Editors’ Note: “Association of prone position with sudden unexpected death in epilepsy” raised several inquiries from our readers. Sethi suggests that since the pathogenesis of sudden unexpected death in epilepsy (SUDEP) is not yet elucidated, advising patients to sleep in the supine position, which risks aspiration, warrants careful consideration. Furthermore, based on their prior study, Lhatoo et al. believe that forced ictal version, rather than prone position, may be a SUDEP risk factor. Authors Tao et al. argue that supine sleeping can help prevent SUDEP and, although it could be associated with aspiration, babies seizing face-down risk suffocation.

—Chafic Karam, MD, and Robert C. Griggs, MD

ASSOCIATION OF PRONE POSITION WITH SUDDEN UNEXPECTED DEATH IN EPILEPSY
Nitin K. Sethi, New York: Liebenthal et al.1 studied the association of prone position with sudden unexpected death in epilepsy (SUDEP). The central dogma underlying SUDEP is unclear. Does postictal cerebral shutdown represented by postictal generalized EEG suppression (PGES) cause hypoxemia, hypercapnia, pulmonary edema, and autonomic instability, resulting in death? It is also possible that the primary peri-ictal involvement of brainstem neurons (pre-Botzinger complex) sets off the cascade that manifests as PGES at the end of a terminal seizure. The role that peri-ictal prone position plays is unclear; it may be a coincidental finding or may play a major role in the final common pathway contributing to the hypoxemia and hypercapnia and leading to death. Until the etiopathogenesis underlying SUDEP is elucidated, advising patients to sleep in the supine position—which risks aspiration—warrants careful consideration.

Samden D. Lhatoo, Cleveland; Lina Nashef, London; Torbjorn Tomson, Stockholm; Philippe Ryvlin, Lausanne, Switzerland; for the Mortality on Epilepsy Monitoring Units Study: Liebenthal et al.2 highlighted similarities between SUDEP and sudden infant death syndrome (SIDS),1 for which the Back to Sleep campaign reduced deaths. They rightly suggested that fatal airway obstruction may occur in prone patients. However, others have acknowledged the absence of information, such as sleep position immediately prior to agonal seizure, influencing the validity of a SIDS-like prevention campaign.3 We reported on monitored SUDEP in the Mortality in Epilepsy Monitoring Unit Study (MORTEMUS).4 Seven of 11 (64%) SUDEP patients were in fact not prone before fatal seizure (3 awake and supine, 4 asleep on their side). The remainder were asleep prone. By seizure end, 5/7 nonprone patients became prone (72%). All those turning prone had head/body version that resulted in prone posture. Forced ictal version (rather than prone position) may therefore be a SUDEP risk factor.

Semiologic detail is lacking in SUDEP studies. Forced head version occurs in 42% of secondary generalization. Whole body version, potentially more dangerous in the SUDEP context, occurs in 4%.3 Prone position in SUDEP is more consequence than risk and the value of a Back to Sleep campaign is questionable. Semiologic risk stratification should continue to be studied by REPO2MSE and E-PILEPSY network studies (Europe), and the National Institute of Neurological Disorders and Stroke Center for SUDEP Research (United States), both analyzing physiologic and semiologic seizure data.

Author Response: James Tao, Chicago; Jennifer Liebenthal, Stanford, CA; Shasha Wu, Sandra Rose, Chicago; John S. Ebersole, Summit, NJ: We thank Dr. Sethi and Lhatoo et al. for their comments regarding our recent study.1 We agree with Dr. Sethi that the exact relationship between PGES and SUDEP is unclear. However, current evidence does not support the contention that PGES is the initiating event in a terminal cascade leading to SUDEP.4 Nevertheless, PGES is consistently correlated with impaired postictal arousal, which may reflect a peri-ictal impairment of serotoninergic neurons in the brainstem.7 Our study demonstrated that there is a statistically significant association between prone position and SUDEP, which suggested that sleeping in the prone position is likely a major risk factor for SUDEP. The prone position may not play a major role in all cases of SUDEP, but the combination of impaired postictal arousal and being face down is likely to have a catastrophic consequence. As such, advising patients against sleeping in the prone position may be an effective measure to reduce the risk of SUDEP.

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After a generalized tonic-clonic seizure (GTCS), an unattended and unresponsive patient will likely end up in either a face-up or a face-down position. While face-up may indeed risk aspiration, face-down risks suffocation. The risk for aspiration is relatively low, but it may be difficult to influence in the absence of peri-ictal supervision. Regardless, this limited risk of aspiration should not deter physicians from advising those with uncontrolled GTCS to avoid sleeping in a prone position, particularly if they sleep alone.

We agree with Lhatoo et al. that the validity of the Back to Sleep campaign for SUDEP prevention remains unproven, as sleep position immediately prior to agonal seizures has rarely been described in published SUDEP studies. The data in the MORTEMUS study provide important insights into this uncertainty, showing that prone sleeping (4/11 cases) and forced ictal version (5/11 cases) almost equally contributed to a postictal prone position.

Therefore, the Back to Sleep campaign may be most useful in patients with a tendency of prone sleeping, and perhaps less so in those turning into prone position from a lateral sleeping position during versive seizures. Regardless, the Back to Sleep campaign can help prevent the former. It is unclear whether prone sleeping or forced ictal version is a more significant risk factor for a resultant postictal prone position. The prone position has previously been proposed as a risk factor. It is premature to conclude that forced ictal version is a more likely risk factor than prone sleeping, given the small case numbers in the MORTEMUS study. Future large case studies are warranted to stratify the risks and determine appropriate measures for SUDEP prevention.

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