Changes in Epithelial Cells

To the Editor:

Sharma, Lovell, Wiegmann, and Savin, in their recent article published in *JASN*, beautifully demonstrated changes in the cytoskeleton of glomerular epithelial cells induced by vasoactive substances (1). They suggested that these changes might have an effect on the hydraulic permeability of the glomerular capillary wall through modification in foot process (and slit pore) morphology.

I would agree the epithelial cell is a determinant of the ultrafiltration coefficient. Although correlations between measures of filtration and podocyte structure exist in glomerular injury, the same cannot be said in physiologic states (2–4). Only one study has shown a reduction in filtration slit frequency with angiotensin II; most of the other results have been negative (5). Alternatively, Racusen, Prozialeck, and Solez suggested in 1984 that changes in ultrafiltration may occur as the glomerular epithelial cell body spreads itself over the podocyte processes (6). This could hinder local filtration without changing podocyte process morphology.

It is extremely difficult to quantitate such a change by transmission and/or scanning electron microscopy. It would be even more difficult to demonstrate heterogeneous filtration rates over different areas of a single glomerular capillary. Nonetheless, demonstrated changes in the cytoskeleton could explain changes in hydraulic permeability, either by the hypothesized mechanism of Sharma *et al.* or by that proposed by Racusen *et al.*

Bryce A. Kiberd
Division of Nephrology
Department of Medicine
Queen's University
Kingston, Ontario, Canada

REFERENCES

1. **Sharma R, Lovell AB, Wiegmann TB, Savin VJ:** Vasoactive substances induce cytoskeletal changes in cultured rat glomerular epithelial cells. J Am Soc Nephrol 1992;3:1131–1138.
2. **Bohman S-O, Jaremko G, Bohlin A-B, Berg U:** Foot process fusion and glomerular filtration in minimal change nephrotic syndrome. Kidney Int 1984;25:696–700.
3. **Shemesh O, Deen WM, Brenner BM, McNeely E, Myers BD:** Nature of the glomerular capillary injury in human membranous glomerulopathy. J Clin Invest 1985;77:868.
4. **Kiberd BA:** The functional and structural changes of the glomerulus throughout the course of murine lupus nephritis. J Am Soc Nephrol 1992;3:930–939.
5. **Olivetti G, Giacomelli F, Wiener J:** Morphometry of superficial glomeruli in acute hypertension in the rat. Kidney Int 1985;27:31–38.
6. **Racusen LC, Prozialeck DH, Solez K:** Glomerular epithelial cell changes after ischemia or dehydration: Possible role of angiotensin II. Am J Pathol 1984;114:147–163.