

# Pulmonary Hydatidosis

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**Abstract:** *Thoracic hydatidosis is the second hydatid localization, we reported a descriptive and retrospective study concerning 124 cases of pulmonary hydatidosis, compiled in our department over an 8 years periode. Through our series, we emphasize that the pulmonary hydatid cyst is manifested by unspecific signs. Chest X-ray is often suggestive of diagnosis. However, the CT scan should be systematic before any surgery. Abdominal ultrasound, more sensitive to explore the liver, should be systematic given the frequency of dual liver-lung localization.*

**Keywords:** Pulmonary, hydatidosis

## 1. Introduction

Thoracic hydatidosis is the second hydatid localization, following *Echinococcus granulosus* infestation. It has been endemic in Morocco, affecting young adults mostly. The hydatid serology is an essential step towards the diagnosis. It allows to guide the diagnosis in 80 to 95% of the pulmonary localization. The main goal of our study is to discuss the radioclinical aspect of the pulmonary hydatidosis.

## 2. Patients and methods

It is a descriptive and retrospective study concerning 124 cases of pulmonary hydatidosis, compiled in the department over an 8 years periode ( January 2007 to December 2014 ).

For every patient, the following data has been collected : age, sex and hydatid contagion, clinical, radiological, serological and endoscopic profil, associated localizations and treatment methods.

The analysis of the data used the 2007 Excel version.

## 3. Results

Our study included 124 patients. 56% were males (70 cases) and 44% females (54 cases). The median age of these patients was 30 years ( 18 to 75 years old). Hydatid contagion was found in 63% of the cases. Clinical signs were dominated by bronchial syndrome (80%) then chest pain (71%) (board 1). Incidental radiological discovery was in only 4% of the cases.

**Board 1:** Revealing functional signs

|                    |     |
|--------------------|-----|
| Chest pain         | 71% |
| Bronchial syndrome | 80% |
| hemoptysis         | 41% |
| Hydatidoptysis     | 22% |

The chest x-ray shows a round well limited radio-opacity in 51% of the cases (figure 1), hydroaeric image with the aspect of floating membrane in 33% of the cases.

The CT scan allowed not only to confirm the hydric density in 84% and to have a better study of the wall and the hydroaeric level which enable to diagnosis, but also to objectify other non-visible lung cysts in the X-ray (figure 2, 3, 4, 5, 6, 7), other localization (cardiac, pleural, hepatic) and the study of the underlying parenchyma. The hydatid cyst was unique in 64 cases and multiple in 18 cases.

Through the analysis of the files, the bronchoscopy was not systematic in the management of a sane hydatid cyst. It is indicated in case of a complicated cyst or in case of a doubt diagnosis. It visualized a typical aspect of hydatid membranes in 25% of the cases that matches the aspect of floating membrane in the CT scan. The search for scolex in the bronchial aspiration fluid was found negative in all of our patients.

The hydatid serology conducted in 75% of the cases, by ELISA method in 12 cases, by indirect haemagglutination test in 22 cases, and by the association of both techniques in 41 cases, was positive in 40% of the cases and negative in 35% (88% uncomplicated hydatid cyst). The serology was positive in the multiple hydatid cysts (17cases).

Hepatic localization was found in 20% of the cases (14 cases). The other locations were costal, diaphragm, adrenal, Inter-hepatorenal (1 case each).

Note that cerebral CT in patients with multiple hydatidosis was normal.

The treatment was surgical in 96 cases (84%). 18 patients were put on medical treatment. The evolution is good with 1.5 years of hindsight on average.

## 4. Discussion

Hydatid cyst is still an endemic pathology in Morocco which represents a public health problem. The pulmonary localization is by far the most common intra-thoracic location. It can be single or multiple. The multiple pulmonary hydatidosis represents 12% of the cases [1]. It is a benign pathology but severe by its mechanical, infectious or metastatic complications. The pulmonary hydatid cyst can

appear under different radiological aspects depending on the evolution.

For most authors [2, 3], male predominance seems classic because of the exposed occupations, the young adult under 30 years old is affected in 70% of the cases [2,4].

When it is symptomatic, the pulmonary hydatid cyst can be revealed by non specific respiratory functional signs such as chest pain, dyspnea, cough, hemoptysis and/or hydatidoptysis which is the most evocative symptom. The clinical examination is poor. it is necessary to search of other locations.

