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Non parasitic cysts of the spleen in children partial splenectomy: Conservatory surgery of choice (about 4 cases)

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Abstract
Non-parasitic splenic cysts are estimated at 650 cases, of which 60 to 70% of the cases are pseudocysts without a cellular covering, in other cases they are true cysts whose wall contains an epithelial cell coating.
Clinically, the latency of the cyst gives it total muteness. However, sometimes alone, splenomegaly (apart from complications) leads the patient to consult.
Diagnosis is made easy through the provision of imaging: Ultrasound and CT scans represent the key examination.
The current therapeutic attitude must give primacy to conservative treatment: partial splenectomy which seems to give less complication.
In the light of our 4 observations of histologically proven non-parasitic spleen cysts, partial splenectomy, which is based on knowledge of splenic vascularization, is for us the intervention of choice because a less complex and risk-free trial excessive compared to total splenectomy. These results are consistent with those of the literature.

Keywords: Cyst, true cysts, splenic, children

Introduction
Benign, non-parasitic spleen cysts in children remain rare [2, 3], presenting only one-third of cystic splenic pathology. They include true epithelial-walled cysts dominated by epidermoid cysts and pseudocysts frequently of traumatic origin. Only postoperative anatomopathological examination accurately indicates the nature of the cyst.
The operative indication depends on the clinical expression and cyst size, it is recommended to perform a splenectomy in front of a cyst of more than 5 cm symptomatic or complicated. An attitude that remains controversial in view of the unknown evolutionary risk essentially of epidermoid cysts and the essentially infectious complications of a splenectomy [4].
Performing only a partial splenectomy to treat a benign lesion of the spleen was performed for the first time by Pean in 1867. However, conservative surgery took a long time to appear technically reasonable and useful on the organic plane. The description of infectious complications after splenectomy has prompted anatomical studies showing that partial splenectomy with hemostasis control is possible [5, 6]: non-parasitic cysts show a choice indication by partial splenectomy [7].
We report the experience of our service in the PEC of 4 cases of simple non-parasitic cystic lesions of the spleen treated immediately by partial splenectomy.
The purpose of our experiment is to establish partial splenectomy as the conservative treatment of choice for the treatment of nonparasitic spleen cysts.

Materiels and Methods
We report a retrospective study spread over 15 years: 4 cases of simple non-parasitic cystic lesions demonstrated by an ultrasound supplemented by an abdominal CT scan, the patients having also benefited from a hemogram and preoperative hydatid serology. These patients are treated with a partial splenectomy adjusted with long-term monitoring to evaluate the effectiveness of the treatment and to detect a possible complication.

Case n°1
A 10-year-old boy admitted for post-traumatic painful splenomegaly. Ultrasound revealed a cystic appearance of 10 cm in diameter, at the expense of the upper pole of the spleen (Figure 1) confirmed by a scanner (Figure 2). A medial umbilical medial laparotomy is performed to achieve superior partial polar splenectomy with cystic formation.
The anatomo-pathological study of the piece reveals a pseudo-cyst whose wall is devoid of any cellular structure.
The long-term evolution was good.

Case n°2
A 12-year-old boy, admitted for pain of the left hypochondrium with palpable mass; Ultrasound and CT (Figure 3,4) show a cyst of 15 cm at the expense of the upper pole of the spleen.
The patient is approached by a supraumbilical medial Laparotomy which allowed partial splenectomy with the cyst, which had a large salient dome.
The anatomo-pathological examination of the operative specimen concludes with a true cyst with a wall of epithelial structure (epidermoid type cyst).

Case n°3:
A 14-year-old boy with no traumatic or infectious history consulted for left scapular pain and a respiratory gene on examination: a sensitive hypotenture of the left hypochondrium.

Ultrasound showed a hypoechoic mass 15 cm long axis probably splenic origin. The abdominal CT scan confirmed the splenic origin of a well-limited mass of fluid density that drove the left kidney down, coming into contact with the liver and the left edge of the stomach (Figure 5).
A laparoscopic partial splenectomy was proposed and performed (after first evacuation of the cyst) using three trocars, two of 10 mm (umbilical and mid-xipho-umbilical) and one of 5 mm in the left hypochondrium.
The pathological examination concluded with an epidermoid cyst with fibrous and inflammatory reorganization.
Abdominal CT control one year after was satisfactory with persistance of a reliquat in the lower pole of the spleen (Figure 6).

Case n°4:
An 11-year-old boy with no history of trauma consults for an uncomfortable pain in the left hypochondrium that has been evolving for 1 year. An ultrasound was performed showing a splenic cyst with a simple appearance at the expense of the lower lobe measuring 10 cm and confirmed by CT.
The patient underwent a lower polar splenectomy (Figure 7, 8), with simple operative follow-ups and a control ultrasound showing a good splenic stump.

