BILIARY COMPLICATIONS OF HYDATID CYST, SURGICAL MANAGEMENT

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SUMMARY

Cystic echinococcosis is a zoonose with hepatic involvement. It determines the formation of a tumor like cyst, with silent evolution, that is either discovered by accident in early stages or after local or systemic complications, such as pruritus, jaundice, abdominal discomfort or pain, reactive cholecystitis, anaphylactic shock after rupture. The objective of this study is to determine factors that can predict biliary complications and management options for these complications. We included in the study 364 patients operated on in our hospital between 2003-2014, with liver echinococcosis, with a total of 533 cysts, most of them located in the right lobe (72%), with a median dimension of 9 cm. We included in the study the demographic data of the patients, GGT, Eosinophiles and ELISA IGG values, location and dimension of the cyst, surgical procedures performed, complications and the presence of biliary fistulas. We compared the group with biliary complications and observed some variation of evolution, regarding the hospital stay and also the choosing of the surgical procedure. Most often procedure performed was the cystectomy with partial pericystectomy, with drainage of the remaining cavity associated or not with cholecystectomy, this proving to have also the least number of complications. The biliary fistulas in postoperative monitoring either closed spontaneously or with the aid of ERCP technique. Open surgery approach remains the best option for cure of the liver hydatidosis, associated with postoperative measures of managing different complications.

Key words: surgery of hydatidosis, biliary complications of hydatid cyst, liver hydatid cyst

RÉSUMÉ

Les complications biliaires du kyste hydatique, approche chirurgicale

L’échinococcose kystique est une zoonose avec atteinte hépatique. Elle détermine la formation d’une tumeur pareil à un kyste, à évolution silencieuse, qui est dépistée soit accidentellement dans les premiers stades, soit suite aux complications locales ou systémiques, telles que le prurit, l’ictère, les douleurs abdominales, la cholecystite réactive, le choc anaphylactique après la rupture. L’objectif de cette étude est de déterminer les facteurs qui peuvent prédire les complications biliaires et les options de gestion de ces complications. Nous avons inclus dans l’étude 364 patients opérés dans notre hôpital entre 2003-2014, avec échinococcose hépatique, avec un total de 533 kystes, la plupart situés dans le lobe droit (72%), avec une dimension médiane de 9 cm. Nous avons inclus dans l’étude, les données démographiques des patients, GGT, eosinophiles et ELISA IGG valeurs, l’emplacement et la dimension du kyste, les procédures chirurgicales effectuées, les complications et la présence de fistules biliaires. Nous avons comparé le groupe avec complications biliaires et observé une certaine variation de l’évolution, pour le séjour à l’hôpital et aussi le choix de la procédure chirurgicale. La procédure la plus souvent réalisée était la cystectomie avec péricystectomie partielle, avec un drainage de la cavité restant associée ou non à la cholecystectomie, ce qui prouve aussi avoir le moins de complications. Les fistules biliaires dans le suivi post-opératoire se sont fermées soit spontanément soit à l’aide de la technique ERCP. L’approche ouverte de la chirurgie reste la meilleure option pour la guérison de l’hydatidose hépatique, associée à des mesures de gestion postopératoire des différentes complications.

Mots clés: la chirurgie de l’hydatidose, complications biliaires de kyste hydatique, hydatique du foie Kyste

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INTRODUCTION

The hydatid disease has an endemic distribution, especially in the Mediterranean countries, Middle East and those in South and Central America (1), our country being in the endemic area. It is a zoonose, caused by Echinococcus granulosus, with intermediate human host that has a tumor-like cystic development in the affected organs. Main targets of the parasite are dense organs, such as the liver (first filter) or the lungs (second filter) (2). Other organs where we can identify the cyst: spleen, muscles, brain, peritoneal organs, kidney (3). The presence of the parasite implies an architectural alteration of the afflicted organ, such as the liver: the pericyst is the reaction of the hepatic tissue to the parasite, thus including in this structure the biliary ducts – evolution towards fistula. Although we have the possibility of none or minimal invasive treatment (medication or PAIR, with variations such as MoCat), these are options only for a small portion of selected patients, with very small uncomplicated cysts (4). Surgery remains the main and most effective treatment for echinococcosis. The most feared part of the treatment is the management of residual post operatory cavity, which is source for serious complications (abscess, biliary fistulas, biliary peritonitis, and relapse) and peri operatory biliary complications (rupture, cholangitis, cirrhosis, fistula, jaundice) (5). The chosen technique depends on multiple factors among which we consider cysts location, number and dimensions and not the least, the experience in the clinic with this pathology (6).

