## **Clinical commentary**

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## Bilateral synchronous gamma range firing of bulbar motor units during tonic seizures

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- A patient with tonic seizures of the bulbar muscles is presented.
- Video-EEG recording during the multiple attacks showed no ictal EEG abnormalities.
- The tonic seizures were clearly visible as EMG artefacts on the EEG recording and consisted of 3-6 symmetric tonic bursts of EMG activity of 2-4 seconds and an interval of 2-6 seconds. Spectral analysis showed a very distinct, bilateral synchronous, dominant gamma peak in the EMG spectra during the seizures with a cross correlation of 0.67 between left and right without a time lag.





Left panel: muscle artefact from left and right temporal area (T7-P7 and T8-P8) during chewing and at the bottom the corresponding power spectra. Right panel: same channels during tonic seizures. Note the synchronous EMG during the seizure and the abnormal spectra with a sharp peak.



• The highly abnormal EMG patterns in the bulbar muscles during the tonic seizures of this patient, as measured on the scalp showing a strong peak in the power spectra at 53-33 Hz and abnormal bilateral hypersynchrony, are an expression of the abnormal epileptic discharge originating in the motor cortex.

