Percutaneous Treatment of Symptomatic Non-Parasitic Benign Liver Cysts With 20% NaCl Solution

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GOAL. The aim of the study is to evaluate efficacy of single-session 20% NaCl solution sclerotherapy in the treatment of symptomatic non-parasitic benign liver cysts. METHODS. 20 patients were chosen (7 man and 13 woman, mean age 52.9 with mean duration of disease before treatment 9.4 months) for a prospective trial. Patients were treated with ultrasound-guided percutaneous aspiration and injection of 20% NaCl solution. Patient demographics, clinical characteristics, treatment outcome and complications were analyzed during the trial. The procedure was considered successful if the cyst disappears. The cyst was considered to have disappeared if it could no longer be visualized on ultrasonography. Other important measures to document the efficacy of treatment included the length of the hospital stay and complications related to the procedure. RESULTS. The average volume reduction was 96.3 % (range, 74.9-100%). During the 24-month follow up period, 8 cysts (40.0%) disappeared completely. The hospital stay was one day for all patients. CONCLUSION. Percutaneous treatment and sclerotherapy with hypertonic NaCl (20%) is safe and effective for hepatic non-parasitic cysts. Keywords: Interventional ultrasound, liver cyst, cyst sclerosation

1. INTRODUCTION
Non-parasitic liver cysts are very often asymptomatic and rarely associated with clinical symptoms. They occur more frequently in women and are generally found in the right lobe of the liver. In some percentage due to its size and pressure on adjacent tissue they can cause abdominal pain, meteorism, nausea, vomiting, early satiety and jaundice. Simple liver cysts are usually stable in size over long time, but may slowly or rapidly enlarge and become symptomatic or even rupture, show hemorrhage, or get infected (1). The reported prevalence amounts at 2.5%–7%. The prevalence is increasing with the age. Even though simple cysts are usually solitary, more cysts may be present even in the absence of polycystic liver disease.

Conservative surgical management was the only way of treatment in the past. The procedure which is in general recommended is total removal of the symptomatic hepatic cyst by either enucleation or hepatic resection (2-4) or if the cyst contains bile then internal drainage into a Roux-en-Y limb of jejunum (5). The morbidity and mortality rates of these procedures, however, may be significant. Laparoscopic deroofing of simple hepatic cysts was evaluated in several studies and has showed successful results (6-9).

Percutaneous treatment is the less invasive method and can be used as aspiration only treatment or aspiration and injection of a sclerosing agent. The most used sclerosant is alcohol (10-13); not often other sclerosant is used (14-20). Frequent relapses are documented at percutaneous cyst aspiration only, without use of sclerosant (9, 21, 22–24).

In this study experience with 20 patients is reported to evaluate use of 20% NaCl in single-session sclerotherapy in the treatment of symptomatic non-parasitic benign liver cysts.
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Table 1. Baseline characteristics of the patients

<table>
<thead>
<tr>
<th>Parameter</th>
<th>N=20</th>
</tr>
</thead>
<tbody>
<tr>
<td>N of cysts</td>
<td>20</td>
</tr>
<tr>
<td>N of cysts: right lobe/left lobe</td>
<td>11/9</td>
</tr>
<tr>
<td>Volume of cyst before treatment (ml)</td>
<td>717.5 ± 254.7</td>
</tr>
<tr>
<td>Volume of cyst after treatment (ml)</td>
<td>20 (0 – 100)</td>
</tr>
<tr>
<td>Average volume reduction (%)</td>
<td>96.3</td>
</tr>
<tr>
<td>N of cysts with/without additional treatment</td>
<td>7/13</td>
</tr>
<tr>
<td>N of disappeared/persisting cysts</td>
<td>8/12</td>
</tr>
</tbody>
</table>

Table 2. Cyst characteristics and results

<table>
<thead>
<tr>
<th>Parameter</th>
<th>N=20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years (mean 4 SD)</td>
<td>52.9 ± 10.1</td>
</tr>
<tr>
<td>Range</td>
<td>(39-71)</td>
</tr>
<tr>
<td>Male/female</td>
<td>7/13</td>
</tr>
<tr>
<td>Mean duration of a disease before treatment (months)</td>
<td>9.3 ± 2.4</td>
</tr>
<tr>
<td>N of symptomatic/asymptomatic patients</td>
<td>20/0</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>20/0</td>
</tr>
<tr>
<td>Abdominal swelling</td>
<td>11/9</td>
</tr>
<tr>
<td>Mass over liver</td>
<td>6/14</td>
</tr>
<tr>
<td>Jaundice</td>
<td>4/16</td>
</tr>
</tbody>
</table>

Figure 1. Volumes of cysts before and after treatment

Volumes of the cysts before and after treatment and during the 24 month follow-up period. The average volume reduction was 96.3 % (range, 74.9-100%).

During the follow up period, 8 cysts (40.0%) disappeared completely. The hospital stay was one day for all patients. All symptoms and signs disappeared during the first 24 h after the procedure.

5. DISCUSSION

As a minimally invasive procedure, percutaneous treatment of symptomatic liver cyst is becoming more frequently used in the recent years. It is proven as a safe and effective procedure. There are wide variety of percutaneous treatments and sclerosing agents but most frequently used is ethanol.

Several studies have (16, 25, 26) used a multiple instillations with different time intervals between each instillation. According to their results, multiple sclerotherapy yield better results than single instillation of sclerosant and recurrence rate is documented to be reduced. Regardless of the organ...
which is punctured, the disadvantages of multiple session technique include the following: it takes much more time to perform repeated aspiration and injection procedures, multiple sessions cause patient discomfort and inconvenience, and an increased risk of sclerosing agent leakage (27). On the other hand several studies documented that single session alcohol sclerotherapy showed good results (10, 12, 19, 22, 28, 29). They recommend single-session alcohol sclerotherapy as a sufficient and less risk method. The time of exposure to the sclerosant varies widely (from 10 min to 4 h) in various reports (10, 23).

In our study, 20% NaCl as a sclerosing agent was used and time exposure was 2 hours. Percutaneous treatment of symptomatic non-parasitic benign liver cysts with 20% NaCl solution was found to be effective in reducing the volume of liver cysts. It was technically 100% successful with average volume reduction of 96.3%. The cysts totally disappeared in 40% patients and all patients showed symptom relief.

6. CONCLUSION

Percutaneous treatment of the symptomatic non-parasitic benign liver cysts with 20% NaCl solution is safe, effective, well-tolerated alternative technique for management of simple liver cysts.

LITERATURE