MATERIAL AND METHOD

The objective of this study was to determine the incidence of biliary complications in liver hydatidosis and possible surgical management. This is a retrospective study including 364 patients operated on in a period of 12 years (2003-2014), diagnosed with liver hydatidosis. We excluded all cases that had other organ localizations. From this group, 177 patients presented with biliary leakage (small fistulas or large biliary communications), that had an impact on the clinical evolution of the case. We included in the analysis demographic data of the patients, types of surgery performed, cyst number, dimension and localization, hospital stay and laboratory ELISA IGG value, GGT and eosinophiles values. We used Excel and SPPS Statistics 19, for statistical descriptions.

RESULTS

Demographic characteristics of the group (fig. 1). We determined that 48% (177 patients out of 364) of the patients in our group presented clinical fistulas: either diagnosed prior to the operation (jaundice, cholangitis - 20 patients) or the first 36 hours from the operation (during the operative examination or after, by monitoring the drainage tube of the remaining cavity). We considered real biliary fistula either a communication observed freely during the operation or a biliary drainage of more than 100 ml/day after the surgery: (table 1)

From the table we can observe that between the two groups appear some differences in hospital stay (biliary complications are associated with higher hospital days rates), higher values of GGT enzyme and higher values of total bilirubin, both due to the involvement of the intrahepatic biliary architecture.

Also, we can observe that the difference between groups regarding median age of the patients or IGG value with ELISA technique has no statistical value. It is interesting to note that none of the groups presented average value of eosinophiles higher than the normal standard, despite the association in the literature between the hydatid cyst and eosinophilia. (fig. 2, 3, 4)

We can observe an omogenous distribution, with a peak between 22 and 33 years old.

We can notice that the majority of the cysts are located in the right liver lobe – due to the mass and also the specific anatomy that allows for the implantation and growth of the cyst; also the number of biliary fistulas is considerably higher in the right lobe, especially in the 7th and 8th segments. (fig. 6)
The choice procedure was cystectomy with pericystectomy, with local drainage tube. When the location of the cyst permitted, a digestive anastomosis was performed, but with 25% rate of abscess of the residual cavity, which lead to a greater hospital stay and multiple operations. The use of Argon LASER changed the local management of the residual cavity and associated with no complications. Considering all the procedures, 321/364 patients had a drainage tube (in the residual cavity or a witzel tube after the digestive anastomosis). The presence of the tube is an important factor in the monitoring of the patient’s evolution, serving both as a passive element of observation, and as an active one – we can use the tube for radiological postoperatory monitoring of the patient (cholangiography). If the fistula didn’t spontaneously close, often an ERCP was indicated to ease the bile passage in the duodenum by altering the pressure differently in the biliary tract: 71 patients had ERCP after the surgery. (fig. 7)

We also conducted a histology examination on 35 cases included in this study, to determine if we can identify directly the parasite in the cholecyst and the result was negative – thus the gallbladder does not serve as a parasitic reservoir. (fig. 8, 9)

Complications encountered in the group: infection of the residual cavity (32 cases - 24 in the group that presented biliary fistula), death (3 patients) and 1 patient for: post operatory hernia, thyrectoxicosis and pancreatitis.

