Does the arousal system contribute to near death experience?

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21 June 2006



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We read with interest the article by Nelson et al suggesting an association between REM intrusion and near-death experience (NDE). [1] We applaud their creative hypothesis about NDE, but caution against drawing premature etiological conclusions from a correlational study.

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Their NDE sample, drawn from volunteers who shared their NDE on the Internet, may be atypical of most NDE experiencers in their willingness to acknowledge unusual experiences publicly. Moreover, it is plausible that sleep paralysis questions embedded for the NDE sample in an Internet survey of unusual experiences would elicit more positive responses than identical questions presented solely in interviews to the control sample.

Furthermore, we suspect the control group, "recruited from medical center personnel or their contacts," would have reservations about endorsing hallucinations and related symptoms they would likely identify as pathological. This suspicion is bolstered by the control group's endorsement rate of only 7% for hypnagogic hallucinations, about one-fourth of that in the general population. [2]

Data arguing against the contribution of REM intrusion to NDE include many features, such as fear, typical in sleep paralysis but rare in NDE, and the occurrence of typical NDE under general anesthesia and other drugs that inhibit REM. [3]

Finally, a correlation between REM intrusion and NDE would not establish that REM intrusion contributes to NDE. This study did not explore REM intrusion that had occurred prior to the NDE. It is equally plausible that NDE enhances subsequent REM intrusion. REM intrusion is increased in posttraumatic stress disorder (PTSD), [4] and PTSD symptoms are increased following NDE. [5]

In light of these concerns, we regard the association of REM intrusion and NDE as still speculative, and any causal role of REM intrusion in NDE debatable. We suspect that the etiology of NDE is multifactorial and caution against seizing upon any single physiological mechanism as explanatory.

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Disclosure: The authors report no conflicts of interest.

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Reply from the Authors

21 June 2006



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Email Kevin R. Nelson,

Drs. Greyson and Long have made substantial contributions to our understanding of near death experience (NDE) and raise worthy points.

Given the diversity of proximate NDE causes, many outside the hospital setting, an inclusive study must bear the limitations of being retrospective and of self-identified subjects. It can never be known if any subject population represents the entire population of NDE. The pervasiveness of the internet for subject recruitment and interviewing a large number of subjects approximates the ideal. Even prospective studies of hospitalized patients that survive cardiac arrest with sufficiently intact memory and language function to report their experience represents a narrow subset of those with NDE.

It is difficult to compare the REM intrusion prevalence of our control subjects to findings derived from epidemiological studies of the general population. [2,6,7] REM intrusion measures are sensitive to methodology, which is why our investigation employed age- and gendermatched controls. Nevertheless, our control subject rates for sleep paralysis, cataplexy, and hallucinations are within acceptable ranges after accounting for differences in technique. In contrast, REM intrusion for NDE subjects has similarity to narcolepsy.[8]

We make a distinction between normally occurring REM sleep and REM intrusion evoked by the arousal system. Inhibiting REM sleep is not the same as inhibiting REM intrusion provoked by the arousal system. They represent different processes under different physiologic conditions.

In our study, of the 33 NDE subjects reporting a life-time occurrence of REM intrusion, 15 had REM intrusion before their NDE. [1] This speaks against NDE itself as the cause of greater life time REM intrusion prevalence. At least two NDE subjects had a family history of narcolepsy.

We agree with Drs. Greyson and Long's cautionary note. NDE are influenced by a confluence of factors including the context of danger, past life experience and psychological make-up. However, we retain the assumption that fundamental elements of NDE have a neurophysiologic basis. We are further biased to mechanisms that can be tested. This topic has long suffered from excessive speculation. The support of these initial data moves the concept of REM intrusion contributing to NDE and syncope beyond speculation alone. We encourage subjecting the concept's validity to the rigors of further scientific inquiry.

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Disclosure: The authors report no conflicts of interest.