Editorial

Neurology® Clinical Practice

Serum prolactin in seizure diagnosis

Glass half-full or half-empty?

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Since the initial paper by Trimble in 1978[1] highlighting postictal levels of serum prolactin as a way to separate epileptic from nonepileptic seizures, PubMed has logged approximately 300 articles retrievable by the search terms "epilepsy" and "prolactin." Despite this considerable body of work, the role of serum prolactin in diagnosis of seizures remains uncertain. In this issue of *Neurology® Clinical Practice*, Abubakr and Wambacq[2] evaluated serum prolactin levels 20 minutes after a behavioral seizure–like event in 200 patients undergoing video-EEG recordings in an epilepsy monitoring unit. Using the video-EEG as the "gold standard," they found prolactin to be elevated in all 22 patients with tonic-clonic seizures, 27 of 32 patients with complex partial seizures, and 42 of 146 patients with psychogenic seizures. For tonic-clonic seizures sensitivity was 100% and for complex partial seizures sensitivity was 84.4%. Overall, elevated prolactin occurred in 84.4% of patients with epileptic events and 28.8% of patients with nonepileptic events. Sensitivity and specificity in this study were comparable to the pooled sensitivity (52.6%) and specificity (92.8%) for all epileptic seizures in a previously published American Academy of Neurology Therapeutics and Technology Assessment Subcommittee review of 10 studies.[3]

Because the present study includes a large number of patients evaluated at a single center, it provides useful new information on the utility of serum prolactin as a marker for seizures. Certain study limitations need to be considered. As the authors indicate, the study was retrospective and was performed in a selected population of patients referred to an epilepsy monitoring unit. Obtaining prolactin assay 20 minutes after a seizure in the outpatient setting is difficult, although possible by a finger-stick method.[4] Some conditions that can elevate serum prolactin, such as syncope,[5] are not well represented in video-EEG monitoring populations. The criterion used in this study for identifying elevated serum prolactin is debatable, because different studies[3] require either a doubling over baseline or elevation above some absolute value ranging from 16.5 to 45 ng/mL. The absolute value matters; for example, a doubling of serum prolactin from 1 to 2 ng/mL would not represent an impressive increase. My own view is that prolactin should at least double and achieve a minimum value of 15 ng/mL in order to meet criteria for marking an epileptic seizure. Conditions that affect baseline serum prolactin, such as dopaminergic or neuroleptic medications, pregnancy, or pituitary abnormalities, should be excluded.

The main debatable issue with the findings of this study is the conclusion that "serum prolactin levels do not provide any additional support for distinguishing psychogenic nonepileptic seizures from epileptic seizures." This is an interpretive matter of glass half-full or half-empty. This gloomy interpretation is not supported by the sensitivity and specificity reported in the study. In an epilepsy monitoring unit, prolactin does not provide useful additional information, because the diagnosis is provided (usually) by the video-EEG recording. In other settings, the positive predictive value of a prolactin elevation depends on the a priori likelihood of underlying epilepsy. In certain circumstances, therefore, prolactin

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measurements might be helpful. One such example would be a negative postevent prolactin elevation in an outpatient with apparent tonic-clonic seizures. In less clear circumstances, prolactin values would simply be a piece of the diagnostic puzzle. A diagnosis of epilepsy or seizures primarily depends on history and clinical impression. Every laboratory test, with the possible exception of video-EEG monitoring (and even that is not perfect), is adjunctive, with false-negatives and false-positives. This study provides cautionary information, but it does not rule out a useful contribution by serum prolactin measurements in a suitable clinical context.

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CORRECTION

How neurologists are paid: Part 3: Hospital support, Veterans Administration, and neurohospitalists

In the article "How neurologists are paid: Part 3: Hospital support, Veterans Administration, and neurohospitalists" by P.D. Donofrio et al. (Neurol Clin Pract 2015;5:412-418), there is an error in the section titled "Neurohospitalists." Survey data published in Neurol Clin Pract 2012;2:319–327 were incorrectly cited as unpublished, and the percentage of neurologists who self-described themselves as neurohospitalists should have read 14.7%, rather than 16% as originally published. The authors regret these errors.