Discussion
Non-parasitic spleen cysts are rare, often unrecognized and difficult to quantify accurately. We can find nearly six hundred cases reported in the world literature with a clear predominance of pseudocysts (75%).
Indeed, in a study conducted by D.J Shah and spread over a period of 38 years (1955 -1993), he found only 12 non-parasitic cysts of the spleen [8].
Similarly, between 1984 and 1989 (5 years), E. EMRY found 3 splenic cysts in children [8].
A single non-parasitic splenic cyst was found in a study conducted by BENHAYOUN over a period of 9 years [9].
Concerning our series, 4 cases of nonparasitic splenic cysts studied over a spread period of 15 years, which confirms the rarity of the splenic localization.
All authors confirm that non-parasitic splenic cysts are a disease of the young subject and the adult, with female predominance for epidermoid cysts, and male for post-traumatic cysts.
Our series includes 4 boys with 3 cases with a true cyst and 1 case of pseudo-cyst confirmed by the pathological study.
The reason for consultation was painful swelling in 3 cases and a painless mass for a child. These clinical expressions lead us to pose the operative indication in front of these benign cystic lesions.
The most used hydatid serology in current practice was negative in all cases of our observations. As for the blood count performed in all our patients, no hematological abnormality was revealed. These results are consistent with those of the literature
For the four patients in our series who benefited from the combination of ultrasound and computed tomography, it Was possible to establish with precision the splenic site of the cyst.
In the series studied, the diagnosis is based on these two examinations (ultrasound and CT).
We report that all 4 patients underwent partial splenectomy with excellent long-term results, including the absence of biological stigmas of asplenia.
A posterior splenic scintigraphy will allow us to assess the fixation of the remaining splenic tissue, but not to affirm its functional and immunological character. Some authors use digitized venous angiography to obtain parenchymography [10, 11]. Unfortunately, these 2 exams have never been done in our patients. Only an ultrasound coupled to Doppler was performed one month postoperatively in our patients to ensure good vascularization of the splenic stump.
In our department, partial splenectomy is the technique of choice for non-parasitic spenum cysts that are not bulky in children.
This is made possible thanks to the knowledge of the vascular segmentation of the spleen, which seems to be a good compromise, allowing to preserve at least 25% of the splenic tissue to ensure a prevention of the infectious risk, as well as to eradicate the cystic lesion in general. It remains the reference procedure for nonparasitic cystic lesions [12, 13], but it may be technically difficult in the presence of large cystic lesions and may lead to total splenectomy, especially in cases of haemorrhagic complications [14].
However, there is no evidence that partial splenectomy avoids serious infectious events and there is at least one published example [15]. However, animal studies have shown that in cases of partial splenectomy, immune function against encapsulated bacteria is conserved, though perhaps somewhat diminished [16, 17].

Conclusion
The benign non-parasitic spleen cyst forms a rare entity in children, dominated by pseudocysts, as evidenced by the low frequency described in the literature. The prognosis, generally favorable, depends on the early discovery of the cyst, in order to avoid complications caused mainly by cystic rupture and splenic infarction.
The majority of authors advocate a conservative treatment, namely partial splenectomy, which is the treatment of choice for non-parasitic cysts in young children, particularly non-bulky cysts and post-traumatic cysts.

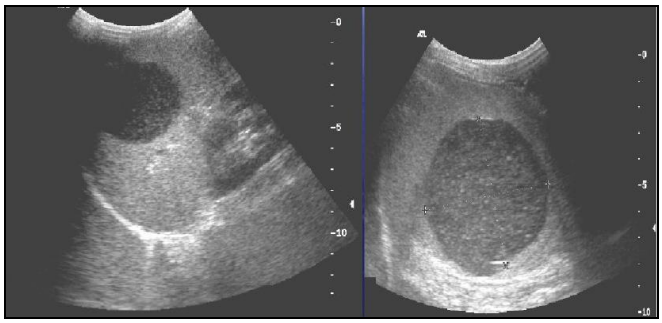

Fig 1: Ultrasound image showing a thin walled hypoechoic formation.

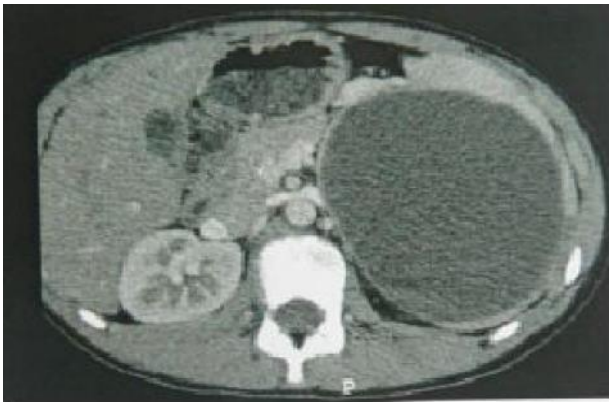

Fig 2: Abdominal CT showing the huge cystic mass of the spleen.