**Table 1 - General statistical data for the 2 groups**

<table>
<thead>
<tr>
<th></th>
<th>With biliary complications (fistula)</th>
<th>Without biliary complications (fistula)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>177</td>
<td>187</td>
</tr>
<tr>
<td>Mean hospital stay after the operation</td>
<td>21.6 days</td>
<td>12.5 days</td>
</tr>
<tr>
<td>Median age of the patients in the group</td>
<td>42.5 years</td>
<td>47.2 years</td>
</tr>
<tr>
<td>Median value of the eosinophiles</td>
<td>0.53 * 1000/ul</td>
<td>0.34 * 1000/ul</td>
</tr>
<tr>
<td>Median value of IGG - ELISA</td>
<td>5.24 IU</td>
<td>4.79 IU</td>
</tr>
<tr>
<td>Median value GGT at time of diagnostic</td>
<td>118.31 IU/L</td>
<td>61.68 IU/L</td>
</tr>
<tr>
<td>Median value of total bilirubin at the time of diagnostic</td>
<td>0.97 MG/DL</td>
<td>0.55 MG/DL</td>
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</tbody>
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**Figure 2** - Eosinophiles distribution in the group with biliary involvement - patients present with high values as an exception

**Figure 3** - Frequency histogram on values of ELISA – ACIGG – the majority of the patients presented values between 4-8 IU, with no difference between groups, as seen also from the table

**Figure 4** - Frequency histogram over age distribution of the subjects in the study.

**DISCUSSIONS AND CONCLUSIONS**

Hepatic surgery is a difficult field itself, with a lot of challenges, which increases in risk when associated to a parasitic element. Liver hidatydosis surgery is a continuous changing field, a challenging and interesting domain. The
hepatic architecture, the number, dimension and the location of the cyst are all very important in choosing the appropriate method for ideal treatment, considering also the possible complications (7). Although the laparoscopic approach and the percutaneous techniques are available, the best choice for a positive outcome remains the open surgery (8).

Our study comes to confirm the conclusions and results from other international and national studies. The location in the right lobe of the liver increases the incidence of biliary fistula and is often associated with cystectomy and cavity drainage (9). The presence of biliary complications (fistula, cholecystitis, and cirrhosis) is the main group of postoperative morbidity (10) and may be predicted by the values of GGT (11), IGG – ELISA (12) and the use of ultrasonography (all 364 of our patients had an imagistic diagnosis before surgery) (13), and also, both the imagistic and laboratory values can be used for postoperative monitoring of the fistula, of the remaining cavity and the follow-up to search for residual biliary cysts in the former pericyst or hepatic abscesses (14, 15). Although initial studies tried to prove that percutaneous approach could have the same outcome as simple cystectomy and drainage, in selected groups (16), further studies, including ours concluded that laparoscopic and especially classic surgery is the best choice for cure, not followed by complications (residual membrane, cavity abscess and sepsis). (8, 9, 17, 18)

Most of the fistulas close spontaneously in 7-10 days (17), event encountered in our study too, and rarely lead to further surgery, their best management is either the "wait and see " (up to 3 months) or the aid of ERCP technique, which in our group was performed on 71 patients after a median of 23 days (19). The endoscopic retrograde cholangio pancreatography is a safe method for managing complications of hepatic...

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Figure 5 - Percentual distribution of cysts in different segments. Blue column – patients with biliary complications group; red group – patients without biliary involvement

Figure 6 - Most frequent surgeries elected in the two groups

Figure 7 - Cholecystectomy was often associated to the main procedure, as one of the complications of the hydatid cyst is reactive chronic cholecystitis
programme human resources development (sop hrd), 

surely involve also the surgery of this pathology. Nor after surgery. The evolution of general techniques will dictate the receipt of complications or outcome, neither before nor after surgery. The evolution of general techniques will allow us to continue the technique in further surgery as it enables the drainage of hydatid remainings in the biliary tree and alters the pressure in the choledocus, increasing the elimination of bile and limiting the fistula (20). A particularity of our study is the use of argon laser in the management of the residual cavity and the residual pericyst, unfortunately on a low number of patients, but the observation of rapid recovery, with no fistula or minimal (30 ml and closed in 2 days) biliary leak-age allows us to continue the technique in further surgeries.

This domain remains open since there is no ideal predictive receipt of complications or outcome, neither before nor after surgery. The evolution of general techniques will surely involve also the surgery of this pathology.

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References