Ultrasonic Scanning for Renal Biopsy in Acute and Chronic Renal Failure

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Excretion urography is commonly used for localising the kidneys for renal biopsy. In renal failure only the nephrographic phase of excretion urography (Moseley et al, 1971), tomography or retrograde pyelography (Lindquist & Nyström, 1967) may show the kidneys.

The purpose of this study was to examine the advantages of ultrasonic scanning for localisation of the kidneys prior to percutaneous renal biopsy in patients with renal failure.

PATIENTS AND METHODS

Ultrasonic scan was used in 10 patients with acute renal failure and 22 patients with chronic renal failure (creatinine clearance < 10 ml/min) directly before biopsy with the patient in the prone position. The ultrasonic echo pattern

Figure 1. Longitudinal section from the upper to the lower pole of the right kidney
Figure 2. Cross section through the largest diameter of the right kidney

Figure 3. Cross section through the lower pole of the right kidney
(B-scan) was shown on the oscilloscope (Kretz-Technik 4 100 MG and MGS). This sonogram gave the precise size and position of the kidney including the distance between body surface and kidney (Figures 1-3).

Biopsy of the lower pole of the kidney (Figure 3) was done in the conventional way using a disposable needle (TruCut).

RESULTS

X-ray methods did not outline the kidney in 6 patients with acute renal failure and 4 patients with terminal renal failure. In acute renal failure the size of the kidneys was normal (12 x 6 cm) as determined by sonography. Sixteen of the 22 patients with severe chronic renal failure had contracted kidneys (<10 x 5 cm).

The difficulty in localising the kidney in renal failure was overcome in all cases by ultrasonic technique (B-scan). Detection of movement of the kidney and biopsy needle with respiration was not necessary for exact localisation during the biopsy procedure. Adequate renal tissue was obtained at the first attempt in all but 2 patients with contracted kidneys. The A-scan only was used by others to determine the necessary depth for the biopsy needle (Berlyne, 1961).

CONCLUSION

Ultrasonic scanning of the kidneys can be applied without any risk to the patient and improves the results of renal biopsy not only in renal failure (Bahlmann & Otto, 1972).

REFERENCES

Bahlmann, J. and Otto, P. (1972) Deutsche medizinische Wochenschrift, 97, 840

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