Radiographic features may differ. The sane hydatid cyst occur as an opacity of water tone , homogeneous, dense, single or multiple, with well defined outlines, rounded or oval, in "cannonball" or "rugby ball" very suggestive of the diagnosis ( figure 8). Sometimes the limits of the opacity can be blurring, realizing "the image with oiled edges of Escuerdo " (figure 9), witness of a reaction of the pulmonary parenchyma [5]. The aspect of sane hydatid cyst has been found in more than half of our patients (51%).

The cracked cyst has the aspect of a crescent or a meniscus known as « the bell sign » ( figure 10) or a pneumocyst, occurring as clarity located at the upper pole of the opacity between the outer wall of the cyst and the inner wall of the pericyst, this aspect is pathognomonic (figure 11). The intrabronchial rupture of the cyst manifest as a hydroaeric image with uneven irregular level due to floating membranes achieving the water lily sign (figure 12). Finally, a bridge image or "double bow sign Ivassinevich" is due to the partial detachment of the membranes of the cyst forming a bridge above the fluid level (figure 13). These last two aspects are pathognomics of the ruptured cyst [5]. It happens that all the hydatid liquid is evacuated and only persists the incarcerated mother membrane in the residual cavity, it is the phase of membrane retention achieving a round opacity with blurred limits, surrounded by a fine ring-like clarity, "cockade" image. The cyst completely emptied of its contents produces a roughly rounded image, limited by an opaque band more or less thin [6].

The CT scan allows to study precisely the cyst and the pericystic parenchyma, to confirm the liquid nature and to eliminate other etiologies. It allows to detect the small cysts, determine their evolution, and most importantly to complete a clinical assessment of other possible thoracic locations that may go unnoticed on standard radiography [7,8]. The sane cyst appear as a fluid mass limited by a thin, regular wall. The hydatid cyst goes through six evolutionary stages [9]. Six stages ranging from stage I single cyst to stage VI sequelae of the cyst.

The ultrasound allows to affirm the cystic nature, Specifies the topography of a basithoracic opacity relative to the diaphragm and eliminates the presence of systemic aberrant vessels in favor of sequestration [8].

The abdominal ultrasound should be systematic to search for abdominal localizations, especially liverworts [10]. The discovery of multiple pulmonary hydatidosis must always seek a primitive cardiac localization, hence the major benefit

of a systematic transthoracic ± transesophageal echocardiography.

The therapeutic decision is guided by thoracic imaging, surgery remains the cure. Medical treatment, when cysts are disseminated, remains the alternative therapy. . Primary prevention of the population is crucial.

## 5. Conclusion

Through our series, we emphasize that the pulmonary hydatid cyst is manifested by unspecific signs. Only the hydatidoptysis seen by a doctor confirms the diagnosis, this sign is rare. Chest X-ray is often suggestive of diagnosis. However, the CT scan should be systematic before any surgery so as not to ignore infra radiological hydatid cyst. Abdominal ultrasound, more sensitive to explore the liver, should be systematic given the frequency of dual liver-lung localization.

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Figure 1: Solitary Hydatid Cyst

