

KIDNEY BIOPSY IN THE VERY ELDERLY: TECHNICAL CONSIDERATIONS AND PROCEDURAL OUTCOMES

Jadranka Buturović Ponikvar, Miha Arnol, Vladimir Premru, Marko Malovrh, Jernej Pajek

Department of Nephrology, University Medical Center Ljubljana, Ljubljana, Slovenia

INTRODUCTION

Percutaneous kidney biopsy, introduced in 1951, was a major technological advancement that led to establishment of nephrology as the subspecialty in 1960. In the last 20 years there is a shift in who is performing biopsy towards radiologists (Korbet SM, CJASN 2012). The aim of our study was to evaluate technical considerations and procedural outcomes in kidney biopsy performed by nephrologists, in an increasingly complex group of patients - the very elderly.

METHODS

Retrospective analysis was performed in the cohort of patients aged 75 years or more undergoing native kidney biopsy in the period 2011-2016. Biopsies were performed by a single operator (5 experienced nephrologists), under real-time ultrasound (US) guidance, with immediate and next-day post-biopsy US-Doppler monitoring for complications. Data on indication, pre-biopsy serum creatinine, punctured kidney length and resistance index (RI), needle gauge (G), number of needle passes, immediate and next-day complication rate, cumulative core length and number of glomeruli in the sample were evaluated.

RESULTS

	No / Median	Range
Patients /Biopsies	97/101	-
Men	41	-
Age (years)	78	75-89
Serum creatinine (µmol/l)	269	55-770
Left kidney	95	-
Kidney length (mm)	105	72-133
Resistance index	0.82	0.51-1.0
Cummulative core length (mm)	27	5-47

Table 1. Data on patients' and procedure characteristics

Main indications for biopsy were nephritic syndrome in 61 (60%) patients, acute kidney injury in 21 (21%) and nephrotic syndrome/large proteinuria in 13 (13%) of patients.

Approximately half of the procedures (51, 51%) were performed using 18G needle, 36 (36%) by 16G and 14 (14%) with both needles (18G and 16G). 18G needle only was used in patients with higher age: median 79 vs. 78 years ($p=0.002$). In 44% biopsies more than 2 passes (punctures) were made. The cumulative median core length was 27 mm (range 5-47 mm).

RESULTS

	No
Immediate active bleeding	30
Immediate hematoma	21
Immediate arteriovenous fistula	3
Hematuria	2
Next-day hematoma	18
Next-day arteriovenous fistula	6

Table 2. Complications after 101 native kidney biopsies in the very elderly patients

No association was found between complication rate and age, prebiopsy serum creatinine, kidney length, RI and needle size. Immediate active bleeding was associated with immediate and next-day hematoma, but not with hematuria and AVF. There was a trend to larger percentage of immediate AVFs with more than 2 passes performed: 0 vs 7.3% ($p=0.08$). The median number of glomeruli per total sample was 16 (range 4-44). Biopsies with more than 2 passes provided larger cumulative core length: median 30 vs. 26,5 mm ($p=0.07$) and more glomeruli: median 18 vs 16 ($p=0.04$). No difference in median number of glomeruli was found between biopsies employing 18G needle only and biopsies with larger 16G needle or both needles (16 (IQR 13) vs. 16.5 glomeruli per sample (IQR 13), $p=0.63$.)

CONCLUSIONS

Kidney biopsy in very elderly patients performed by nephrologists resulted in favourable procedural outcome in the vast majority of patients. Immediate active bleeding from the puncture site was observed in 30% of procedures and was predictive of immediate and next-day hematoma. Age, pre-biopsy creatinine, punctured kidney length and resistance index were not predictive of post-biopsy complications. Thinner 18G needle use provided equal number of glomeruli per sample as a larger, 16G needle. Immediate post-biopsy Doppler examination focused on active bleeding and hematoma predicted next-day hematoma and may be used to guide intensity of post-biopsy patient monitoring.

