COMMENTS AND RESPONSES

Impact of White-Coat Hypertension on Microvascular Complications in Type 2 Diabetes

Response to Kramer et al.

In their recent study, Kramer et al. (1) performed a cross-sectional study comparing type 2 diabetes with white-coat hypertension (WCH) and normotension and showed that type 2 diabetic patients with WCH have an increased risk for diabetic retinopathy and nephropathy. The results of their study point to the possibility that an acute rise in blood pressure levels in daily life has a deleterious impact on renal and retinal vessels. The findings of this study are important because the data have been scarce regarding the use of 24-h ambulatory blood pressure monitoring (ABPM) in diabetic patients. The authors discussed the possibility that acute rise in blood pressure due to daily stressors in patients with WCH could lead to microvascular damage because the WCH groups had a higher blood pressure peak during the exercise test. However, this can be interpreted differently: small artery remodeling (microvascular damage) can augment blood pressure surge by pressor stimulus (2). As cardiac output increases as a result of some stressors, blood pressure increases exponentially if there is a narrowing of small vessels. The coexistence of WCH and diabetes is hypothesized to be "prehypertension" (2) because it may reflect status of subclinical vascular damage.

With regard to WCH and diabetes, we reported that diabetic WCH was not innocent of microvascular damage in the brain (3). We performed brain magnetic resonance imaging and ABPM on 360 Japanese hypertensive patients (226 women; average age 67 years), of whom 159 also had diabetes. Participants with diabetes and WCH had more silent cerebral infarctions (SCIs) (average 2.8 per person), whereas those with sustained hypertension but with no diabetes had an average of 2.3 silent strokes per person. Patients with diabetes and sustained hypertension had the most SCIs (average 5.2), whereas patients with WCH and no diabetes had the fewest SCIs (average 1.4). Hypertension-related microvascular damage was more advanced in diabetic patients, even in those with relatively lower blood pressure. The result is consistent with the findings of Kramer et al. that diabetic WCH has more advanced target organ damage than nondiabetic WCH and that blood pressure control is important even in the context of a transient rise in blood pressure. We have, in a previous study (4), discussed the concept of "white-coat hypertension syndrome," defined as WCH and metabolic abnormalities, which are characteristics of insulin resistance; the increased risk of target organ damage is determined not only by blood pressure but also by metabolic abnormality in these patients. Even in the case of transient elevation of blood pressure in WCH, the existence of a white-coat effect would be associated with target organ damage. On the other hand, we have recently shown that cardiovascular prognosis of diabetic WCH was not as bad as that associated with sustained hypertension in diabetes and that it was even similar to that of nondiabetic WCH during 4 years of follow-up (5). The results of this study imply that blood pressure must be continuously rather than transiently elevated in order to cause cardiovascular events.

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