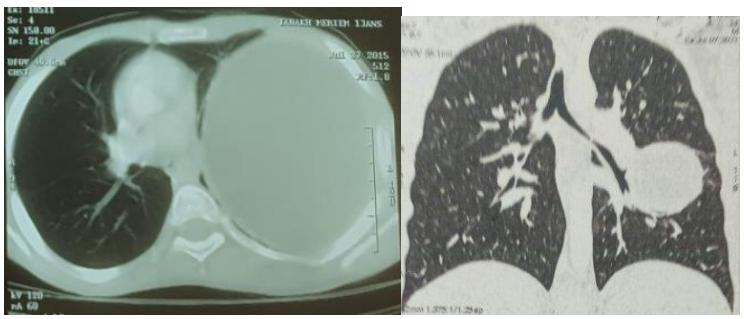

Fig: 3 : The different scannographic aspects of the pulmonary hydatid cyst (K..MESKOURI collection)

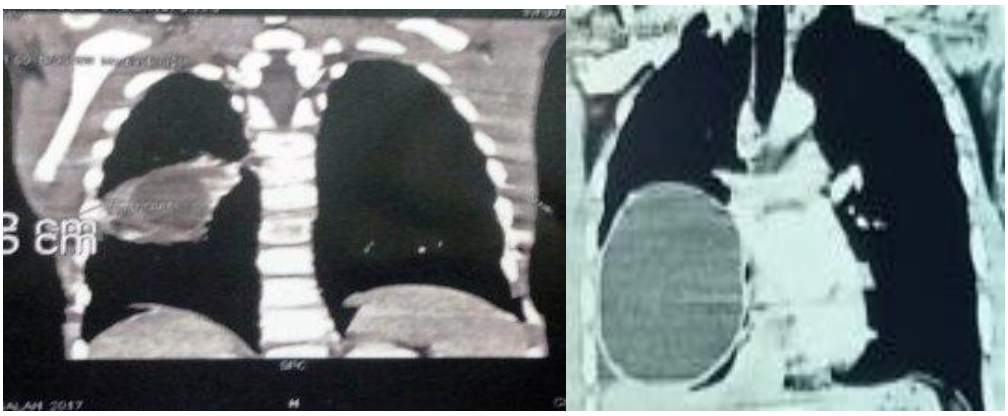

Fig: 3: The different scannographic aspects of the pulmonary hydatid cyst (K..MESKOURI collection)

Fig 4: Lower lobectomy for large healthy centrilobar hydatid cyst (K..MESKOURI collection)

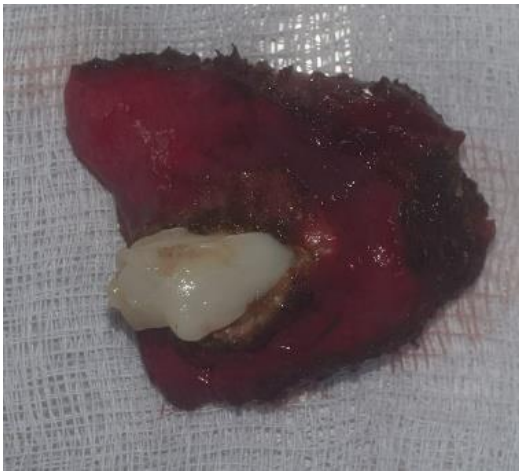

Fig 5: Lower lobectomy for destroyed lobe on infected cyst (K..MESKOURI collection)

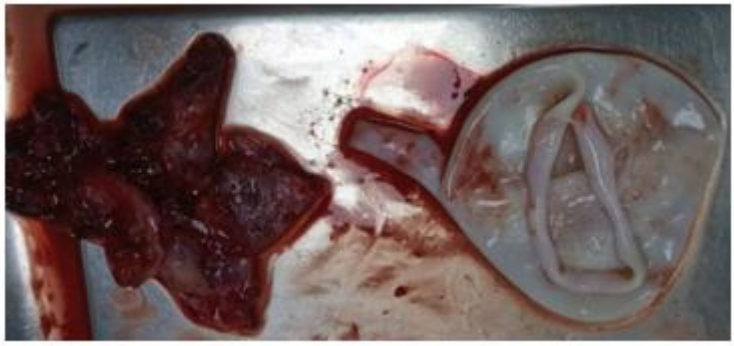

Fig 6: Middle lobectomy for destroyed lobe. (K..MESKOURI collection)

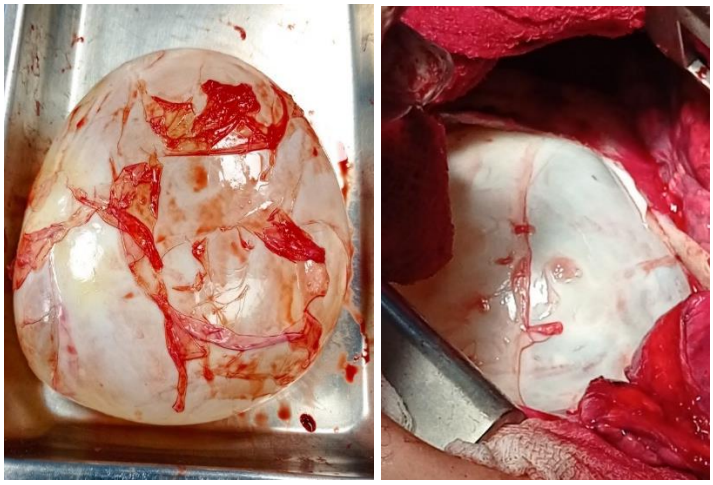

Fig 7: Healthy hydatid cyst delivered. (K.MESKOURI collection)