



Not All Seizures Are Epilepsy Also Applies to the Military

Psychogenic Nonepileptic Seizures in US Veterans.

Salinsky M, Spencer D, Boudreau E, Ferguson F. *Neurology* 2011;77(10): 945–950.

OBJECTIVES: Psychogenic nonepileptic seizures (PNES) are frequently encountered in epilepsy monitoring units (EMU) and can result in significant long-term disability. We reviewed our experience with veterans undergoing seizure evaluation in the EMU to determine the time delay to diagnosis of PNES, the frequency of PNES, and cumulative antiepileptic drug (AED) treatment. We compared veterans with PNES to civilians with PNES studied in the same EMU. **METHODS:** We reviewed records of all patients admitted to one Veterans Affairs Medical Center (VAMC) EMU over a 10-year interval. These patients included 203 veterans and 726 civilians from the university affiliate. The percentage of patients with PNES was calculated for the veteran and civilian groups. Fifty veterans with only PNES were identified. Each veteran with PNES was matched to the next civilian patient with PNES. The 2 groups were compared for interval from onset of the habitual spells to EMU diagnosis, cumulative AED treatment, and other measures. **RESULTS:** PNES were identified in 25% of veterans and 26% of civilians admitted to the EMU. The delay from onset of spells to EMU diagnosis averaged 60.5 months for veterans and 12.5 months for civilians ($p < 0.001$). Cumulative AED treatment was 4 times greater for veterans with PNES as compared to civilians ($p < 0.01$). Fifty-eight percent of veterans with PNES were thought to have seizures related to traumatic brain injury. **CONCLUSIONS:** The results indicate a substantial delay in the diagnosis of PNES in veterans as compared to civilians. The delay is associated with greater cumulative AED treatment.

Commentary

The diagnosis of psychogenic nonepileptic seizures (PNES) continues to be clinically challenging despite increasing evidence that delay in diagnosis is related to increased use/cost of medical services; poor quality of life; psychiatric comorbidities, including posttraumatic stress disorder (PTSD) and depression; medically unexplained symptoms; family dysfunction; unemployment; and poor 4-year and 10-year outcomes (1–5). Even though trauma, health-related anxiety, older age, unclear episodes, and nondiagnostic video EEG (vEEG) studies are common in males with PNES, physicians are more predisposed to diagnose PNES in women rather than men [(6–8)]. Salinsky et al.'s findings demonstrate the delay in diagnosis of PNES in U.S. veterans with NES, who were mainly male and had experienced a traumatic event, head injury, during their deployment.

Between 12 and 35 percent of the military deployed to fight in Iraq, Afghanistan, and the war-on-terror sustain mild traumatic brain injury (TBI) or concussion as a result of blast injuries (9). Military who experience mild TBI and return from deployment have increased PTSD (11–43.9%) (10, 11), depression (23%), and unexplained somatic symptoms (8–32%) (10), as well as pain (43.1%) (12). Yet, these same symptoms and TBI are also risk factors for PNES. Furthermore, one-fourth to

one-third of PNES cases have TBI (13, 14), and one-third of TBI patients have PNES (15).

The findings by Salinsky et al. of PNES in 25% (50/203) veterans and in 26% (189/726) civilians demonstrate that PNES is undiagnosed in both U.S. veterans and civilians. But mismanagement of the 50 PNES veterans compared with the 50 civilian PNES cases is evident from the five-fold longer time to PNES diagnosis, increased percentage of patients on at least one AED, four-fold longer cumulative time on AEDs, and larger number of prescription drugs. Additional evidence for inadequate medical care and increased use of medical services by the PNES veterans includes the significantly larger number of prescription drugs at admission and the number of patients on benzodiazepines and narcotics compared with the veterans with epilepsy. The finding of TBI in 58% of the PNES and in 51% of the epilepsy veterans but only in 26% of the PNES civilians underscores the importance of including PNES in the differential diagnosis of posttraumatic epilepsy following TBI in the military.

In addition to the unequal gender distribution in the military, significantly more males in the veteran than in the civilian PNES group might reflect the previously described difficulty diagnosing PNES in males even in the presence of unclear episodes (7). The significantly older age of the veteran compared with the civilian PNES patients is probably a correlate of the delay in diagnosis. It might also represent military protocol to diagnose and treat seizures following TBI as posttraumatic epilepsy rather than conduct diagnostic vEEG and psychiatric evaluations, particularly in cases of mild TBI. Furthermore, veterans' lack of reporting of psychiatric symptoms related to PTSD and depression for



“macho” reasons and reluctance to disclose mild TBI to prevent medical evaluations that might delay returning home and reuniting with their families (16) reduce the likelihood that military physicians will consider possible PNES in mild TBI cases.

Although this was a retrospective study, study strengths include well-defined hypotheses and criteria for the inclusion, exclusion, and classification of subjects into epilepsy/PNES subgroups, as well as the use of consecutive controls (who underwent vEEG within 34 days (range, 0–127 days) of the veteran PNES cases. Among the study’s methodological problems, the comparison of the cumulative time on AEDs between veteran and civilian PNES cases should have controlled for age because civilians were significantly younger than the veterans. In addition, only one author (who was not blind to the study’s hypotheses) reviewed all the medical charts. In contrast to civilian studies on TBI and PNES (13–15), the authors did not provide information on the type and severity of TBI in the veteran PNES, veteran epilepsy, and civilian PNES groups. This study also did not report on somatic symptoms other than PNES and on psychiatric diagnoses in the study’s groups. Therefore, it remains to be determined if the larger number of prescription drugs in the veteran compared with the civilian PNES group might reflect more somatic symptoms associated with higher rates of PTSD, depression, or chronic pain among the veterans (10–12). However, the authors noted that lack of information on psychiatric diagnosis and recruitment from a tertiary center might limit generalization of the study’s findings to other U.S. veterans.

The findings of Salinsky et al. have important clinical care implications. In terms of diagnosis, PNES in 25% of veterans referred for vEEG 5 to 20 years after onset of symptoms in 37% of these veterans emphasizes the need to include PNES in the differential diagnosis of military TBI cases with posttraumatic epilepsy. Increasing physicians’ awareness about PNES in military posttraumatic epilepsy cases is particularly important, because underreporting and lack of treatment for PTSD, depression, and somatic symptoms in military experiencing mild TBI can increase both the risk for PNES and its morbidity.

Regarding treatment, these findings emphasize the importance of revisiting prophylactic prescription of AEDs for late onset posttraumatic epilepsy in military cases of TBI. The guidelines of the American Academy of Neurology (17) clearly state that, “Prophylactic use of phenytoin or valproate is not recommended for preventing late post-traumatic seizures.” The cognitive and behavioral adverse effects associated with AEDs (particularly when they are not indicated) might further impair the poor functioning, prevent employment, and decrease the quality of life of PNES patients. Although not examined in this study, these conditions might have contributed to the veterans increased use of medical services as suggested by the larger number of prescription drugs and number of patients on benzodiazepines and narcotics. Finally, the need for prescription drugs, benzodiazepines, and narcotics indirectly reflects the PNES veterans’ unmet mental healthcare needs. Early diagnosis of PNES and referral for specialized psychiatric and psychological care can prevent this downhill process.

by Rochelle Caplan, MD

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