

Editors' Note: The use of anesthetic drugs in status epilepticus remains controversial. Hocker and Shorvon discuss their concerns about the article "Anesthetic drugs in status epilepticus: Risk or rescue? A 6-year cohort study" and its accompanying editorial. The author Sutter responds. Commenting on "Teaching *NeuroImages*: 'Subarachnoid hemorrhage' from decreased contrast elimination after therapeutic hypothermia," Rebecca Hurst shares her own experience with pseudo-subarachnoid hemorrhage.

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

ANESTHETIC DRUGS IN STATUS EPILEPTICUS: RISK OR RESCUE? A 6-YEAR COHORT STUDY

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Sutter et al.¹ reported that patients treated with anesthesia for control of refractory status epilepticus (SE) have a worse outcome. Association does not mean causality and this association can be explained by the fact that physicians choose anesthesia for patients who are most gravely ill. The article and accompanying editorial² raise the possibility that the anesthetic therapy is a cause of this greater mortality. We are concerned that this may be the erroneous message taken from the article. All treatment is a balance of risk and benefit, and it needs to be stressed that the reasons for using anesthetics in SE are to protect the patient against excitotoxic cerebral damage and to protect a convulsing patient in a life-threatening situation.

Sutter et al.¹ mentioned that there is insufficient evidence in humans to know whether SE damages the brain. We do not agree. There is overwhelming evidence from available literature, as well as from everyday clinical practice, of the dangers of prolonged seizures. In what is seemingly the same patient cohort, the authors previously reported that "the use of IV anesthetic drugs and mechanical ventilation may not be strongly related to outcome and should therefore be used cautiously for informed decision-making regarding treatment."³ We support this interpretation and stress that while anesthesia presents clear risks to the patient, this must be balanced against the risks of prolonged seizure activity. The true value of the article by Sutter et al.¹ is the message to take caution before initiating anesthetics.

Author Response: Raoul Sutter, Basel, Switzerland: The authors thank Drs. Hocker and Shorvon for their comments. We controlled for predictors of adverse outcome including the Status Epilepticus Severity Score, duration of SE, and critical medical conditions because we realize confounding by indication is an important bias in observational studies.¹

Claims of causality cannot be made and this is a limitation we addressed. However, this is the second study reporting adverse effects of treatment with continuously administered IV anesthetic drugs (IVAD) in SE patients. We concur that the brain-damaging effects of prolonged seizures have been shown, yet large studies and systematic reviews have failed to confirm an independent association between SE duration and outcome in humans.⁴⁻⁶ In addition, causality has not been proven according to the Bradford Hill Criteria. Underlying etiology may be the most important outcome predictor.³

In a previous study, we reported that the use of IVAD was not strongly related to outcome.³ Albeit deriving from the same center, this cohort differed regarding inclusion criteria and study period. This study and our previous findings indicate that the association of IVAD is not significant after adjustment for refractory SE, which is explained by the strong correlation of treatment-refractoriness and IVADs, possibly not reflecting the true association.

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Anesthetic drugs in status epilepticus: Risk or rescue? A 6-year cohort study

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