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What is the Mechanism of Diffusion of Extra-Pulmonary Thoracic Hydatidosis?

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Abstract

Introduction : Extra-pulmonary intra-thoracic hydatid cysts are rare, their multiple forms often testify to secondary dissemination. pulmonary (HTE).

Material and Methods: Between 2010 and 2017, we operated 84 patients for extrapulmonary thoracic hydatidosis. Surgery consisted on a complete excision of cysts. The first approach was a posterolateral thoracotomy in all patients. Medical treatment-based supplement Albendazole was started with 83 patients.

Results: The extatulmonary thoracic hydatidosis localizations were isolated in 55 patients or 67% and associated with a pulmonary localization in 17 patients or 20.2% or a hepatic localization in 12 patients or 14.2%.
We divided our patients into three groups:
Group A: patients with notion of hepatic hydatidosis;
Group B: patients with notion of pulmonary hydatidosis;
Group C: patients without any notion of hepatic or pulmonary hydatidosis.
There were no deaths among our patients, but the recidivism rate was 4.76%.

Conclusion: The mechanism of extra-pulmonary thoracic hydatidosis with single location is hematogenous, unlike extra-pulmonary thoracic hydatidosis with multiple locations which can be done either by lymphatic way or by contiguity, hence the need to take into account loads hydatid cysts in the liver to prevent intra-thoracic spread.

Keywords: Hydatid Cyst; Isolated Hydatidosis; Thoracic Hydatidosis; Extra Pulmonary Hydatidosis; Secondary Hydatidosis

Introduction

Echinococcosis or human hydatidosis is a chronic parasitic anthropozoonosis, linked to the development of humans, accidental intermediate host, of the larval form of echinoccocus granulosis which lives in the adult state in the intestine of dogs or other carnivores, It is rampant in the endemic state in the temperate grazing regions of the five continents where traditional pastoral farming takes place. This parasitosis can affect all organs without exception, but hepatic and pulmonary localization remain the most frequent. The localization of the hydatid cyst at the pleural interlobar fissures level is rare, but represents the most frequent localization of extra-pulmonary intra-thoracic hydatidoses.

It is important to understand the mechanism of diffusion of this disease to know the place of anthelmintic after surgery and also the importance of a complete surgical cure of all hydatid disease of liver especially of hepatic dome. Through a retrospective study, we will evaluate the mechanism of diffusion of extra-pulmonary thoracic hydatidosis.

Materials and Methods

During a seven-year period (January 2010, December 2017), 84 patients with extrapulmonary thoracic cysts collected at the CHU Hassan II FES thoracic surgery department. It was 49% men and 51% women. The mean age at the time of the intervention was 43.5

years (9 to 78 years). Chest pain (86%) and cough (72%) were the main functional signs. Hydatic vomics, testifying to the break-through of cysts in the branchus, has occurred among 15 patients (17.8%) (Table 1).

Functional signs	Number of cases	Percentage
Chest pain	73	86%
Cough	60	72%
Sputum	19	52%
Hemoptysis	30	35.70%
Hydatic Vomics	15	17.80%
Dyspnea	50	41%
Hepatic colic	9	10%
Biliptysia	6	7.10%

Table 1: The different clinical signs noticed in our patients

The diagnosis essentially rests on the chest x-ray which shows the full or ruptured cyst (Figure 1A). All of our patients received a chest CT scan (Figure 1B). Abdominal ultrasound is systematically performed as part of a report on the extension of hydatid disease.

