

cleic acid amplification, resulting in excellent specificity (>99.99 percent) for the combined antibody and nucleic acid amplification approach. The positive predictive value for positive results on nucleic acid amplification testing among antibody-negative clients was remarkably high (90 percent), considering the low prevalence of the disease. It is interesting to note that nucleic acid amplification tests are both licensed and marketed for diagnostic testing of blood donors, for which the group-testing strategy is preferred. Still, even when pooled, nucleic acid amplification tests must be considered screening tests that, if positive, warrant additional testing to confirm or rule out seroconversion. With regard to our study's criteria for HIV-antibody positivity on confirmatory testing, varying Western blot criteria made no difference in the results. Moreover, the various Western blot criteria have very little or no effect on the sensitivity of antibody screening (the problem with current antibody testing that the addition of nucleic acid amplification testing aims to improve).

Dr. Klausner and colleagues point to the fact that the public health infrastructure in North Carolina favored the state's success in implementing testing procedures for acute HIV infection. In addition to confidential testing, the state also has invested in the systems necessary for partner counseling and referral, with staffing by specialists experienced in HIV and STD intervention, and continues to favor the use of venipuncture (as opposed to oral-fluid or finger-prick-blood collection) at most HIV-testing sites. Particularly in areas with a high burden of HIV disease, such as California, the potential benefit of programs designed for the prevention of acute HIV infection may merit reconsideration of these issues.

Christopher D. Pilcher, M.D.  
Peter A. Leone, M.D.

University of North Carolina at Chapel Hill  
Chapel Hill, NC 27599-7215  
cpilcher@med.unc.edu

## Traumatic Brain Injury in the War Zone

**TO THE EDITOR:** In Okie's Perspective article (May 19 issue)<sup>1</sup> on traumatic brain injury (TBI) from the war in Iraq, she alludes to mood disorders that result from such injuries. Patients with TBI have been described as the "walking wounded"<sup>2</sup> owing to their lingering neuropsychological problems. Lishman studied 670 cases of head injuries from the Second World War and reported that "simple measures of the amount of brain damage . . . were indeed related to the amount of psychiatric disability encountered one to five years later."<sup>3</sup> As many as 77 percent of patients with TBI have been given a diagnosis of depression.<sup>4</sup> Mood disorders may result in the restriction of social contact as well as increased loneliness and are major barriers to functional and social rehabilitation.<sup>5</sup>

Technological improvements and better emergency medical care have reduced the incidence of severe TBI while increasing the numbers of patients with mild or moderate TBI. Such patients are more adversely affected by their emotional problems than by their residual physical disabilities.<sup>6</sup> It is important to screen these patients for depression and to conduct neuropsychological testing soon after head injury in order to facilitate treatment and reentry into the community, as well as to optimize the long-term outcome.

Rohit R. Das, M.B., B.S., M.P.H.

Boston Medical Center  
Boston, MA 02118  
rohit.das@bmc.org

Ranjani N. Moorthi, M.B., B.S., M.P.H.

Saint Vincent Hospital  
Worcester, MA 01608

1. Okie S. Traumatic brain injury in the war zone. *N Engl J Med* 2005;352:2043-7.
2. Rao V, Lyketsos C. Neuropsychiatric sequelae of traumatic brain injury. *Psychosomatics* 2000;41:95-103.
3. Lishman WA. The psychiatric sequelae of head injury: a review. *Psychol Med* 1973;3:304-18.
4. Kreutzer JS, Seel RT, Gourley E. The prevalence and symptom rates of depression after traumatic brain injury: a comprehensive examination. *Brain Inj* 2001;15:563-76.
5. Morton MV, Wehman P. Psychosocial and emotional sequelae of individuals with traumatic brain injury: a literature review and recommendations. *Brain Inj* 1995;9:81-92.
6. Satz P, Fourny DL, Zaucha K, et al. Depression, cognition, and functional correlates of recovery outcome after traumatic brain injury. *Brain Inj* 1998;12:537-53.

**TO THE EDITOR:** Although Okie's article described well many of the issues involved in the current war in Iraq, we would like to clarify our comments, reported in the article, regarding the classification of mild TBI. We noted that the boundary between mild and moderate TBI is one hour of loss of consciousness and that the cutoff between moderate and se-

vere TBI is one day of loss of consciousness. However, there is variation in the classification of mild TBI.

Some authors<sup>1</sup> use 30 minutes of loss of consciousness as the criterion, and others 20 minutes,<sup>2</sup> and still others<sup>3</sup> define “brief” loss of consciousness as lasting less than 1 hour. In practice, we more often use the duration of post-traumatic amnesia to determine the level of severity, since that information is available to us more often than are data on loss of consciousness.