Fig 3: Ultrasound image showing a well-limited mass of the left hypochondrium hypoechoic, homogeneous, with fine mobile echoes.

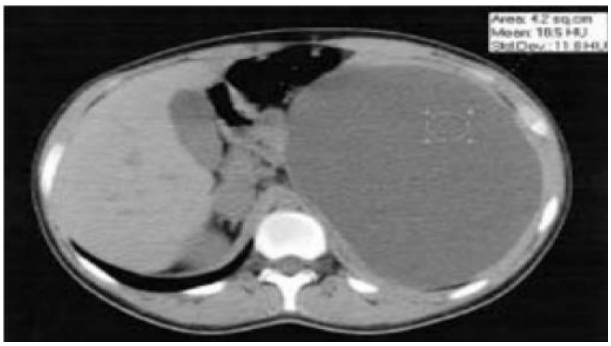

Fig 4: Axial section of an abdominal CT without injection, showing a voluminous intrasplenic mass, homogeneous, of liquid density.

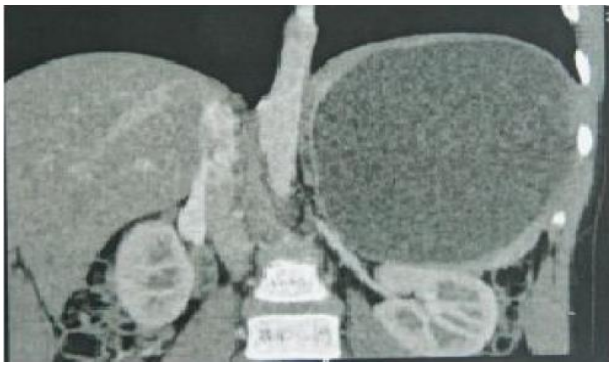

Fig 5: Abdominal CT showing the cyst coming into contact with the liver and the left edge of the stomach.

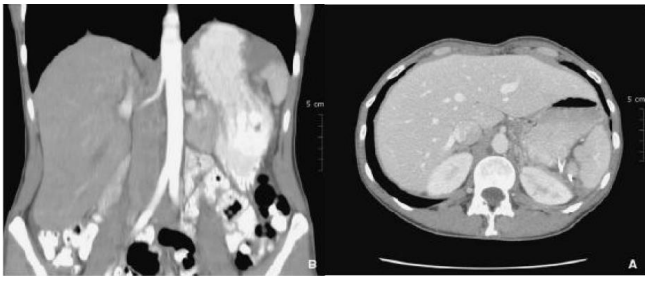

Fig 6: Abdominal CT one year after a partial splenectomy showing the lower polar remainder remains well vascularized.

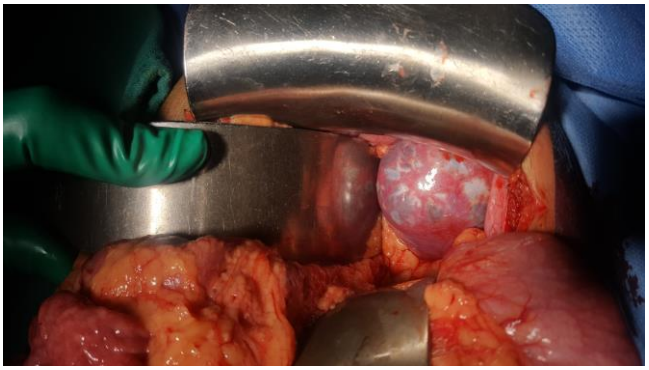

Fig 7: Intraoperative image of the spleen cyst.

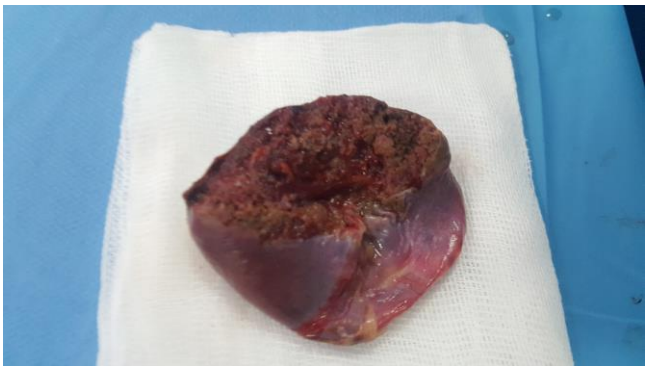

Fig 8: Image showing a partial splenectomy taking the cyst.

Conflict of Interest

All the authors declare that they do not have any conflict of interest.

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