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Reviewer Critique

The Odyssey of Masked Hypertension in the HOMERUS Trial

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Some untreated subjects show normal clinic but high home or ambulatory blood pressure (BP). This phenomenon has been called masked hypertension (MH) and may be determined by various factors.[1] The same experience may be observed in treated hypertensive patients[2] and has been labeled with the same term. The prevalence of MH in treated hypertension is variable,[2] from 7% to 20%, depending on different populations studied and frequency of underlying mechanisms, such as smoking habit, coffee use, alcohol abuse, physical activity, and daily and work stress. Some studies have also evaluated the prognostic impact of MH in treated hypertension.[3–6] These studies included 1559 subjects with normal clinic and home or ambulatory BP who experienced 77 cardiovascular events and 733 patients with MH who experienced 80 events.[3–6] The adjusted relative risk of cardiovascular events in patients with MH, when compared to those with normal clinic and out of office BP, ranged from 1.62 to 2.8.[3–6] Thus, these studies suggest that MH has a remarkable clinical relevance.

In the present issue of the *American Journal of Hypertension*, the phenomenon of MH has been further analyzed.[7] Verberk et al[7] investigated the prevalence and persistence of MH in treated hypertension. One hundred sixty-one subjects included in the home BP group of the Home versus Office blood pressure MEasurements: Reduction of Unnecessary treatment Study (HOMERUS) trial (designed for other purposes than those exposed in the report) had clinic BP measurement at eight visits and home BP recording before each visit for 1 year. The MH was defined as clinic BP $<$140/90 mm Hg and home BP $\geq$135/85 mm Hg. During the study, 50% of the patients had MH at least once, whereas 19% had MH at two consecutive visits, 8% at three consecutive visits, and 2% at four consecutive visits. The investigators concluded that MH is common in treated patients, but it is not a persistent phenomenon, probably because of an accidentally low clinic BP at one particular occasion.

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Some features of this article deserve comment. First, in these patients drug therapy was guided by home BP, and not clinic BP. Thus, subjects with MH received intensified treatment to achieve lower home BP. This aspect may have prevented them from having MH at the next visit. In this context, results do not seem to suggest poor reproducibility of MH, but the effect of treatment. If patients had received therapy according to clinic BP I believe that the results would have been different. Second, these subjects underwent eight clinic visits during 1 year. Considering that hypertensive patients generally attend fewer visits per year, it cannot be totally excluded that part of them showed a clinic BP increase because of the stress induced by frequent visits. Third, it is unclear whether patients did not regularly take their medications before each clinic visit. Fourth, when the classification of a subjects is based on a threshold, it is not surprising to have a limited reproducibility, particularly if we measure an unstable parameter such as BP or its value is close to the diagnostic threshold. The aforesaid aspect is further emphasized when the classification is based on a single clinic visit. Finally, although home BP recording is a good tool to detect MH, I believe that ambulatory BP monitoring is superior because it records BP during the entire day, and not only in a morning or evening window. Ambulatory BP monitoring is able to detect the effect of some specific factors (smoke, coffee, alcohol, physical activity, daily and work stress) on 24-h BP. In the study by Verberk et al[7] the prevalence of MH was 12% when it was evaluated by ambulatory BP monitoring at the end of the study. Thus, various aspects may have contributed to the loss of MH from the start to the Calypso's island in the HOMERUS trial.

References

1. Pickering TG, Davidson K, Gerin W, Schwartz JE: Masked hypertension. Hypertension 2002;40:795–796.
2. Pierdomenico SD, Cuccurullo F, Mezzetti A: Masked hypertension in treated hypertensive patients. Am J Hypertens 2006;19:873–874.

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3. Bobrie G, Chatellier G, Genes N, Clerson P, Vaur L, Vaisse B, Menard J, Mallion JM: Cardiovascular prognosis of "masked hypertension" detected by blood pressure self-measurement in elderly treated hypertensive patients. JAMA 2004;291:1342–1349.
4. Clement DL, De Buyzere ML, De Bacquer DA, de Leeuw PW, Duprez DA, Fagard RH, Gheeraert PJ, Missault LH, Braun JJ, Six RO, Van Der Niepen P, O'Brien E: Prognostic value of ambulatory blood-pressure recordings in patients with treated hypertension. N Engl J Med 2003;348:2407–2415.
5. Ohkubo T, Kikuya M, Metoki H, Asayama K, Obara T, Hashimoto J, Totsune K, Hoshi H, Satoh H, Imai Y: Prognosis of masked hypertension and white coat hypertension detected by 24-h ambulatory blood pressure monitoring. J Am Coll Cardiol 2005;46:508–515.
6. Pierdomenico SD, Lapenna D, Bucci A, Di Tommaso R, Di Mascio R, Manente BM, Caldarella MP, Neri M, Cuccurullo F, Mezzetti A: Cardiovascular outcome in treated hypertensive patients with responder, masked, false resistant, and true resistant hypertension. Am J Hypertens 2005;18:1422–1428.
7. Verberk WJ, Thien T, Kroon AA, Lenders JWM, van Montfrans GA, Smit AJ, de Leeuw PW: Prevalence and persistence of masked hypertension in treated hypertensive patients. Am J Hypertens 2007; 20:1258–1265.