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Percutaneous Renal Cyst Aspiration and Treatment with Alcohol

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Twenty-two simple renal cysts of 16 patients were aspirated under guidance of ultrasound, with a 20-gauge needle with stylet. Sixteen of those cysts were treated with 96% alcohol. All cysts that were not treated with alcohol recurred within 10 weeks. Treatment with alcohol revealed no recurrences in 3 months follow-up for 12 patients and 6 months follow-up for 4 patients. No major complications were encountered.

Introduction

Percutaneous aspiration of renal cysts, a safe and simple procedure, has become increasingly popular in recent years. Ultrasound has added more safety and facilitated the procedure. However, reported high recurrence rates [1, 2] have led to the application of a combined sclerotherapy. The two sclerosing agents used most commonly today are Pantopaque and 95% ethanol [3].

In this paper we describe our method for drainage and the use of alcohol to prevent re-formation of simple renal cysts.

Patients and methods

This study included 22 simple renal cortical cysts of 16 patients. Diagnosis of simple renal cystic disease was confirmed by both intravenous pyelography (IVP) and ultrasonography. Eleven of the patients had local symptoms and 5 showed obstructive signs on IVP. Aspiration of cystic fluid and alcohol treatment were performed under ultrasound guidance with a standard diagnostic 3.5 MHz transducer (Hitachi EZU-PL 21).

With the patient in the prone position ultrasonic examination of the kidney is performed and the site and depth of puncture are determined. The skin of the puncture site is then sterilized with povidone-iodine and draped. After infiltration of local anaesthetic, a small incision is made to the skin with a scalpel to permit easy passage of the needle. We used a 20-gauge needle and stylet with outer sheath (B. Braun Melsungen A.G., FRG). The stop on the needle is placed according to the depth measurement to prevent it from being advanced too far. Once we memorized the direction to the centre of the cyst, the needle is introduced

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to the needle stop. By removing the stylet, drops of clear fluid confirmed the successful puncture. The needle is then removed while advancing the outer drainage catheter into the cyst. A three-way stopcock is attached to the end of the catheter. The fluid is aspirated completely and sent to the laboratory to be tested for fat, protein, lactic dehydrogenase (LDH) and malignant cells. Twenty per cent of the cyst volume is then replaced by 96% alcohol, and is allowed to remain in the cyst for 20 to 25 minutes.

In this period the patient is placed in the supine, prone and both lateral decubital positions, each for 5 minutes. Complete evacuation of the cyst is ensured before removal of the catheter by both volume measurement and ultrasound scanning. All patients were hospitalized for 24 hours after the procedure. First voided urine is tested for haematuria. Periodic ultrasound examinations were performed in order to reveal recurrences and possible renal damages.

Results

In 6 patients who received no sclerosing therapy, cysts recurred within 10 weeks; therefore the other 10 patients underwent this therapy. Recurrent cysts of 6 patients were also treated with alcohol. Thus, 22 cysts in 16 patients form the basis of the results in this paper. Five of the recurrent cysts returned to their original size and one was smaller.

Cysts varied in volume between 190 and 780 ml. The mean age of the patients was 52 years, ranging from 38 to 69. Laboratory examinations of cystic fluid for fat, protein and LDH were found normal in all patients. Cytologic examinations revealed no suspicion of malignancy.

Pain or discomfort after the injection of alcohol is not felt by patients. Elevation of body temperature and gross haematuria did not occur in any of the patients. Microscopic haematuria was detected in two of 26 punctures. One of these was in the group in which only simple aspiration was done. None of the haematurias persisted for more than 12 hours. No major complications such as perirenal haematoma, urinoma or pneumothorax were encountered in this series. Of the 16 patients 12 were followed for 3 months and 4 for 6 months. On periodically performed ultrasound examinations neither scarring of adjacent renal parenchyma nor reaccumulation of cystic fluid was observed. In one patient a formerly present small, simple cyst increased in size to twice the original in 6 months, however, it remained asymptomatic.

Discussion

The majority of renal cysts are asymptomatic, however, obstruction or mechanical stretch may cause pain in some cases. Although it has been recommended that diagnostic aspiration should be done even in asymptomatic patients [4–7], we do not puncture the cyst if the lesion is found incidentally and met all

the criteria of a benign cystic mass on ultrasound, as concluded by others [8–10]. Among the indications for puncturing a simple renal cyst renin dependent hypertension was not detected in our series. This is probably due to the fact that our material included only patients with superficial cysts.

Although a special aspiration transducer is required for puncture [11], a routine diagnostic probe may also be used for the same purpose [7, 9]. The aspiration technique used in this series eliminated the guide wire placement step, preventing thereby false passages and extravasation. It has to be noted, however, that in spite of these advantages this technique rendered difficult to aspirate the cyst completely when compared with the pigtail catheter technique. In most of the patients complete drainage required further positioning of the catheter. The rigid system of the needle alone may be traumatic especially when positioning the needle tip for complete aspiration of the cystic fluid.

Problems encountered during puncture in this series were limited to the upper pole cysts. Intercostal punctures should be done carefully, the patient should be instructed to stop breathing and the upper margin of the lowest rib should be the site of puncture. Thus, pneumothorax and trauma to the intercostal neurovascular bundle can be avoided.

Reported rates of diagnostic accuracy of ultrasound in predicting the nature of renal masses [12–15] and obtaining clear fluid in every aspiration encouraged us to neglect performing renal cystography.

Among the sclerosing agents used in the past, alcohol has some advantages. It is easily available and less toxic. Bean [7] has shown that alcohol can safely sclerose the epithelial lining of the cyst wall without damaging the adjacent renal parenchyma. To prevent the injection of alcohol into the renal collecting system, diagnosis should be confirmed by IVP to be sure that the lesion is not a calyceal diverticulum.

In conclusion, for puncturing superficially located simple renal cysts a 20-gauge sheathed needle can be used effectively. It is cheaper than the complicated system of guide wire and pigtail catheter. Safety and effectiveness of alcohol to prevent recurrence of benign renal cysts have been demonstrated once again.

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