Effect of Reduction of Cystic Volume by Percutaneous Cystic Puncture on the Renal Function in Polycystic Kidney Disease

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Dear Sir,

Autosomal dominant polycystic kidney disease (ADPKD) is a common disease that develops very frequently to end-stage chronic renal failure. At present no specific treatment to change the progression of this disease is known. Some investigators are of the opinion that the cysts are formed by a highly focal process and that the progression to chronic renal failure is the result of deterioration of noncystic nephrons through compression by cysts [1]. Other authors deny the harmful effect of cysts on the renal parenchyma by compression because they did not found histological injuries confirming it [2]. The reduction of the cyst volume by Rovsing's operation was performed frequently in the past until the 1960s. This method was abandoned because worsening of the renal function was shown in a little number of cases [3]. In the last years, several authors have reported the absence of deleterious effects in the kidneys by reduction of the cyst volume with improvement in renal function [4] and decreases in lumbar pain and arterial hypertension.

We are studying the effect on the renal function of reduction of the cyst volume by aspirational puncture. We have carried out aspirational cystic puncture in 9 patients with ADPKD and continuous lumbar pain or progressive chronic renal failure. The cysts were punctured under ultrasonographic control with 22-gauge needles. In 6 patients, we measured the glomerular filtration rate (GFR) and the renal plasma flow (RPF) with the aid of ¹²⁵I-iothalamate and ¹³¹I-hippuran, respectively, 24 h before and 24 h after reduction of the cyst volume. In these patients, a mean ($\pm$ SD) of 5.2 ± 2.5 cysts were aspirated, with a volume of 120 ± 79 ml. Furthermore, in 6 patients with chronic renal failure and a serum creatinine level of 4.8 ± 1.8 mg/dl, the $1/\text{serum creatinine}$ slope was assessed before (11 ± 2.4 months) and after (6.6 ± 1.0 months) the aspirational cystic puncture (reduction volume: 134.7 ± 107 ml). The results were compared by paired Student's t test.

The GFR increased by $12.1 \pm 7.3\%$ from 44.5 ± 53.4 to 49.2 ± 57.6 ml/min ($p < 0.05$). The initial RPF was 237 ± 316 ml/min and did not change. The progression of chronic renal failure showed a nonsignificant improvement in slope (-0.11 ± 0.01 vs. -0.039 ± 0.04). No complications were observed as regards the aspirational cystic puncture. In 2 patients with aspirated cysts of 9 and 8

cm in diameter, respectively, a relapse to cysts of the same size could be detected by ultrasonography at 2 months.

Our results suggest that the reduction in cyst volume can improve the GFR during a short time. So, we support the hypothesis that the decompression of noncystic nephrons could slow down the progression of chronic renal failure. The fast refilling of cysts is probably the reason why this effect does not continue. It would be necessary to evaluate the effect of a permanent reduction of cyst volume on renal function.

References

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