

Epilepsy in PMS

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Consensus recommendations on Epilepsy in Phelan-McDermid syndrome. Eur J Med Genet. 2023 Jun;66(6):10474

Introduction

PMS and epilepsy: Literature about the association.

Prevalence fever related and non-fever related seizures 20-30%

Life time risk up to 70%. (review 2016)

Fundamental Questions

What is the prevalence of epilepsy in PMS, and is there a specific kind of epilepsy?

What is the mechanism underlying epilepsy in PMS?

What is the treatment for epilepsy in PMS?

Literature summary 1.

Prevalence of epilepsy 14% -70%, increase with age 11% under 5 and 60% > 18 yrs

Type of epilepsy atypical absences, tonic, atonic, tonic clonic and myoclonic

No specific EEG findings. Overnight EEG increase detection epileptiform activity (18 > 75%)

MRI imaging did not explain the type of seizure

Seizures or EEG abnormalities are not associated with regression

Literature summary 2.

Mechanism underlying epilepsy is unknown

Reduced function of inhibitory neurons

Suggestions for polygenic or multifactorial model to explain the epilepsy.

Literature
summary 3.

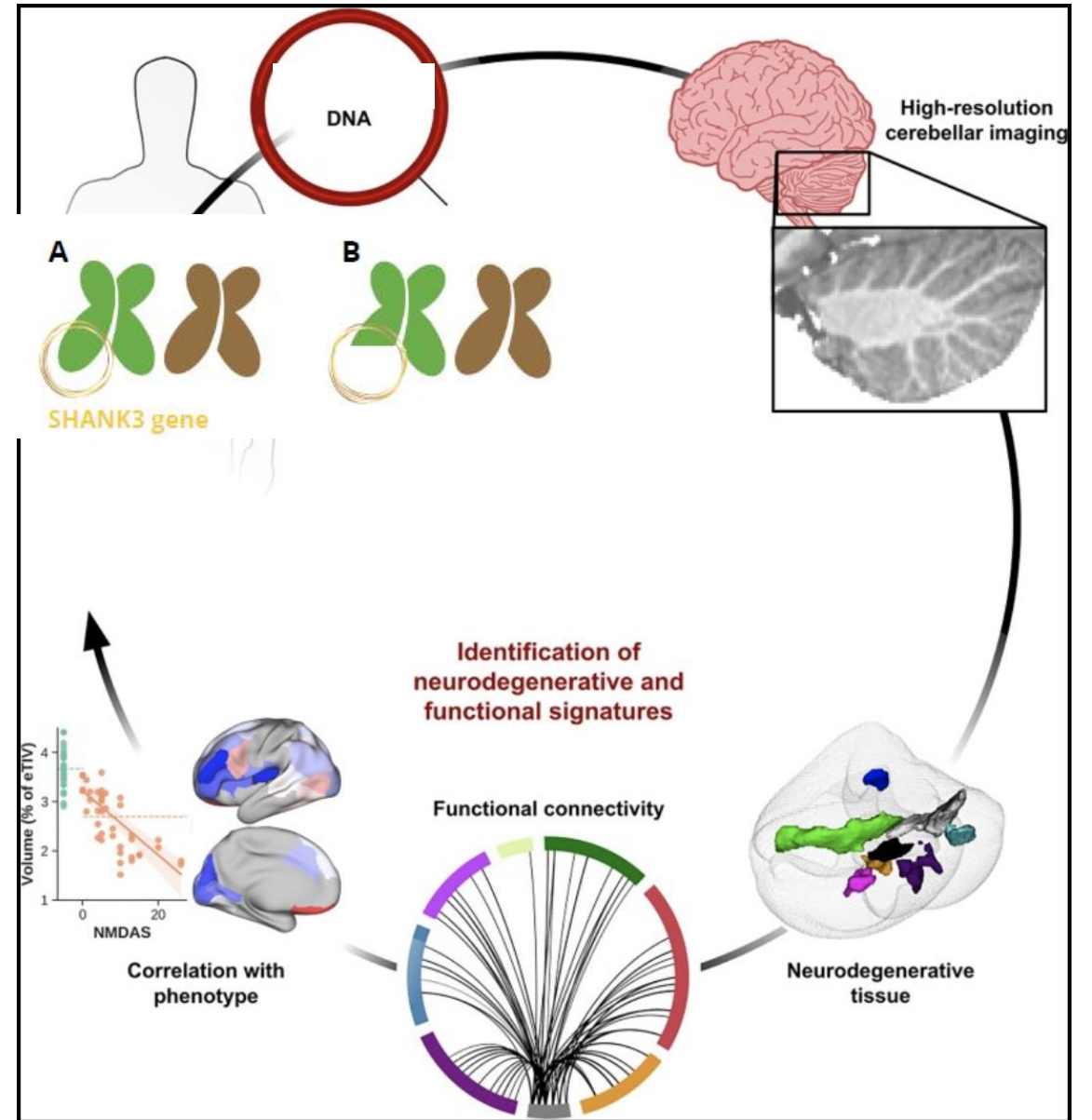
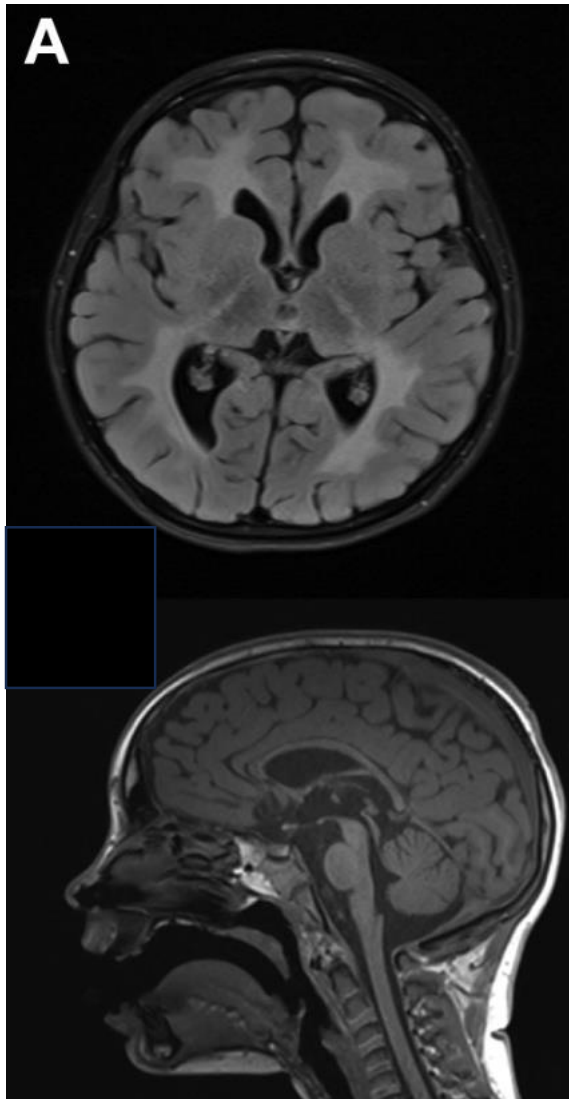
Treatment of epilepsy