Deborah L. Warden, M.D.

Louis French, Psy.D.

Defense and Veterans Brain Injury Center  
Washington, DC 20307

1. American Congress of Rehabilitation Medicine. Definition of mild traumatic brain injury. *J Head Trauma Rehabil* 1993;8(3):86-7.
2. Rimel RW, Giordani B, Barth JT, Boll TJ, Jane JA. Disability caused by minor head injury. *Neurosurgery* 1981;9:221-8.
3. International classification of diseases, hospital edition, 9th rev., clinical modification: ICD-9-CM. 6th ed. Vol. 1, 2 & 3. Los Angeles: Practice Management Information Corporation, 2002.

## Teriparatide, Osteoporosis, Calcium, and Vitamin D

**TO THE EDITOR:** Dr. Licata reports in his letter to the editor (May 5 issue)<sup>1</sup> that the increase in serum calcium levels after treatment of osteoporosis with the parathyroid hormone derivative teriparatide correlates “inversely with 25-hydroxyvitamin D.” Therefore, vitamin D supplementation to increase the level of 25-hydroxyvitamin D might be desirable. Indeed, Dr. Licata’s own data show that patients with higher levels of 25-hydroxyvitamin D have a reduced risk of hypercalcemia.

Given this finding, we are very surprised that Dr. Licata advises caution in the use of vitamin D supplementation. Dr. Licata’s letter focuses on the increase in levels of 1,25-dihydroxyvitamin D that accompanied the use of teriparatide, but there is much evidence that substantial vitamin D supplementation does not affect the level of 1,25-dihydroxyvitamin D.<sup>2-4</sup> Since 25-hydroxyvitamin D is an important determinant of serum immunoreactive parathyroid hormone in healthy adults,<sup>5</sup> there is still much to learn about the interrelationship between vitamin D supplementation and teriparatide.

Reinhold Vieth, Ph.D.

David E.C. Cole, M.D., Ph.D.

University of Toronto  
Toronto, ON M5G 1L5, Canada  
rvieth@mtsinai.on.ca

1. Licata AA. Osteoporosis, teriparatide, and dosing of calcium and vitamin D. *N Engl J Med* 2005;352:1930-1.
2. Vieth R, Kimball S, Hu A, Walfish PG. Randomized comparison of the effects of the vitamin D3 adequate intake versus 100 mcg (4000 IU) per day on biochemical responses and the wellbeing of patients. *Nutr J* 2004;3:8.
3. Vieth R, Ladak Y, Walfish PG. Age-related changes in the 25-hydroxyvitamin D versus parathyroid hormone relationship suggest a different reason why older adults require more vitamin D. *J Clin Endocrinol Metab* 2003;88:185-91.
4. Barger-Lux MJ, Heaney RP, Dowell S, Chen TC, Holick MF. Vitamin D and its major metabolites: serum levels after graded oral dosing in healthy men. *Osteoporos Int* 1998;8:222-30.

5. Pepe J, Romagnoli E, Nofroni I, et al. Vitamin D status as the major factor determining the circulating levels of parathyroid hormone: a study in normal subjects. *Osteoporos Int* 2005;16:805-12.

**TO THE EDITOR:** Licata describes three patients who had elevated levels of serum calcium six or more hours after receiving teriparatide (Forteo, Lilly). In a fracture prevention trial,<sup>1</sup> 11 percent of patients receiving 20 µg of teriparatide, as compared with 2 percent of patients treated with placebo, had at least one elevated serum calcium value in blood samples drawn four to six hours after the injection of the study drug. These elevations were not associated with adverse clinical events, and serum calcium measurements made more than 16 hours after injection of the dose were elevated in only one patient each in the teriparatide group (receiving a dose of 20 µg per day) and the placebo group. The transient rise in serum calcium after the injection of teriparatide is consistent with the known renal effects of parathyroid hormone.

The Forteo product label warns that patients with preexisting hypercalcemia should not be treated with teriparatide. The labeling for teriparatide suggests that blood samples be drawn at least 16 hours after dosing. Subsequent normalization in the serum calcium level has been observed in patients with hypercalcemia without a reduction in the dose of teriparatide or supplementation with calcium and vitamin D.<sup>2</sup> However, a reduction in calcium supplementation may be considered.<sup>3</sup>

John H. Kregge, M.D.

David W. Donley, Ph.D.

Robert Marcus, M.D.

Eli Lilly  
Indianapolis, IN 46285  
kreggeh@lilly.com