Stereomicroscopic Examination of Kidney Tissue

A Method for Rapid Identification of Renal Cortex in Biopsy Specimen

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Dear Sir,

Electron microscopic (EM) and immunofluorescent (IF) examinations of kidney tissue along with light microscopy (LM) have now become an essential part of diagnostic nephrology. But the number of kidney biopsies taken from a patient, specially of the pediatric age group, is restricted to one because of the risk of complications, and it has to be divided into 3 parts – one each for LM, IF and EM examination. The identification of renal cortex or glomeruli in each division of the kidney biopsy poses a problem which becomes more accentuated when selecting blocks for EM examination. Several methods have been applied to overcome this problem, e.g. examination of biopsy by dissecting microscope [1] or transillumination of kidney biopsy [2], but they are helpful only when biopsy is fresh. We have used a stereomicroscope for the identification of glomeruli in biopsy material fixed for a longer time to judge the adequacy of each piece of kidney biopsy and to ensure the presence of glomeruli in blocks selected for EM examination.

The kidney biopsy is kept on dental wax with a small amount of saline and is then placed over the stage of the stereomicroscope. The tissue is then illuminated with both incident and transmitted light and examined with a 50 × objective and a 12 × eyepiece. From both ends of the biopsy a segment of about 1 cm is sliced for EM studies and the rest of the tissue is bisected, one half for LM and the other for IF examination. The two halves become thin and show the presence of glomerular tufts (fig. 1). The visualization of glomeruli is better by this method due to an appreciation in depth. Similarly tissues for EM studies are divided into small pieces of about 1–2 mm³ and the blocks showing glomeruli on the surface are selected for the study.

Kidney tissues from 80 percutaneous needle biopsies were examined by this method, 15 (18.7%) of which showed only medullary tissue, hence a repeat biopsy was requested. The number of blocks containing glomerulus

Fig. 1. Photomicrograph of kidney biopsy specimen showing presence of glomeruli (arrowhead) on the surface. × 200.

processed for EM previously was 1–2 out of 20–25 blocs prepared from each case when biopsy was divided blindly and sometimes it was even nil and reprocessing had to be done. But after dissection of kidney biopsy directly under stereomicroscopic observation, the yield of blocks containing glomeruli was increased to 6–7 out of 10 blocks prepared in each case.

Stereomicroscopic examination of kidney biopsies was found to be the quickest and a better way to identify renal cortex or glomeruli in biopsy material; moreover, the technician saves a lot of time and effort and it ensures adequate sampling.

References

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