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Predicting Recurrent Depression Using Vitamin D Levels?

To the Editor: I read the report of Hoang et al[1] on low 25-hydroxyvitamin D and depression with great interest. Of note, recently published guidelines on evaluation of vitamin D deficiency do not call for screening of persons with prior or current depression.[2] A plausible clinical application of the findings of this study—if confirmed, especially in multiracial cohorts—would be to obtain 25-hydroxyvitamin D levels in patients with a history of depression and treat when indicated, in hope of preventing new episodes of depression.

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In reply: We thank O'Keefe et al for their interest in our report on the association between serum hydroxyvitamin D and current depressive symptoms.[1] Lack of cardiorespiratory fitness (CRF) has been associated with depressive symptoms. For example, previous studies from the Aerobics Center Longitudinal Study found a significant inverse dose-response relationship between maximal CRF and depressive symptoms.[2,3] The current study focused on depressive symptoms and their relationship to serum hydroxyvitamin D from a psychiatric perspective. Physical activity has been used as a covariate by other similar studies exploring the relationship between vitamin D and depression.[4,5] In our report, we controlled for physical activity, or exercise, which represents a modifiable behavior that was statistically significant in its inverse relationship to depressive symptoms in this study.[1] In sensitivity analyses that included CRF in the model, the relationship between vitamin D and depression was essentially unchanged.

We applaud O'Keefe et al's thoughtful review of the potential mechanisms linking depression, vitamin D, and cardiovascular disease. The idea that low vitamin D levels may be, in part, responsible for the association between depression and cardiovascular disorders is interesting and worthy of further investigation.

Kolade noted that guidelines for vitamin D deficiency do not call for screening vitamin D levels in the setting of current or prior depression. The idea of using vitamin D screening and, when necessary, supplementation to prevent depression relapse is very interesting and warrants further study.

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Sustained Blood Pressure–Lowering Actions of Subcutaneous B-Type Natriuretic Peptide (Nesiritide) in a Patient With Uncontrolled Hypertension

To the Editor: Hypertension continues to be an important public health problem, with a substantial proportion of patients failing to achieve optimal blood pressure (BP) control.

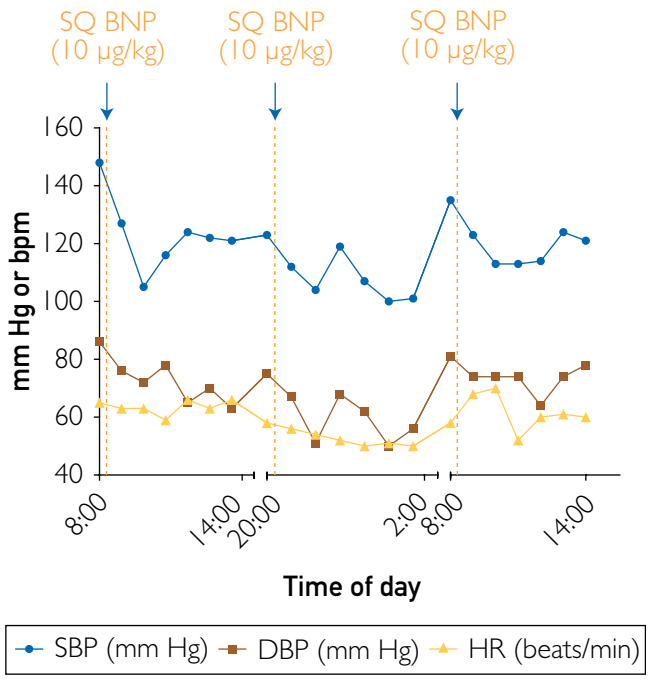

FIGURE. Hyoptensive effects of 10 μg/kg of SQ BNP in a patient with uncontrolled hypertension. DBP = diastolic blood pressure; HR = heart rate; SBP = systolic blood pressure; SQ BNP = subcutaneous B-type natriuretic peptide.

Recent data suggest that hypertension is characterized by a relative deficiency of the natriuretic peptide system, which has cardiorenal and vascular protective properties.[1,2] Furthermore, we previously demonstrated that B-type natriuretic peptide (BNP) supplementation has BP-lowering actions in models of acute and chronic experimental hypertension.[3,4] With all of this in mind, we designed a pilot study to investigate the effects of low-dose subcutaneous (SQ) BNP (nesiritide; Scios, Inc, Mountain View, CA) in patients with uncontrolled hypertension despite the use of conventional antihypertensive therapy. Herein we report the results from the first patient enrolled for the safety and dose-finding study (Trial Registration clinicaltrials.gov Identifier: NCT00953472; "B-Type Natriuretic Peptide [BNP] in Human Hypertension"), for which funding is currently being pursued.

A 59-year-old white man (weight, 79 kg; body mass index, 27 kg/m^2) with office BP of 150/90 mm Hg despite treatment with an angiotensin receptor blocker (losartan, 50 mg once a day orally) and a diuretic (hydrochlorothiazide, 25 mg once a day orally) consented to participate in this study. Ambulatory BP monitoring indicated hypertension (while awake: 148/87 mm Hg; heart rate, 67 beats/min; during sleep: 132/76 mm Hg; heart rate, 51 beats/min). Results of physical examination and laboratory analyses were normal, with no signs of secondary hypertension or renal insufficiency (serum creatinine, 0.8 mg/dL; to convert to μmol/L, multiply by 88.4).

The patient was on a no-added-salt diet (120 mEq of sodium per day) for 7 days before admission to the Clinical Research Unit at Mayo Clinic. The Figure illustrates BP levels before and after repeated administration of 10 μg/kg of SQ BNP. (The dose was based on experience in patients with heart failure.[5]) On the morning of the study the patient withheld his standard medications to receive the first SQ BNP dose. Systolic and diastolic BP decreased (from 148/86 to 105/72 mm Hg) and remained reduced for the following 12 hours. Twelve hours after the first SQ BNP injection, the second dose was administered, and a reduction of both systolic and diastolic BP (from 123/75 to 101/56 mm Hg) followed, with no other antihypertensive therapy being given. On the following morning, 12 hours after the second dose, BP was 135/81 mm Hg. Again, the patient's standard medications were withheld. and the last dose of SQ BNP was given, which induced a BP reduction (from 135/81 to 113/74 mm Hg). The patient was discharged with a BP of 121/78 mm Hg and instructed to restart his standard therapy the following day. Plasma BNP_{1-32} increased from 53 pg/mL before treatment to 72 pg/mL 4 hours after the last injection; in contrast, corresponding plasma levels of endogenous N-terminal $proBNP_{1-76}$ decreased from 48 pg/mL to 22 pg/mL. (to convert to pmol/L, multiply BNP_{1-32} by 0.289 and NT-$proBNP_{1-76}$ by 0.118, respectively.)

Thus, this patient demonstrated effective BP reduction after BNP administration. This study was designed to assess the safety of low-dose (10 μg/kg) BNP, which normalized BP for the duration of the study without additional therapy. These encouraging results support further studies with SQ BNP as a potential antihypertensive drug, perhaps in combination with standard therapy, in patients who have resistant hypertension or poorly controlled BP.

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CORRECTION

In the article entitled "**Recognition and Management of Nonrelaxing Pelvic Floor Dysfunction**" published in the February 2012 issue of *Mayo Clinic Proceedings (Mayo Clin Proc.* 2012;87(2):187-193), one of the images is mislabeled. The corrected image Figure 2 has the piriformis and coccygeus muscles labeled correctly.