Paper II

Acta Radiologica 40 (1999) 636–638
Printed in Denmark · All rights reserved

ACTA RADIOLOGICA
ISSN 0284-1851

SINGLE-SESSION ALCOHOL SCLEROTHERAPY IN SYMPTOMATIC BENIGN HEPATIC CYSTS

Long-term results

T. B. LARSSEN[1], D. K. JENSEN[1], A. VISTE[2] and A. HORN[2]

Departments of [1]Radiology and [2]Surgery, Haukeland University Hospital, Bergen, Norway.

Abstract

Purpose: To evaluate the long-term results of single-session alcohol sclerotherapy of symptomatic benign liver cysts.

Material and Methods: 23 cysts in 19 patients were treated by single-session percutaneous catheterization and injection of 96% ethanol. Evaluation of long-term results was possible in 11 cysts (volume 200–2,700 ml, mean 1,317 ml) in 11 patients. Time of observation was 12–67 months, mean 38.3 months.

Results: The reduction of volume was 93–100% (mean 98%). The re-accumulation of fluid after therapy seen in 9 patients proved to be transitory. Except for pain there were no complications.

Conclusion: Single-session sclerotherapy resulted in satisfactory cyst volume reduction in all 11 long-term follow-up patients.

Key words: Liver cysts, sclerotherapy; interventional procedures.

Correspondence: Trond Bjerke Larssen, Department of Radiology, Haukeland University Hospital, N-5021 Bergen, Norway.
FAX +47 55 97 51 40.

Accepted for publication 5 May 1999.

Benign non-parasitic hepatic cysts represent remnants of biliary ducts that do not communicate with the biliary tree (5, 18). Large hepatic cysts may result in symptoms of clinical significance (4, 7, 10, 17, 18). Aspiration without the use of a sclerosing agent has proven to be insufficient (12). Until the introduction of percutaneous sclerotherapy, surgery has been the only method for definite treatment. Many reports conclude that percutaneous alcohol sclerotherapy is efficient (1–3, 6, 8, 9, 11, 13–16, 18). Some authors practice multiple sessions of alcohol sclerotherapy (1, 18), sometimes with an indwelling catheter left for days or even weeks (18). We have earlier reported favourable results of single-session therapy with immediate catheter removal (9). Some other authors also claim that it is sufficient to perform alcohol sclerotherapy only once (8, 15). Single-session therapy is favourable both with regard to costs, patient comfort and the risk of complications related to prolonged catheter drainage.

The purpose of the present investigation was to evaluate the long-term results of single-session alcohol sclerotherapy.

Material and Methods

During the period 1993–1998, 23 cysts in 19 patients (18 women and 1 man), were treated by single-session alcohol sclerotherapy. To evaluate the long-term results, patients with an observation period of 12 months or more after therapy were included. Eleven patients with 11 treated cysts fulfilled this criterion (10 women and 1 man, aged 33–82 years, mean 64.7 years). The time of observation after therapy was 12–67 months, mean 38.3 months (Table, Fig.). Cyst volume was 210–2,700 ml (mean 1,317 ml). Patient data were registered prospectively.

The symptoms and signs were abdominal pain in all 11 patients, local mass in 7, biliary duct compression in 2 and early satiety caused by com-

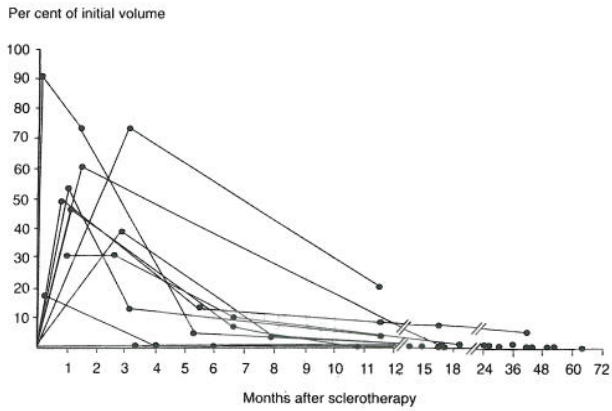

Figure. Cyst volume in 11 cysts following single-session percutaneous alcohol sclerotheraphy: Long-term results (12–66 months). In all 11 cysts, satisfactory volume reduction was achieved. In 10 cysts, a pattern of temporary post-procedural recollection of fluid within the cyst was evaluable. This pattern was observed in 9 patients (93%). In 1 patient, this pattern could not be evaluated because the first control was at 24 months.

pression of the stomach and the duodenum in 1 patient (Table). One 70-year-old woman was admitted to hospital as an abdominal emergency due to spontaneous rupture of a big cyst in the right lobe of the liver.