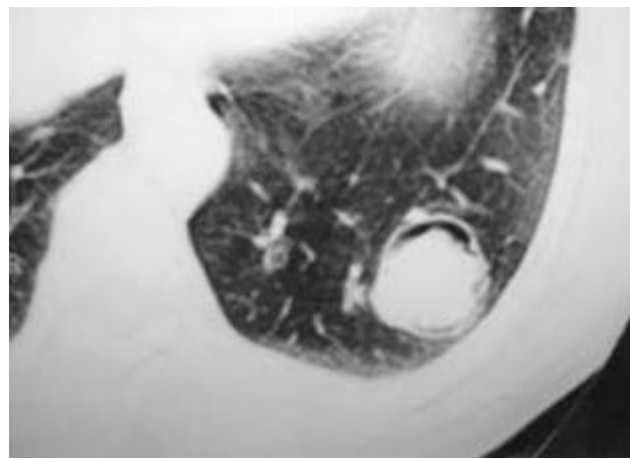


Figure 4: Air crescent sign

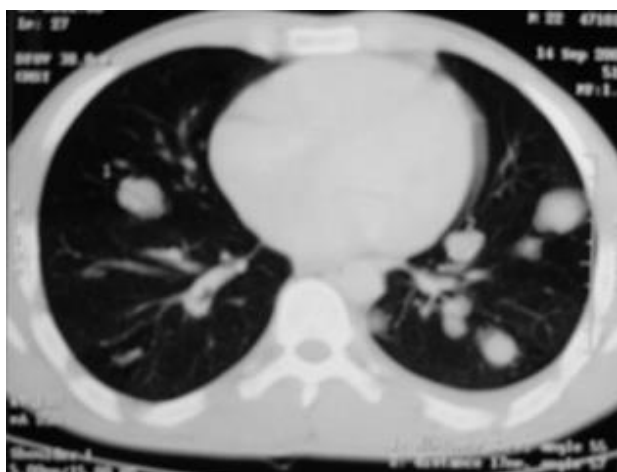


Figure 2: Multiple Hydatid Cysts

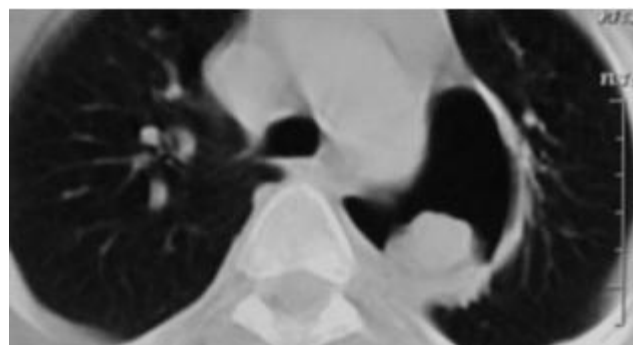


Figure 5: Bell Sign

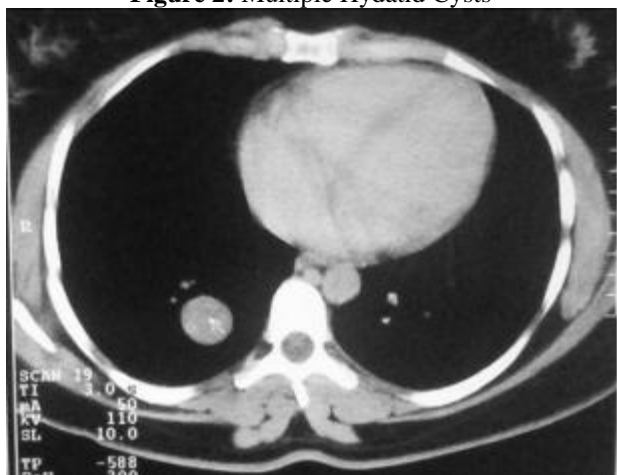


Figure 3: Round image, well-defined borders, hydric density

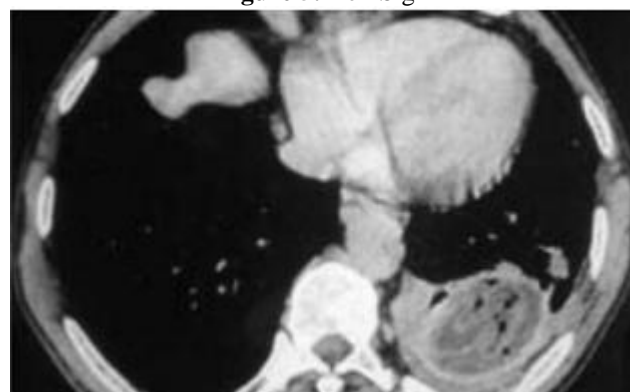


Figure 6: Aspect of trapped transparency

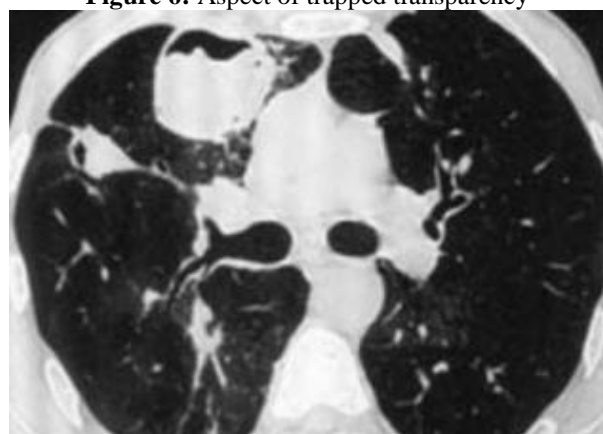


Figure 7: Hydroaeric image, corrugated hydric level



**Figure 8:** Rounded, dense and homogeneous opacity, with regular and well-defined edges in relation to a sane pulmonary hydatid cyst.



**Figure 11 :** Image of pneumocyst



**Figure 9:** Rounded opacity, with blurred edges



**Figure 12 :** Hydroaeric image with regular level



**Figure 10:** Bell sign



**Figure 13 :** Floating membrane appearance