Therapeutic Problems In Complicated Liver Hydatid Cyst Title

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ABSTRACT The treatment of the liver hydatid cyst is by far from being well codified and continues to be the subject of countless medical contradictions. The numerous surgical therapeutic methods proposed are approved or disapproved by various surgeons, so that it is very difficult to appreciate the value of a surgical procedure which appears very efficient in certain statistics but which generates complications and new surgical interventions in other statistics. This is mainly due to the structural and evolutional polymorphism of the liver hydatid cyst. The apparition of the complications in the evolution of the liver hydatid cyst, encountered in more than one third of the cases, raises even more problems concerning the choice of an ideal therapeutic conduct. In the present study we have tried to make an analysis of the surgical treatment types used in complicated liver hydatid cyst and we pursued the morbidity, the mortality and hospitalization duration for each surgical procedure used.

KEY WORDS liver hydatid cyst, complications, liver posthydatid remnant cavity

Introduction

The liver hydatid cyst (CHH) remains an ancient disease, being known all the way back in the Ancient times, but always present by the special diagnosis and treatment problems which it raises. The liver hydatid cyst is produced through the cystic tumoral development in the organism of the larva of Taenia Echinococcus granulosus (1), and the disease prevalence in Romania is of 5-6 cases to 100 000 inhabitants, with increasing incidence (2).

The evolution of the disease is complex and dynamic and consists of the development of certain cystic tumours, many times being multiple, at liver level, finding themselves in various phases of evolution and growth. Many times the evolution stages of a cyst weave with the involution stages of another one, each of this stages of the hydatid cyst bringing about risks and complications that endanger the patient’s life. This structural and evolutional polymorphism led to the apparition of a wide range of treatment, the choice and adaptation of the ideal procedure for each particular case being extremely difficult (3).

In the present study we have tried to make an analysis of the surgical treatment types used in the complicated liver hydatid cyst and we pursued the morbidity, the mortality and hospitalization duration for each surgical procedure used.

Material and method

In the Surgery III clinic of Craiova, were hospitalized and submitted to surgical intervention during the period 1998-2008, 109 ill persons diagnosed with liver hydatid cyst, out of which 51 patients (46,78%) had complicated liver hydatid cyst.

In our group of patients biliary complications prevailed, 31 cases (60,78%) of which 14 cases (27,45%) of ruptured hydatid cyst in the biliary tree, 4 cases (7,84%) of sclerotic odditis with consecutive dilatation of CBP, 9 cases (16,64%) of hydatid biliary lithiasis and 4 cases (7,84%) of hydatid acute colecistitis. In 8 cases (15,68%) we faced complications of septic type (suppurated liver hydatid cyst), in 6 cases (11,76%) we encountered liver hydatid cyst ruptured in the peritoneum, 4 ill people (7,84%) presented calcified liver hydatid cyst and in one case (1,96%) we dealt with an extrinsic compression realized by the liver hydatid cyst voluminous on the duodenum, manifested from the clinical point of view as a high occlusion. We also registered a case (1,96%) of liver hydatid cyst ruptured in the right pleura.

Among the 51 patients, 30 (58,81%) were men and 21 (41,19) were women, with age limits between 21 and 72 years and an age average of 48,5 years. The repartition on origin environment showed us a high frequency of the disease in the rural environment (34 cases– 66,66%) comparatively with the urban one (17 cases– 33,33%).

On admission in hospital the most frequent clinical signs were: pains in right hypochondrium
in 43 cases (84.3%), the dyspeptic syndrome in 37 cases (72.5%), fever in 23 cases (45%) and icterus in 12 cases (23.5%). The basic explorations were the imagistic ones echography being used in 49 cases (96.07%) and computerized tomography in 21 cases (41.17%). The Gharbi echographic classification of hydatid cysts is given in tb no 1.

**Table no 1 The Gharbi echographic classification of hydatid cysts**

<table>
<thead>
<tr>
<th>Gharbi echographic classification</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIP I</td>
<td>2</td>
<td>3.92</td>
</tr>
<tr>
<td>TIP II</td>
<td>4</td>
<td>7.84</td>
</tr>
<tr>
<td>TIP III</td>
<td>15</td>
<td>29.41</td>
</tr>
<tr>
<td>TIP IV</td>
<td>24</td>
<td>47.05</td>
</tr>
<tr>
<td>TIP V</td>
<td>4</td>
<td>7.84</td>
</tr>
</tbody>
</table>

The localization of the cysts at liver level, according to its segmentation (Couinaud’s classification) is presented in figure no 1.