The number of cysts was less than 5 in 4 patients, between 10 and 20 in 3, between 21 and 40 in 2, and more than 40 in 2 patients. None of the patients suffered from polycystic kidney disease. Contraindications to sclerotheraphy were coagulopathy, communication between the cyst and the biliary tree seen on contrast injection into the cyst, extravasation of contrast into the peritoneal cavity and failure to aspirate the contrast medium injected. Liver function tests were made before and after the procedure.

Thirty to 40 min before the procedure, 50–100 mg of pethidine and 0.6 mg atropine were injected i.m. Sclerotherapy was performed on an angiographic table, with the combined use of US-guided puncture and fluoroscopy. After percutaneous catheterization and aspiration of all cyst fluid, 96% ethanol was injected in an amount of 10% of the cyst volume (maximum 100 ml) and applied for a maximum of 20 min. Thereafter, the alcohol was aspirated and the catheter removed.

In 1 patient only one measurement was made, at 24 months, when the volume was zero. Our protocol of control examinations at an earlier stage was not followed in this patient, and an evaluation of the temporary postprocedural recollection of cystic fluid was therefore not possible.

Results

In 11 cysts in 11 patients, the original volume was 210–2,700 ml (mean 1,317 ml) and the final volume was 0–188 ml (mean 26 ml). This represents a reduction of volume of 93–100% (mean 98%). In no case was a tendency of increase in volume on late control observed in any cyst after sclerotheraphy (Table). Re-accumulation of fluid during the first months after therapy, followed by a significant volume reduction on later follow-up, was seen in 9 out of 10 patients in whom this pattern was evaluable: In 1 patient only, one measurement was made at 24 months, when the volume was zero (Fig.).

Except for pain there were no complications. In no case did the procedure have to be repeated due to insufficient sclerotheraphy effect.

Table

Long-term results of 11 patients treated with single-session alcohol sclerotheraphy

Pat/Age/Sex	Presenting symptoms	Original volume, ml	Final volume, ml	Follow-up, months
1/71/F	Upper abdominal pain; upper abdominal mass; abdominal emergency due to cyst rupture	1,752	0	67
2/74/F	Upper abdominal pain	275	0	54
3/82/F	Upper abdominal pain; upper abdominal mass	2,000	0	53
4/33/F	Upper abdominal pain; upper abdominal mass	200	0	43
5/76/F	Upper abdominal pain	450	0	42
6/40/F	Upper abdominal pain; early satiety	210	42	12
7/69/M	Upper abdominal pain; upper abdominal mass	2,700	188	41
8/62/F	Upper abdominal pain; upper abdominal mass; biliary duct compression	680	21	36
9/74/F	Upper abdominal pain; upper abdominal mass	2,000	0	24
10/72/F	Upper abdominal pain; upper abdominal mass	2,418	0	30
11/65/F	Upper abdominal pain; upper abdominal mass	1,800	35	19
Mean 61 years		mean 1,317	mean 26*	mean 38.3

* Mean volume reduction 98% (range 93–100%).

Significant growth of cysts in other locations of the liver was observed in 2 patients. One female patient was treated for a 1,752-ml cyst in the right liver lobe at the age of 71. At CT control 67 months later, the treated cyst had totally disappeared, but a different cyst in the left lobe showed a significant increase in volume as compared with the last CT examination (case 1, Table). The second patient was 33 years old when sclerotherapy was performed on a liver cyst in the caudal part of the right lobe. Forty-five months later the volume of the cyst was reduced by 99%, but another cyst in the cranial subdiaphragmatic part of the right liver lobe had significantly increased in size compared to the previous CT examination (case 4, Table).

Discussion

In a retrospective study, VAN SONNENBERG et al. (18) reported results of sclerotherapy of 24 symptomatic cysts in 20 patients. Fourteen of those cysts were treated by alcohol alone. More than half of these cyst were treated by prolonged catheter drainage and 2 or more alcohol injections. The routine of VAN SONNENBERG et al. was to leave the catheter for drainage in every patient. If more than 10–15 ml of fluid was produced before the next day, the sclerotheraphy procedure was repeated – if necessary several times – until fluid production had ceased. In 1 case, sclerotherapy was repeated 11 times over a period of 44 days. This prolonged period of catheter drainage represents an increased risk of complications. The complications reported by VAN SONNENBERG et al. – secondary infection of 1 cyst and pleural fluid in 2 patients – might possibly have been avoided if the catheter had been removed immediately after sclerotherapy.

Our long-term results corresponded with the results of KAIRALUOMA et al. (8), who treated 15 cysts in 8 patients. Repeated sclerotheraphy was carried out 1 or 2 months after the initial procedure only in their first 2 patients. They found that in larger cysts there was an initial, temporary recollection of fluid during the first 2 months after sclerotheraphy. The cysts thereafter continued to decrease in size for at least 2 years. Due to this experience, sclerotheraphy was performed only once in the following 6 patients, with satisfactory results in all cases. Similar results were reported by BEAN & RODAN (2) and by TIKKAKOSKI et al. (15).

