Sympathetic Activity, Blood Volume, and Smoking

To the Editor:

I read with great interest the Hypertension Highlights article, “Sympathetic Nervous System and Blood Pressure in Humans.” I would like to make 2 comments with regard to regulation of sympathetic activity, which relates to the above-mentioned article and may be of interest to your readers. We reported many years ago that sympathetic activity as measured by plasma norepinephrine increased with age. Furthermore, we demonstrated that sympathetic activity was inversely related to the blood volume. Joyner et al demonstrated that muscle nerve sympathetic activity was inversely related to the level of cardiac output in a group of young healthy men. It is well established that cardiac output depends on the level of the blood volume and decreases, for example, in response to volume changes in the standing-up position. It is, therefore, likely that the interrelationship observed between cardiac output and sympathetic activity is at least in part explained by variations in the level of blood volume between different subjects. In elderly but healthy subjects we observed very high basal values of plasma norepinephrine in long-term smokers. This response was most likely attributed to a decrease in the sensitivity to norepinephrine. A similar response was not seen in young smokers, and the high norepinephrine values observed in elderly smokers were not explained by changes in blood volume. Blood volume and smoking have important effects on sympathetic activity. These factors should, therefore, be included in coming studies of sympathetic activity and aging.

Disclosures

None.

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