A New Hormone Therapy With Drospirenone and NO Production in Postmenopausal Women

To the Editor:

We read with great interest the article by White et al1 dealing with the combination therapy of drospirenone (DRSP), a novel progestin with antialdosterone activity, and 17-β-estradiol (E2) in postmenopausal women. The results of their study demonstrated that DRSP and E2 might have a significant antihypertensive effect in postmenopausal women with stage 1 to 2 hypertension. The authors also indicated that treatment of DRSP and E2 was not associated with a significant increase in serum potassium. The authors proposed that the new hormone therapy with DRSP and E2 might have a theoretical advantage for the treatment of hypertension and the prevention of cardiovascular target organ complications in postmenopausal women.

Evidence indicates that estrogen may have beneficial effects on cardiovascular functions. One of the mechanisms underlying the cardiovascular protective effect of estrogen may be the enhancement of NO production. It was demonstrated that vascular endothelial function might be ameliorated by estrogen replacement therapy in postmenopausal women.2 In a study presented earlier, we showed that E2 increased membrane fluidity (a reciprocal value of membrane microviscosity) of erythrocytes and improved the rigidity of cell membranes in postmenopausal women via the NO-dependent mechanism.3 Because abnormalities in membrane microviscosity could cause a disturbance in the rheological behavior of erythrocytes and the microcirculation, estrogen might be favorable for the prevention of circulatory disorders in postmenopausal women. In addition, we demonstrated that progesterone and NO might have a synergistic effect on the improvement of membrane microviscosity of erythrocytes.4 It was also shown that the hormone replacement therapy with estrogen and progesterone significantly improved membrane microviscosity of erythrocytes with a concomitant increase in plasma NO metabolite levels.5 Rupnow et al6 demonstrated that estrogen and progesterone alone and in combination significantly increased the NO synthase expression in uterine artery endothelium. It was also reported that progesterone might stimulate NO production and endothelium-dependent relaxation in rat aorta and the porcine coronary artery.7 In this context, it can be speculated that the antihypertensive effect of DRSP and E2 might, at least in part, be because of the improved NO bioavailability. Therefore, we would like to know whether a reduction in blood pressure by DRSP and E2 treatment might be accompanied by the restored endothelial function in postmenopausal women in the study of White et al.1 It would be necessary to assess more precisely the relationships between DRSP and E2 therapy and NO production, as well as their contribution to the prevention of cardiovascular diseases in hypertensive postmenopausal women.

Disclosures

None.

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Hypertension. 2006;48:e106; originally published online September 25, 2006;
doi: 10.1161/01.HYP.0000244900.75100.41
Hypertension is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0194-911X. Online ISSN: 1524-4563

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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