In conclusion, alcohol sclerotherapy performed as a single-session procedure proved to be successful in achieving a satisfactory reduction in cyst volume also after long-term observation.

ACKNOWLEDGEMENTS

We thank Snorri Olafsson, M.D., and Ole Martin Pedersen, M. D., for their help and comments during the preparation of this manuscript.

REFERENCES

1. ANDERSSON R., JEPPSSON B., LUNDERQUIST A. & BENGMARK S.: Alcohol sclerotherapy of nonparasitic cysts of the liver. Br. J. Surg. 76 (1989), 254.
2. BEAN W. I. & RODAN B. A.: Hepatic cysts. Treatment with alcohol. AJR 144 (1985), 237.
3. BUCKENHAM T. M. & YEELE R.: Percutaneous therapy for hepatic cysts. A case report and review of the literature. Australas. Radiol. 34 (1990), 159.
4. CAPPEL M. S.: Obstructive jaundice from benign nonparasitic percutaneous aspiration for diagnosis and treatment. Am. J. Gastroenterol. 83 (1988), 93.
5. EVERSON G. T., EMMETT M., BROWN W. R., REDMOND P. & THICKMAN D.: Functional similarities of hepatic cystic and biliary epithelium. Studies of fluid constituents and in vivo secretion in response to secretin. Hepatology 11 (1990), 557.
6. FURUTA T., YOSHIDA Y., SAKU M. et al.: Treatment of symptomatic non-parasitic liver cysts. Surgical treatment versus alcohol injection therapy. HPB Surgery 2 (1990), 269.
7. HOWARD R. J., HANSON R. F. & DELANEY J. P.: Jaundice associated with decompression of the cyst. Arch. Surg. 111 (1976), 816.
8. KAIRALUOMA M. I., LEINONEN A., STÅHLBERG M., PÄIVÄNSALO M., KIVINIEMI H. & SINILUOTO T.: Percutaneous aspiration and alcohol sclerotherapy for symptomatic hepatic cysts. Ann. Surg. 210 (1989), 208.
9. LARSSEN T. B., VISTE A., JENSEN D. K., SØNDENAA K., RØKKE O. & HORN A.: Single-session alcohol sclerotheraphy in benign symptomatic hepatic cysts. Acta Radiol. 38 (1997), 993.
10. LERNER M. E., ROSHKOW J. E., SMITHLINE A. & NY C.: Polycystic liver disease with obstructive jaundice. Treatment with ultrasound guided cyst aspiration. Gastrointest. Radiol. 17 (1992), 46.
11. MONTORSI M., TORZILLI G., FUMAGILLI U. et al.: Percutaneous alcohol sclerotherapy of simple hepatic cysts, results from a multicentre survey in Italy. HPB Surg. 8 (1994), 89.
12. SAINI S., MUELLER P. R., FERRUCCI J. T., SIMEONE J. F. & WITTENBERG J.: Percutaneous aspiration of hepatic cysts does not provide definitive therapy. AJR 141 (1983), 559.
13. SIMONETTI G., PROFILI S., SERGIACOMI G. L., MELONI G. B. & ORLACCHIO A.: Percutaneous treatment of hepatic cysts by aspiration and sclerotherapy. Cardiovasc. Intervent. Radiol. 16 (1993), 81.
14. TANIS A. A., ROSENKRANS P. A., WIGGERS R. H. & OUWENDIJK R. J.: Percutane drainage von benigne niet-parasitaire levercysten. Ned. Tijdsschr. Geneeskd. 138 (1994), 859.
15. TIKKAKOSKI T., MAKELA J. T., LEINONEN S. et al.: Treatment of symptomatic congenital hepatic cysts with single-session percutaneous drainage and ethanol sclerosis. Technique and outcome. J. Vasc. Intervent. Radiol. 7 (1996), 235.
16. TRINKL W., SASSARIS M. & HUNTER F. M.: Nonsurgical treatment for symptomatic nonparasitic liver cyst. Am. J. Gastroenterol. 80 (1985), 907.
17. VAN ERPECUM K. J., JANSSENS A. R., TEPSTRA J. L. & THAM R. T.: Highly symptomatic adult polycystic disease of the liver. A report of fifteen cases. J. Hepatol. 5 (1987), 109.
18. VAN SONNENBERG E., WROBLICKA J. T., D'AGOSTINO H. et al.: Symptomatic hepatic cysts. Percutaneous drainage and sclerosis. Radiology 190 (1994), 387.