Response to Morning Surge, Dipping, and Sleep-Time Blood Pressure as Prognostic Markers of Cardiovascular Risk

We apologize to Hermida et al.1 for not having appropriately discussed the results of the Monitorización Ambulatoria para Predicción de Eventos Cardiovasculares (MAPEC)2 study.

The Progetto Ipertensione Umbria Monitoraggio Ambulatoriale (PIUMA)3 and the MAPEC study2 differ under several aspects. The MAPEC study is a randomized intervention study that compares 2 different strategies: in 1 strategy, the initial monotherapy is given at bedtime; in the alternative strategy, the initial monotherapy is given in the morning.2 Randomization is stratified by agent given as initial monotherapy. Furthermore, antihypertensive treatment is adjusted not on the basis of clinic blood pressure (BP), but rather on the basis of ambulatory BP monitoring repeated after 3 months and, subsequently, at least annually or even several times per year in each subject.2 The MAPEC study includes normotensive, untreated hypertensive, and treated hypertensive subjects.2 By contrast, the PIUMA study is an observational study restricted to initially untreated subjects with clinical diagnosis of hypertension (systolic BP ≥140 mm Hg or diastolic BP ≥90 mm Hg).3 We tailor individual treatment according to clinic BP.2 We do not know how many of our patients take their treatment, entirely or in part, at bedtime, but we suspect they are a minority.

Hermida et al2 are to be congratulated for enrolling, in a single center, 3612 subjects over only 7 years, with multiple ambulatory BP monitoring in these subjects over time. We were a bit less productive, by including 3792 subjects between year 1986 and year 2006 in 3 centers.3 We found that a blunted day–night BP dip was associated with a blunted morning BP surge and vice versa, and that a blunted morning BP surge was an independent predictor of cardiovascular events.3 The MAPEC study did not specifically address the association between the day–night BP dip and the early morning surge in BP.2 From a prognostic standpoint, in addition to all-cause death, we analyzed a composite of hard cardiovascular events that included cardiovascular death, nonfatal myocardial infarction, nonfatal stroke, and heart failure requiring hospitalization.3 In contrast, the prognostic analysis of the MAPEC study also included weaker end points, including angina pectoris, coronary revascularizations, and retinal artery occlusion.2 Furthermore, we had the opportunity to adjust for several potential confounders, including smoking, estimated glomerular filtration rate, body mass index, and left ventricular hypertrophy by electrocardiography; all covariates not included in the MAPEC study1 but present in the PIUMA study.3

Apart from these methodological differences, the MAPEC2 and PIUMA3 studies converge in suggesting that an exaggerated early morning rise in BP is a marker of decreased, rather than increased, cardiovascular risk. An exaggerated early morning rise in BP generally expresses a low BP during nighttime. Similar results have been reported by Israel et al4 in a study that is pretty similar, in terms of experimental design, to PIUMA.

Overall, these data strongly indicate that a large multinational study aimed to ascertain whether a treatment given at bedtime is superior to a treatment given in the morning for preventing major cardiovascular events in hypertensive patients is urgently needed.

Disclosures

None.

Paolo Verdecchia
Marta Garofoli
Struttura Complessa di Medicina
Ospedale di Assisi, Italy

Fabio Angeli
Sezione di Cardiologia
AUSL 2 dell’Umbria
Perugia, Italy

Gianpaolo Reboldi
Dipartimento di Medicina Interna
Università di Perugia
Perugia, Italy


