Comparative Study between 18- and 16-Gauge Needle Automated Renal Biopsy under Orthogonal Ultrasound Guidance in Children

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Dear Sir,

An automated biopsy device with an 18-gauge needle was recently introduced [1] and gained popularity as it makes renal biopsy easier, quicker, safer and more effective than conventional manual biopsy techniques [2-4]. However, it is reported that an 18-gauge needle is too small to obtain sufficient numbers of glomeruli for a full diagnosis from one tissue core [2, 3].

We retrospectively evaluated the safety and the number of glomeruli per tissue core retrieved with two different size (18- or 16-gauge) automated, spring-loaded renal biopsy needles (C.R. Bard Inc., Covington, Ga., USA) in 47 children, aged 2-15 years, using orthogonal ultrasound guidance [5]. The average number of intact glomeruli taken from each tissue core was 12.2 ± 5.8 for the 18-gauge and 20.9 ± 8.0 for the 16-gauge biopsy needle (table 1). In 58% of the samples taken with the 18-gauge and in 89% of the samples taken with the 16-gauge needle, at least 10 intact glomeruli, which are usually required for a definitive diagnosis [6], were obtained. None of the patients had macrohematuria nor required blood transfusion after renal biopsy. Mild back pain was reported by 4 patients after biopsy with the 18-gauge needle and by 6 after biopsy with the 16-gauge needle. However, none required additional analgesics or prolonged hospitalization. There was no perirenal hematoma detected.

Table 1. Results of renal biopsies with 18- vs. 16-gauge biopsy needle in 47 patients (mean $\pm$ SD)

able in follow-up renal sonography 24 h after biopsy. Additionally, the 16-gauge biopsy needle tip was more echogenic and therefore easily visualized by ultrasound.

In short, we found the automated renal biopsy with a 16-gauge needle ensures a greater number of glomeruli sampled with equal safety compared to the smaller bore needle (18-gauge). We believe that a 16-gauge needle is a better choice for automated renal biopsy in children.

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