**Results**

Four types of surgical interventions were accomplished on the group studied, simple drainage, partial pericystectomy associated in some cases with methods for the reduction of the remnant cavity and periquito-digestive anastomoses, all these being part of the conservatory treatment methods for the hydatid cyst and from the radical methods the total pericystectomy was used.

The presentation of the types of surgical interventions used is given in table no. 2.

We fulfilled 29 partial pericystectomies (56.86%) in which we attempted to make a resection of the pericyst as big as possible in order to reduce the remnant cavity, hurrying thus the healing. The remnant cavity was drained in all situations with 1-2 drain tubes positioned in declivity as much as possible.

**Table no 2 The types of surgical interventions used**

<table>
<thead>
<tr>
<th></th>
<th>External drainage</th>
<th>Partial Pericystectomy ± the reduction of the remnant cavity</th>
<th>Percycistic- digestive anastomosis</th>
<th>Total cystectomy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHH with biliary complications</td>
<td>4</td>
<td>16</td>
<td>5</td>
<td>6</td>
<td>31</td>
</tr>
<tr>
<td>CHH with septic complications</td>
<td>2</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>CHH + ruptured in the peritoneum</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>CHH calcified</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>CHH + compression</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>CHH + ruptured in the right pleura</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>29</td>
<td>6</td>
<td>10</td>
<td>51</td>
</tr>
</tbody>
</table>

In 12 cases (23.52%), the partial pericystectomy was associated with modalities for the reduction of the remnant cavity: in 4 cases (7.84%) the tunnelling of the remnant cavity was accomplished and in 8 situations (15.68%) the filling with epiploon of the remnant cavity was accomplished.

The method was used in case of the following types of complications of the liver hydatid cyst: 16 cases (31.37%) of ruptured CHH in CBP, 6 cases (11.76%) of abscessed CHH, 6 cases (11.76%) of ruptured CHH in the peritoneum and one case (1.96%) of ruptured CHH in the right pleura.

As associated interventions we fulfilled the cholecystectomy in 19 cases (37.25%), the external drainage of the biliary duct by Kher tube in 16 cases (31.37%) or the internal drainage by coledoco-duodenum-anastomosis in 3 cases (5.88%), peritoneal toilette followed by multiple peritoneal drainage in 6 cases (11.76%) and right pleural drainage in one case (1.96%).

As complications we registered: biliary fistulas in 7 cases (13.72%), the suppuration of the remnant cavity in 3 cases (5.88%), pulmonary thromboembolism 1 case (1.96%). One death was registered as having occurred after a hydatid cyst ruptured in peritoneum, associated with severe coleperitonitis. The average duration of the hospitalization days was of 26.5 ± 2.5 days.

The simple drainage was used for 4 hydatid cysts (7.84%) associated with biliary complications and in 2 cases (3.92%) of
suppurated hydatid cysts. As associated interventions we used in 3 cases (5.88%) cholecystectomy and external drainage of CBP with Kehr tube.

We registered postoperatively 2 biliary fistulas (3.92%) and one case of right subphrenic abscess. The average duration of the hospitalization days was of 24.5 ± 1.5 days.

Pericystic digestive anastomoses were used in 6 cases (11.76%), in all situations the anastomosis on excluded loop in “Y” was preferred. We associated the cholecystectomy and Kehr drainage in 3 cases (5.88%). We registered postoperatively a superior digestive bleeding and deaths were not registered. The average hospitalization duration was of 12 days.

The total cystectomy was used in 10 cases (19.60%), 6 hydatid cysts (11.76%) accompanied by biliary complications and 4 cases (7.84%) of calcified hydatid cyst. We associated cholecystectomy and Kehr drainage in 4 situations (7.84%). Postoperative complications: postoperative bleeding which imposed a new intervention for hemostasis in one case and an acute myocardial heart attack, which led to the patient’s death. The average hospitalization period was of 15 days.

The postoperative complications were registered in 17 cases (33.33%), the postoperative morbidity was dominated by the apparition of the biliary fistulas, in 9 cases (17.64%) and of the complications of suppurative type in 4 cases (3 cases of suppuration of the remnant cavity and one case of subphrenic abscess), the remaining complications being non specific complications (pulmonary thromboembolism, myocardial heart attack, etc). The postoperative mortality was of 3.92%.

