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Letter and Reply

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Resistive index predicts renal prognosis in chronic kidney disease

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Sir,

We would like to comment on the article 'Resistive index predicts renal prognosis in chronic kidney disease' by Sugiura [1] which is, at present, one of the largest studies evaluating the relevance of resistive index (RI) in the progression of chronic kidney disease (CKD).

However, we feel that RI is a value which is largely operator-dependent requiring specialized skills, and even a small variation from 0.65 to 0.70 can surreptitiously predict an adverse prognosis.

RI is dependent on the vascular health of the patients, and in elderly patients with atherosclerosis, the RI will definitely be high. The authors of the paper have however shown that the impact of age has no bearing on the predictability of RI in the progression of CKD. However, there is no standardization of the RI for coexistent atherosclerosis as measured by the RI in the splenic and carotid vessels [2].

The use of antihypertensive drugs could also be confounding in the present study; 210 of 311 patients were on renin–angiotensin system (RAS) inhibitors which are known to influence the RI, although the authors have negated the effect of these drugs.

RI has been found to be normal in renal diseases limited to the glomeruli and to be increased in tubulointerstitial diseases as demonstrated by Platt *et al.* in a previous study. The study of Platt *et al.* is thus not in concordance with the study of Sugiura [3].

It is well known that the RI is high even in the presence of normal renal function in diabetes; hence, the RI may not be very accurate in predicting the prognosis in diabetic kidney disease which accounts for the majority of patients.

Similarly, in hypertensive patients without markedly impaired kidney function, higher renal resistive indices are found if carotid atherosclerosis or ventricular hypertrophy is present. Most patients with CKD have these coexisting factors which were not included in the Sugiura study, and the RI could therefore be misleading in the prognosis [4].

There is no single parameter that accurately predicts progression of CKD, and a new factor like this one is innovative and may open a new door to help the clinician. However, more studies and validation of this index are required to come to a firm conclusion.

Conflict of interest statement. None declared.

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Reply

Sir,

We thank Mendonca *et al*. for their interest and comments about our paper. Mendonca *et al*. noted several important issues concerning a renal resistive index (RI). While RI is the best examined parameter in the studies of renal Doppler ultrasonography, RI is a complex integration of arterial compliance, pulsatility and peripheral resistance [1]. RI is correlated with extrarenal markers of vascular stiffness, such as intima-medial thickness of the femoral and carotid arteries [2]. These facts make it difficult to interpret the increase in renal RI. However, if we look at these findings from another point of view, RI can be considered a long-term imprint of hypertensive organ damage in the same way that glycated haemoglobin is a long-term imprint of glycemic control [3].

In this context, renal RI could be considered a surrogate marker for systemic atherosclerosis in chronic kidney disease (CKD). Atherosclerosis is an important risk factor for progression of CKD [4]. RI could reflect systemic atherosclerosis as well as renal arteriolosclerosis, making it possible to predict renal outcome. Mendonca *et al*. noted that RI should be adjusted for RI in other vessels like carotid arteries. However, this does not make sense because, as we mentioned above, RI would be a marker for systemic atherosclerosis. It is natural that hypertensive patients with CKD showed high renal RI and carotid atherosclerosis [5].