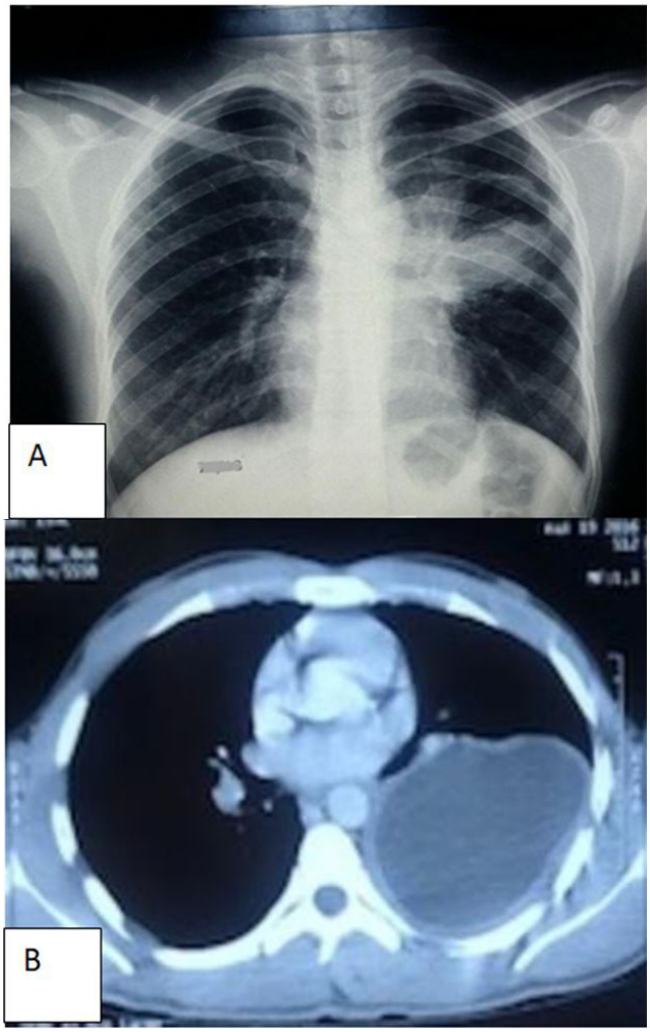

Figure 1: A: Front chest radiograph showing ruptured hydatid cyst in the bronchi of the left fissure B: Chest CT showing a hydatid cyst of the left fissure

At the end of the clinical and paraclinical assessment, we divided our patients into three groups:

Group A: patients with notion of hepatic hydatidosis;

Group B: patients with notion of pulmonary hydatidosis;

Group C: patients without hepatic or pulmonary hydididosis.

The surgical approach was a postero lateral thoracotomy in all our patients, except 4 cases who underwent an elective approach for bone localizations.

The extrapulmonary hydatid cysts were treated by cystectomy after protection of the operating field with compresses soaked in oxygenated water. Those of costal location benefited from a partial rib resection (Table 2).

Locations	Therapeutic attitudes
Mediastinalhydatid cyst	17 cystectomy
Hydatid cyst	20 cystectomy
Diaphragmatic	07 cystectomy
Scissuralhydatid cyst	30 perikystectomy
under pleural Hydatid cyst	07 cystectomy
Bone hydatid cyst	04 bone resections

Table 2: Operative technique according to location

Additional medical treatment with Albendazole (10 mg / kg / day) was started post operatively in all patients for a period of six months, with monthly monitoring of the hepatic function. The chest X-ray was made at each consultation after a week and then once a month in all patients for 1 year and then by his referring doctor.

Results

In order to divide our patients into three groups, patients with notion of hepatic hydatidosis (Group A); patients with notion of pulmonary hydatidosis (Group B) and patients without hepatic or pulmonary hydididosis (Group C), we have we have identified:

- 20 had History of Hydatid Liver Cyst intervention
- 8 had a recurrence of an already operated hydatid liver cyst;
- 11 had a history of intervention for a hydatid liver cyst
- 4 presented with a recurrence of an operated hydatid liver cyst;
- 53 had neither hydatid liver cyst nor pulmonary hydatid cyst

Thus, there were 28 patients in group A, 15 in group B and 53 in group C (Table 3).

Group	Patient characteristics	Number
A	Patients with History of Intervention of Hydatid Cyst of the Liver Patients with recurrent previously operated hydatid liver cyst	20
B	Patients with History of Intervention for Hydatid Cyst of the Liver Patients with recurrent operated hydatid liver cyst	11
C	Patients with no notion of hepatic hydatidosis or pulmonary	53

Table 3: Distribution of patients according to the origin of thoracic extrapulmonary hydatid cysyt

The locations found in our series were as follows:

Isolated: in 55 patients or 67% (Figure 2)

Mediastinal: 10 cases or 18.2%.

Bone: 3 cases or 5.4%.

Scissural: 35 cases or 63.6%.

Diaphragmatic: 4 cases or 7.4%.

Sub pleural: 3 cases or 5.4%.

Associated pulmonary localization in 17 patients (20.2%) or hepatic localization in 12 patients (14.2%).

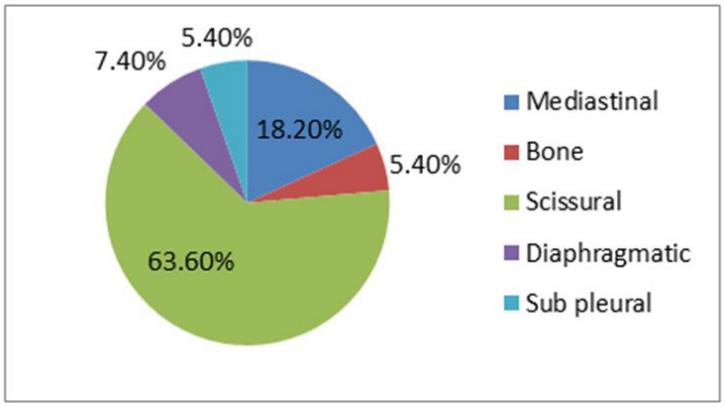

Figure 2: The different locations of extra-pulmonary thoracic cysts isolated from our patients

In our series, no deaths were noted in our series, 4 recurrences were observed in our series, 1 case of bone hydatidosis, 2 cases of médiastinale hydatidosis, 1 case of pleural hydatidosis.