**Discussions**

The complications of the liver hydatid cyst are no rarity, in its evolution the hydatid cyst being able to develop many complications whose frequency is situated according to some authors (68) to one third of the cases, so that in other studies (4) the complications be present at half of the ill people with liver hydatid cyst. In our group 46.78% of the ill people operated for liver hydatid cyst presented complications of it.

The rupture of the liver hydatid cyst in the biliary tree represents the most frequent complication of the hydatid cyst, being present in about 5-25% of the cases (5).

The preoperative diagnosis of the liver hydatid cyst rupture in the biliary tree is suggested by echography or the CT exam (6). Of greater importance is the use of intraoperative echography which can distinguish the biliary-cystic communication and the relation of the hydatid cyst with the vascular elements, allowing thus a correct diagnosis and an adequate treatment (7). The biliary-cystic communication can be distinguished by using ERCP which is superior to the preoperative echography and CT also allows the association of certain therapeutic gestures (8).

The rupture of the hydatid cyst in the biliary ducts and the migration of the hydatid material in the biliary tree leads to the apparition of other biliary complications like: cholangitis, sclerosis odditis, hydatid biliary lithiasis etc.

After the biliary complications, the second complication in respect of frequency of the hydatid cyst is its rupture in the peritoneum, being reported in the studies made on big series of ill people as having a frequency between 10% and 16% (9).

The rupture of the liver hydatid cyst in the peritoneal cavity is followed by the spreading of the hydatid material in the peritoneum, with the apparition of the hydatid peritonitis or even of hydatid coleperitonitis if the hydatid contains bile. The most frequent ruptures of the hydatid cyst in the peritoneal cavity happen after abdominal traumas and after the sudden modifications of intra-abdominal pressure (10). Among the imagistic investigations, the abdominal CT is the method which presents the greatest sensitivity in diagnosing the complicated cyst, being able to establish both its liver origin and the intra-abdominal complication (11).

The suppuration of the hydatid cyst takes place most frequently through the infection of the hydatid cyst on ascendant, biliary way, from the digestive tube by means of the biliary-cystic fistulas and may lead to the transformation of the cyst in a liver abscess. The evolution of a infected hydatid cyst is usually latent, subacute and is clinically translated by pains in the right hypochondrium, hepatomegaly, fever. The apparition of the pus in a hydatid cyst leads inevitably to the death of the parasite (12).

The complete calcification of the hydatid cyst takes place by the impregnation of the pericyst with calcium salts (phosphates, Ca carbonates), rough, thick placards being formed, of variable dimensions at this level (13). This complication also leads to the death of the parasite.

In time the treatment of the liver hydatid cyst led to numerous controversies between the adepts of the various treatment methods, existing studies with pro and contra results in case of each surgical procedure. The contradictory problems appear in
case of the treatment of the liver remnant cavity, the remaining operator times (isolation, inactivation, parasite extraction) being standardized.

In the category of the conservatory methods, the most easy treatment is considered the simple drainage of the remnant cavity in the exterior with the aid of the drain tubes. There are numerous adept authors of this type of treatment (3, 14) who sustain that the simple drainage of the hydatid cyst is a safe method, efficient, which does not present major risks and complications. There are also objectors to the procedure who sustain that most complications (residual abscesses and biliary fistulas) were registered to ill people treated by simple drainage (15).

We used the simple drainage only in 6 cases, 4 cases of liver hydatid cyst ruptured in the biliary ducts and 2 cases of infected hydatid cyst, in all cases we encountered cysts which were difficult to approach (situated in profound or in the posterior areas) which were not adequate for another intervention. We registered complications of biliary fistula type in cases in which we did not associate the drainage of the biliary duct and at the same time we also encountered a septic complication (the development of a subphrenic abscess due to a defective drainage in the case of a hydatid cyst developed on the diaphragmatic face of the liver in the VIIIth segment). We consider the treatment method useful, but the cases in which it can be successfully used must be well selected (profound cyst difficult to be approached, young cysts in which the pericyst could allow the re-expansion of the liver parenchyma).

