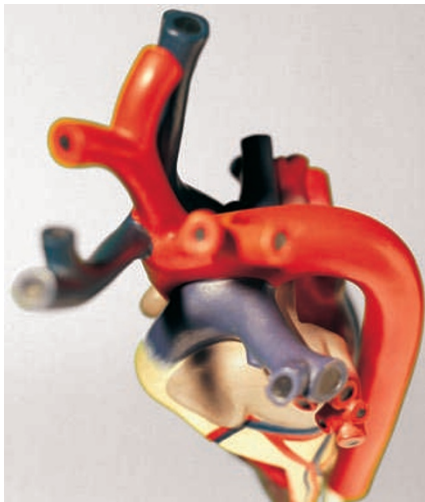


CHRONIC KIDNEY DISEASE

Aortic stiffening is associated with CKD progression rate

In patients with chronic kidney disease (CKD), “aortic pulse wave velocity [is] independently associated with [the rate of] decline in renal function,” says Martin Ford, corresponding author of a study published in *Hypertension*.

Increased aortic stiffness is associated with elevated systolic blood pressure



and widened pulse pressure, which are both associated with accelerated rates of renal function decline. Furthermore, aortic stiffening diminishes the ability of the aorta to dampen the pulsatile surges in blood pressure associated with ventricular ejection. These surges could damage glomerular capillaries and lead to permanent reductions in the glomerular filtration rate. “Arterial stiffening [is a valid] mechanism of glomerular barotrauma”, Ford comments.

The researchers analyzed changes in the renal function of 120 patients with stages 3 and 4 CKD enrolled in the prospective ACADEMIC cohort study. In these patients, renal function data were available for an average of 319 days before aortic pulse wave velocity (PWV) measurement and for an average of 551 days after. Ford notes that the European Society of Cardiology considers aortic PWV to be the gold-standard parameter for estimating aortic stiffness.

After adjustment for mean blood pressure, increasing aortic PWV was

independently associated with the rate of decline in renal function as measured by two different parameters: the slope of the reciprocal serum creatinine level plot and the combined study end point of starting renal replacement therapy or experiencing a $\geq 25\%$ decline in estimated glomerular filtration rate.

The researchers acknowledge the observational nature of their study, which means that the finding of a robust association between aortic stiffness and the rate of renal function decline does not necessarily indicate a pathophysiological link; they suggest, however, that future studies should evaluate the feasibility of targeting aortic stiffness as a therapeutic strategy to inhibit the progression of CKD.

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Original article Ford, M. L. *et al.* Aortic stiffness is independently associated with rate of renal function decline in chronic kidney disease stages 3 and 4. *Hypertension* **55**, 1110-1115 (2010)