Discussion

Extra-pulmonary thoracic localization is very rare and represents 5 to 7.5% of all thoracic localizations [1-2]. It is seen during secondary thoracic hydatidosis;the cysts are multiple and scattered. There are several mechanisms that can explain the multiple and extrapulmonary form of hydatidosis:

The three modes of dissemination explaining the primitive intra-thoracic extra-pulmonary localization of hydatid cysts are presented as follows:

The blood Path

Once ingested, the eggs reach the stomach and release their hexacanth embryos crossing the digestive mucosa, easy by intestinal contractions, their hooks and secretions from the penetration glands. Hexacanth embryos enter the mesenteric blood capillaries and travel through the portal current to reach the liver. Those who cross the hepatic filter engage in portocave communications, the right heart then the pulmonary arteries and arrive at the level of the lungs where 75% of them are in turn stopped by the pulmonary capillary network. The remaining hexacanth embryos are released into the large circulation, favored by vasodilation of the pulmonary capillary network and the opening of physiological shuntes. Some embryos enter the intestinal lymphatics and through the thoracic duct join the systemic circulation [3].

The lymphatic Way

It explains the hydatid localization under pleural, mediastinal and diaphragmatic by the diaphragmatic lymphatic drainage, starting from a hepatic or diaphragmatic hydatic cyst, along the internal mammary ganglia in front, and intercostal ganglia in back [4].

By Contiguity

It is a spread of infection from an adjacent site without obvious rupture of the cyst. Upon arrival at the target organ, the hexacanth embryos are circumscribed by an inflammatory granuloma. They can be, or continue their evolution by forming a sclera inflammatory shell. In our series, single localization is the most frequent, likewise group C patients represent the majority of our patients, ie 63%, which may explain why the mechanism of extra pulmonary hydatidosis with single localization is most likely due to hematogenous pathway, unlike Bouchikh's series [5] where the mechanism of multiple-location extra-pulmonary hydatidosis can be done either by lymphatic route or by contiguity from a hydatid cyst of the liver through the diaphragm.

Treatment for extra-pulmonary thoracic hydatidosis is surgery. It consists in performing an excision of all or the maximum of the hydatid cysts. A postero lateral thoracotomy is the most used approach, it allows to treat extra-parenchymal cysts and to perform a parenchymal resection if necessary. Through this thoracotomy we can treat associated hepatic cysts by performing:

- Aphreno pulmonary disconnection in the case of a cyst is ruptured in the lung
- Aphrenotomy
- Periacystectomy of the Hydatic Liver Cyst
- Closing small bile fistulas or installing a drain if they are large
- Interhepato diaphragmatic drainage

In a series by Msouger [6], the results of thoracic first of all hydatid liver cysts ruptured in the thorax were very satisfactory with a rate of 7.5% of mortality and 16% of morbidity.

Laparotomy is necessary for cysts on the underside of the liver. In our current practice, we adopted a consensus with our conferees visceralist surgeons to refer to us the patients presenting a hydatiddomehepatic cyst ruptured in the thorax for surgical cure through an approach by thoracotomy which which explains then the rarity of the patients of group A in our series. In addition to surgical treatment, most authors use an antihelemintic: Albendazole 10-15 mg / kg / d in 28-day courses with treatment discontinued for 14 days between 2 courses. Aguilar [7] reports a case of secondary thoracic hydatidosis successfully treated with Albendazole alone due to contraindication to surgery. As far as we are concerned, we prefer to avoid using Albendazole pre-operatively given the significant risk of rupture of the cysts [8]. However, long-term continuous post-operative treatment is prescribed, the good results of which are approved by several authors [9,10].

The recurrence rate in our series was 4.76% despite successful surgical and medical treatment. This can be explained by the difficulty of removing all of the lesions and the possibility of subclinical cysts at the time of the intervention.

Conclusion

The mechanism of extra-pulmonary thoracic hydatidosis with single location is hematogenous, unlike extra-pulmonary thoracic hydatidosis with multiple location, which can be done either by lymphatic route or by contiguity. Thoracotomy remains the best approach to treat hydatiddomehepatic cysts ruptured in the thorax to avoid progression to multiple extra pulmonary thoracic involvements.

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