The partial pericystectomy was the most commonly used surgical method (29 cases - 58, 86%) and in 12 cases (23,52%) we associated it with the reduction of the remnant cavity by filling with epiploon or tunnelling. There are authors who show that the use of the epiploon for filling the liver remnant cavity is an ideal method in the conservatory treatment of the liver hydatid cyst, which founds itself on its plastic properties, on its capacity to absorb the secretions from the level of the remnant cavity and according to some studies even on its property to stimulate the migration of the macrophages in the desired area favouring the local healing (16).

In our study we used the epiploon filling in 15,68% of cases, situations in which the cysts were usually situated on the visceral side of the liver so that we have direct contact with the epiploon. The epiploon filling took place after in the remnant cavity were placed drain tubes situated in declivity. After this method we registered two cases of suppuration of the remnant cavity, one solved after the conservatory treatment (antibiotherapy and cavity lavage) and one in which a new intervention was necessary, on this occasion the necrosis of the epiploon in the remnant cavity was noticed.

We have used the tunnelling, considered as a simple and efficient method of reduction of the remnant cavity, in 7,84% of the cases, cases in which we pursued that the pericyst be young, soft, so that it could allow the reduction of the cavity after the invagination of the margins. The results were good.

We consider the partial pericystectomy the most plastic surgical method, being able to be used in most hydatid cysts, regardless of the topography or the type of complication. By associating the drainage of the biliary duct, we reduced a great deal the amount of postoperative biliary fistulas, a frequent complication encountered especially in ruptured cysts in the biliary tree.

Also in case of using the pericystic digestive anastomosis, conception modifications took place, so that Pătrașcu et al. underlines in one article from 2007 that after a stage of enthusiasm in which the use of pericystic-jejunal anastomoses became a rule (55% of the cases), we passed to a more reserved manner (20% of cases), after it was noticed the apparition of residual postoperative abscesses in great proportions (17).

We used pericystic-jejunal anastomoses on excluded loop in “Y” in ill people where the hydatid cyst developed on the visceral side of the liver, position which favours the fulfilment of anastomosis. The method was preferred in the situation in which we knew we had to deal with a hydatid cyst ruptured in the biliary ducts (5 cases-9,80%), in order to prevent a postoperative biliary fistula. The method was followed by good results without complications and deaths, and with an average hospitalization period of 12 days.

The use of total cystectomy brings about greater inter-operative risks, but the complications and relapses rates after surgery are much smaller. The main advantage of cystectomy is represented by the obtainment of a clean liver canker, situation which can be obtained only in case the pericyst is completely eliminated, with or without liver tissue. We have used the method in 10 cases and we registered a bleeding from the hepatic area which imposed a new intervention and we registered a death by myocardial heart attack. The average hospitalization period was of 15 days. We consider that the method brings very good results especially concerning the postoperative morbidity (the lack of the remnant cavity leads to the reduction of the number of complications.
determined by it – abscesses of the remnant cavity, biliary fistulas). Unfortunately the method cannot be used but in case of the peripheral cysts, corticalized, situated in the lateral liver segments and in case of calcified cysts, situations in which the excision of healthy liver parenchyma is minimum.

On the whole, the postoperative complications were registered in 17 cases (33,33%), the postoperative morbidity being dominated by the apparition of the biliary fistulas, in 9 cases (17,64%) and of the complications of suppurrative type in 4 cases (3 cases of suppuration of the residual cavity and one case of subphrenic abscess). The remaining complications were non specific complications (pulmonary thromboembolism, myocardial heart attack etc.)

The postoperative mortality was of 3,92%, comparable with the data from literature.

**Conclusions**

The high percentage of cases of liver hydatid cyst diagnosed in the complications stage (56,78%) indicate the continuous existence of certain premature diagnosis deficiencies of this disease.

The complicated CHH treatment is exclusively surgical. We obtained the best results in the treatment of the residual cavity by using total cystectomy and pericystic-jejunal anastomoses. Unfortunately the use of these methods is conditioned by the topography of the hydatid cyst at liver level (marginal, corticalized cysts, or developed on the visceral side of the liver).

The partial pericystectomy, associated or not with reduction methods of the remnant cavity, is the surgical method most commonly used (56,86%), being practically adequate in the treatment of the majority of types of liver hydatid cyst.

The postoperative morbidity is dominated by the apparition of biliary fistulas in 9 cases and of the complications of suppurrative type at the level of the remnant cavity in 4 cases.

The fulfillment of the drainage of the biliary duct (external drainage on Kehr tube or internal through coledoco-duodenum-anastomosis) diminishes the rate of postoperative biliary fistulas.

**References**