

times result in spurious high frequency oscillations,² laboratories trying to reproduce these results will need the unstated filter settings used by the authors.

The authors show examples of the ripples and artifacts prior to filtering, which suggest proper settings were chosen. Three of their patients were evaluated with scalp and intracranial recordings, showing agreement between the SOZ in each. Given that prior studies of ripples were performed with depth electrode recordings, it is unfortunate that those data were excluded from the present study.

We look forward to reading more about that data, which would link prior studies to the present conclusions, in the near future. The next important steps are determining the relationship between scalp recorded ripples and surgical outcome, and perhaps to automating the method to increase interrater reliability.³

Author Response: Jean Gotman, Montreal; Luciana Andrade-Valenca, Pernambuco, Brazil; Rina Zelmann, Francois Dubeau, Montreal: Goldenholz et al. asked about our filter, which is a Finite Impulse Response filter of order 63. They also inquired about the relationship between scalp HFOs and those recorded in intracerebral electrodes. This is a complex problem for 2 reasons. First, we do not have simultaneous scalp and intracerebral recordings. Secondly, intracerebral electrodes record from a small brain volume and it is unlikely that HFOs seen at one intracerebral contact could be visible on the scalp. As we discussed,¹ HFOs visible on the scalp may come from rare HFOs that occur synchronously over a relatively large area (3 or 4 cm²). We are currently analyzing simultaneous scalp and subdural recordings to further understand the relationship between intracerebral and scalp signals. Finally, Goldenholz et al. mention the need for automatic detection of scalp-recorded high frequencies. We refer them to our recently published method.⁴ We hope that HFOs may become a marker of the epileptogenic zone⁵ and a marker of developing epileptogenesis after an initial brain injury.

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1. Andrade-Valenca LP, Dubeau F, Mari F, Zelmann R, Gotman J. Interictal scalp fast oscillations as a marker of the seizure onset zone. *Neurology* 2011;77:524–531.
2. Benar CG, Chauviere L, Bartolomei F, Wendling F. Pitfalls of high-pass filtering for detecting epileptic oscillations: a technical note on “false” ripples. *Clin Neurophysiol* 2010; 121:301–310.
3. Blanco JA, Stead M, Krieger A, et al. Unsupervised classification of high-frequency oscillations in human neocortical

epilepsy and control patients. *J Neurophysiol* 2010;104: 2900–2912.

4. von Ellenrieder N, Andrade-Valenca LP, Dubeau F, Gotman J. Automatic detection of fast oscillations (40–200 Hz) in scalp EEG recordings. *Clin Neurophysiol Epub* 2011 Sep 20.
5. Jacobs J, Zijlmans M, Zelmann R, et al. High-frequency electroencephalographic oscillations correlate with outcome of epilepsy surgery. *Ann Neurol* 2010;67:209–222.

PSYCHOGENIC NONEPILEPTIC SEIZURES IN US VETERANS

Selim Benbadis, Tampa, FL: The findings of this study¹ are very important, if not surprising. It has been well known that the delay for diagnosis of psychogenic nonepileptic seizures is unacceptably long, and this suggests that it is even worse for veterans. This is partly because when veterans have any episode and a history of head injury, the assumption is that they have post-traumatic epilepsy (58% of patients in the study). This finding illustrates a larger problem of a “gap” in epilepsy care. Since the use of EEG-video for diagnosis is so delayed, it is very likely that veterans do not benefit from nondrug treatments for intractable epilepsy (i.e., epilepsy surgery and vagus nerve stimulation).

The same general rule should be followed in veterans as in the general population of seizure patients: if seizure-like episodes do not respond to medication, the diagnosis should be questioned. Many historical red flags can raise suspicion, and then—if the episodes are frequent enough—the diagnosis should be verified by EEG-video monitoring. If prolonged EEG-video monitoring is not available, outpatient EEG-video with induction can also be used and provides a similar yield.^{2,3}

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1. Salinsky M, Spencer D, Boudreau E, et al. Psychogenic nonepileptic seizures in US veterans. *Neurology* 2011;77:945–950.
2. Benbadis SR, Siegrist K, Tatum WO, et al. Short-term outpatient EEG video with induction in the diagnosis of psychogenic seizures. *Neurology* 2004;63:1728–1730.
3. Varela HL, Taylor DS, Benbadis SR. Short-term outpatient EEG-video monitoring with induction in a Veterans Administration population. *J Clin Neurophysiol* 2007;24:390–391.

NORMAL PRESSURE HYDROCEPHALUS: MEASURE TWICE, SHUNT ONCE

Aunali S. Khaku, Kenneth M. Heilman, Gainesville, FL: In his editorial, Dr. Scharre¹ stated “Cognitive impairment in NPH [...] typically results in [...] low verbal fluency (less than 13 animals named in 1 minute).” The statement suggests that patients

with NPH will exhibit low verbal fluency, but gives a more specific example of category fluency. The number of animals named in a minute is an example of category fluency that would be a specific subset of verbal fluency. It is unclear whether all verbal fluency or only category fluency will be affected. Studies have revealed that whereas letter fluency is more often decreased in patients with frontal lobe dysfunction, a reduction in category fluency is more commonly associated with temporoparietal dysfunction.² In many degenerative conditions, depending on the disease, letter and category fluency may be affected differently. Thus, patients with AD often show a relatively greater impairment in category fluency^{3,4}; however, since NPH is often associated with frontal-subcortical dysfunction, the

letter fluency test may be a better screening test for hydrocephalus than category fluency.

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1. Scharre D. Normal pressure hydrocephalus: measure twice, shunt once. *Neurology* 2011;77:1110–1111.
2. Baldo JV, Schwartz S, Wilkins D, Dronkers NF. Role of frontal versus temporal cortex in verbal fluency as revealed by voxel-based lesion symptom mapping. *Int Neuropsychol Soc* 2006;12:896–900.
3. Chertkow H, Bub D. Semantic memory loss in dementia of Alzheimer's type: what do various measures measure? *Brain* 1990;113(Pt 2):397–417.
4. Monsch AU, Bondi MW, Butters N, Salmon DP, Katzman R, Thal LJ. Comparisons of verbal fluency tasks in the detection of dementia of the Alzheimer type. *Arch Neurol* 1992;49:1253–1258.

CORRECTION

Teaching *NeuroImages*: Reversible splenial cytotoxic edema in acute mountain sickness

In the article “Reversible splenial cytotoxic edema in acute mountain sickness” by Chang Hun Bin and Se-Jin Lee (*Neurology*® 2011;77:e94), there is an error in the figure legend. The legend should begin: “(A) Diffusion-weighted images and (B) fluid-attenuated inversion recovery reveal” The authors regret the error.

Author disclosures are available upon request (journal@neurology.org).

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Normal Pressure Hydrocephalus: Measure Twice, Shunt Once

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