■ Multimedia teaching material

Epileptic Disord 2022; 24 (6): 1-2

Hypermotor-tonic-spasms seizure sequence related to *CDKL5* deficiency disorder: a typical case

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Received April 16, 2022; Accepted July 16, 2022

VIDEO ONLINE

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doi:10.1684/epd.2022.1480

We herein present a patient born at term without complications who had focal tonic and tonic-clonic seizures by the second month of life. Seizures first responded to phenobarbital. Global developmental delay and axial hypotonia were diagnosed at six months old (not sitting, smiling, or cooing). At nine months of age, a unique seizure sequence of hypermotor-tonic-spasms was noticed during a long-term video-electroencephalography (video-EEG), leading to the clinical suspicion of *CDKL5* deficiency disorder (CDD) based on a previous report [1]. Her interictal EEG did not show interictal discharges, however, the background was slow (3-4 Hz delta) with a consistent posterior-to-anterior gradient of high amplitude (300-400 µV). Due to the high cost of a genetic epilepsy panel during the time of diagnosis (2011), *CDKL5* gene sequencing was ordered, revealing a *de novo* donor splice site mutation in intron 3, c.99+1G>A. This confirmed a pathogenic variant based on a previous report and ACMG classification criteria [2, 3]. CDD is considered a developmental and epileptic encephalopathy, type 2 (OMIM # 300672). CDD presents with a full seizure sequence in 24% of cases, however, a combination of phases (predominantly tonic-spasms) is seen in 57% of patients [4]. Therefore, encountering this sequence could facilitate the care and early counselling of these families when genetic testing is costly or difficult to obtain. ■

Supplementary material.
Summary slides accompanying the manuscript are available at www.epilepticdisorders.com.

Funding.
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors

Disclosures.
None.

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Legend for video sequence

Video sequence 1.

The video depicts a nine-month-old female with a typical hypermotor-tonic-spasms seizure sequence associated with CDKL5 deficiency disorder. From a drowsy-quiet state at the onset of the video, the patient suddenly becomes agitated, exhibiting a very brief hypermotor phase with both hips flexed alternatingly. A tonic phase involving all four limbs occurs simultaneously with bilateral anterior quadrant attenuation on the EEG. This lasts for about 12 seconds, followed by the spasm phase, which lasts for almost five minutes (shortened in the video). The patient cries after each spasm in the first half of the cluster. Settings: low-frequency filter (LFF) at 1 Hz, high-frequency filter (HFF) at 70 Hz, notch ON (60 Hz), timebase at 15 mm/sec, sensitivity at 30 µV/mm.

Key words for video research on www.epilepticdisorders.com
Phenomenology: motor seizure, tonic-spasms
Localization: generalized
Syndrome: epileptic encephalopathy not otherwise classified
Aetiology: genetic

TEST YOURSELF

(1) How frequent is the "hypermotor-tonic-spasms seizure sequence" in patients with CDD (with either a complete or partial sequence)?

A. 15%
B. 35%
C. 57%
D. 77%
E. 100%

(2) Patients with CDD may have other seizure types including absences, atonic, clonic, or spasms.

A. False
B. True

Note: Reading the manuscript provides an answer to all questions. Correct answers may be accessed on the website, www.epilepticdisorders.com.