Core Biopsy of the Transplanted Kidney Using 1.1-mm Needles: Results and Comparison with the Tru-Cut Technique

G.	Gilberto	Calconi ^a
M.C.	Maria Cristina	Maresca ^a
G.	Gianpaolo	Amici ^a
G.	Gabriele	Bertolone ^a
M.	Maurizio	Mordacchini ^a
G.	Giannantonio	Arrigoni ^b
A.	Annibale	D'Annibale ^c
G.	Giordano	Chiara ^c
A.	Alberto	Vianello ^a

^aTransplant Center, ^bPathology Department, and ^cSurgery Department, Treviso General Hospital, Treviso, Italy

Alberto Vianello, MD, Centra Trapianti, Ospedale Regionale, I-31100 Treviso (Italy)

Dear Sir,

In order to reduce the risks of percutaneous kidney graft biopsy with 2.0-mm Tru-Cut needles (TCB) (mainly macroscopic hematuria, but also, although very rarely, graft loss or even patient death [1]), the use of thinner needles (TNB) has been suggested [2-4]. As the risk of complications with TNB has never been compared with that of TCB and it has been argued that the benefits of a lower risk are to be weighted against the disadvantages of a smaller amount of tissue [1], we report here our experience with the two techniques.

From January 1987 to March 1991, we performed 159 TNB in 92 Cs-treated patients using needles with an automatic spring-loaded system, an outer diameter of 1.1 mm and a inner diameter of 0.8 mm (Temno T20/9; Bauer, Pieve di Cento, Bologna, Italy). All the patients were on antiplatelet therapy (aspirin 160-320 mg/day), which was not suspended because of the biopsy. Although direct radiologic or echographic guidance was never used, in most cases the best path to the kidney was determined during an ultrasound examination performed within 24 h before TNB. TNB was performed at the upper pole of the kidney after sterilization of the area, local anesthesia, and a skin incision of approximately 2 mm with a scapel blade. After TNB the patient remained in bed for at least 4 h with local compression by means of a sand bag. The specimen was examined under stereomicroscope and a second biopsy was

carried out if the first was inadequate. Biopsy tissue was fixed in Bouin fluid, dehydrated and embedded in paraffin. Up to 12 sections were obtained and stained with hematoxylin and eosin, PAS and silver methenamine.

The results of TNB were compared with those obtained with conventional TCB (31 biopsies in 24 patients, 17 cases after January 1987 and 14 cases previously). After January 1987 TCB

was preferred to TNB if an accurate evaluation of glomerular morphology was required. The procedure of TCB was very similar to that of TNB, but antiplatelet therapy was suspended for at least 7 days before biopsy. The same skilled operators performed both TCB and TNB. The histologic diagnosis of acute rejection or acute Cs toxicity was made according to Imbasciati et al. [5] and Mihatsch et al. [6] respectively, and compared with the response to therapy: acute rejection was confirmed if it was either followed by a reduction of serum creatinine after antirejection therapy without reducing Cs doses or by loss of the kidney with confirmation of rejection at anatomic examination; acute Cs toxicity was confirmed if it was followed by a reduction of serum creatinine after reduction of Cs doses without antirejection therapy. As all the patients who underwent TNB received Cs and the histologic diagnosis of acute rejection may be more complex if the patient is under Cs therapy [7], only Cs-treated patients were considered in the TCB group for the comparison of the accuracy of the two methods in the diagnosis of acute rejection.

In 3 cases with TCB and in 1 case with TNB we had macroscopic hematuria with obstructive problems requiring percutaneous nephrostomy, bladder catheterization, diuretic therapy and hemodialysis respectively, while the only other complication with TNB was severe extrarenal bleeding due to puncture of the deep circumflex iliac artery, requiring transfusion and surgery. In all the 5 cases renal function returned to baseline values after a certain time. Although the comparison between TCB and TNB in the diagnosis of acute rejection and Cs toxicity may be considered only roughly indicative, owing to small number of cases in the TCB group and slightly different indications for TNB and TCB, our data (table 1) suggest that TNB is a safer alternative to TCB in making the diagnosis of acute rejection or Cs toxicity. However, furnishing a larger sample and hence an higher number of glomeruli, TCB is to be preferred when an in depth analysis of glomerular morphology is required.

© 1992 S. Karger AG, Basel
0028-2766/92/
0614-0487\$2.75/0

Table 1. Comparison between the results obtained with TCB and with TNB

Fisher's exact test was used for all the comparisons apart from the comparison of the number of glomeruli (expressed as mean $\pm$ SD), for which the Mann-Whitney test was used. All the p values are two-tailed.

*p < 0.05; **p < 0.001. 1 Only Cs-treated cases were considered.

References

- Wilczek HE: Percutaneous needle biopsy of the renal allograft. *Transplantation* 1990; 50: 790-797.
- Ubhi CS, Irving HC, Guillou PJ, Giles GR: A new technique for a renal allograft biopsy. *Br J Radiol* 1987;60:599-600.
- Wahlberg J, Andersson T, Busch C, Fellström B, Frödin L, Larson A, Larsson E, Lindgren PG, Tufveson G: The biopsy technique: A major advance in the monitoring of renal transplantation recipients. *Transplant Proc* 1988;20: 419-420.
- Worth DP, Khanna SK, Ubhi CS, Irving HC: The biopsy cut procedure for renal biopsies. *Br Med J* 1988;296:1603.

Imbasciati E, Banfi G, Egidi F, Tarantino A, Ponticelli C: Morphologic patterns of renal allograft rejection. *Contr Nephrol* 1987;55:105-122. Mihatsch MJ, Thiel G, Ryffel B: Brief Review of the morphology of cyclosporin nephropathy. *Contr Nephrol* 1987;55:136-141.

7 Bergstrand A, Bohman SO, Farnsworth A, Go-ke J, Krause PH, Lang W, Mihatsch MJ, Oppedal B, Sell S, Sibley RK, Thiru S, Verani R, Wallace AC, Zollinger HU, Ryffel B, Thiel G, Wonigeit K: Renal histopathology in kidney transplant recipients immunosuppressed with cyclosporin A: Results of an international workshop. *Clin Nephrol* 1985;24:107-119.

Calconi/Maresca/Amici/Bertolone/ Mordacchini/Arrigoni/D'Annibale/ Chiara/Vianello
Core Biopsy of the Grafted Kidney Using 1.1-mm Needles