Perfusion Pressure, Proteinuria and the Isolated Perfused Rat Kidney

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Sir,

Dr. Simpson suggests that abnormal blood viscosity is a major factor in renal diseases associated with proteinuria; studies in isolated kidneys perfused without blood are therefore futile exercises. Although we are grateful to Dr. Simpson for calling our attention to this hypothesis, we believe that in medicine as in physiology, hypotheses should be subjected to rigorous testing before being applied clinically. Both Solerte's and Gordge's studies showed weak correlations between blood viscosity and proteinuria in patients with diabetes and/or renal failure. Descriptive statistical correlations hardly ever establish cause and effect relationships. High viscosity, secondary to elevated phase reactants (such as fibrinogen), and proteinuria are both as expected frequent consequences of diabetes and renal failure. Macroglobulinemia, the prototype of the hyperviscosity syndrome, is not typically associated with clinically significant proteinuria. The contention that improvement in blood viscosity by phlebotomies may ameliorate proteinuria (Louie's case report) is inconsistent with the only experimental work directly testing this hypothesis: induction of anemia failed to prevent proteinuria produced in mice by hyperproteinemia [Br. J. exp. Path. 64: 594, 1983]. The reported beneficial effect of pentoxifylline may derive from its antihypertensive action.

Simpson suggests that hyperviscosity induces proteinuria ultimately by modifying intraglomerular hemodynamics. Why then reject an experimental analysis specifically looking at the effects of pressure and flow upon proteinuria (which in fact, confirms been's model, mathematical predictions)? Why not simply propose to test the hyperviscosity hypothesis in such a model? At an age of molecular biology new hypotheses should more than ever, stimulate rather than reject scientific experimental testing, in order to rationally bridge the gaps between our thinking, our observations and ultimately our patients.