Renal Perfusion and Renal Nerve Activity

In the study by Haddock *et al.*,[1] it was both interesting and exciting to see that such differences in regional kidney blood flow could be shown in humans over short time intervals. They suggest in their discussion that this tool could be useful in studies of renal denervation, because the changes that they observed are caused by increased renal nerve activity. This conclusion is questionable, because the changes that they observed could be caused by differences in circulating neurotransmitters rather than specific effects of renal nerve activity. Although they suggest that work of others shows an effect of handgrip on renal nerve activity, a review of these references does not show specific observations on renal nerve activity.

DISCLOSURES

None.

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Authors' Reply

We thank Lifschitz[1] for a valuable comment on our work. It is true that renal sympathetic nerve activity has not been directly measured in humans during isometric exercise, and therefore, the measured decrease in renal blood flow may in theory be caused by circulating vasoactive substances, such as adrenaline. However, it is well established that static exercise induces a generalized increase in muscle sympathetic nerve activity in humans,[2] and an increase in renal sympathetic nervous activity has been directly measured in conscious cats in response to voluntary static exercise.[3] In transplanted (denervated) kidneys in humans, only a small decrease in renal blood flow is seen in the late phase of fatiguing handgrip exercise as opposed to an early-onset, marked decrease in controls,[4] suggesting that renal sympathetic nerves play the major role in the response.

We, therefore, stand by our statement that the magnetic resonance techniques that we have described may be useful to evaluate the effect of renal denervation procedures.

DISCLOSURES

None.

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