No drug has shown
to be most efficient

Conclusions

- 1. Overall prevalence of seizures in PMS is 20-30%, life-time prevalence of up to 70%.**
- 2. All types of seizures, both febrile and non-febrile, can occur in individuals with PMS. The most frequent occurring type is atypical absence seizure. Other seizure types cover tonic, atonic, tonic-clonic and myoclonic semiology.**
- 3. EEG abnormalities can be present in individuals with PMS with and without seizures. The EEG findings are non specific; the most common pattern most commonly seen is a slow background pattern.**
- 4. A deletion of *SHANK3* increases the risk for all type of seizures, irrespective the size of the deletion**
- 5. Larger deletion sizes were associated with a history of abnormal EEG**
- 6. EEG abnormalities and seizures are not associated with an increased risk for regression**
- 7. The response to anticonvulsant treatment in individuals with PMS is not different from individuals without PMS**
- 8. Brain imaging, preferably MRI, is indicated in every individual with PMS who shows neurological signs and symptoms, including seizures**





Haast RAM, De Coo IFM, Ivanov D, Khan AR, Jansen JFA, Smeets HJM, Uludağ K. Brain Commun. 2022 Feb 3;4(1):fcac024

<https://ern-ithaca.eu/documentation/phelan-mcdermid-guideline/>

A. Mingbunjerdasuk D, Wong M, Bozarth X, Sun A. J Child Neurol. 2021 Feb;36(2):148-151



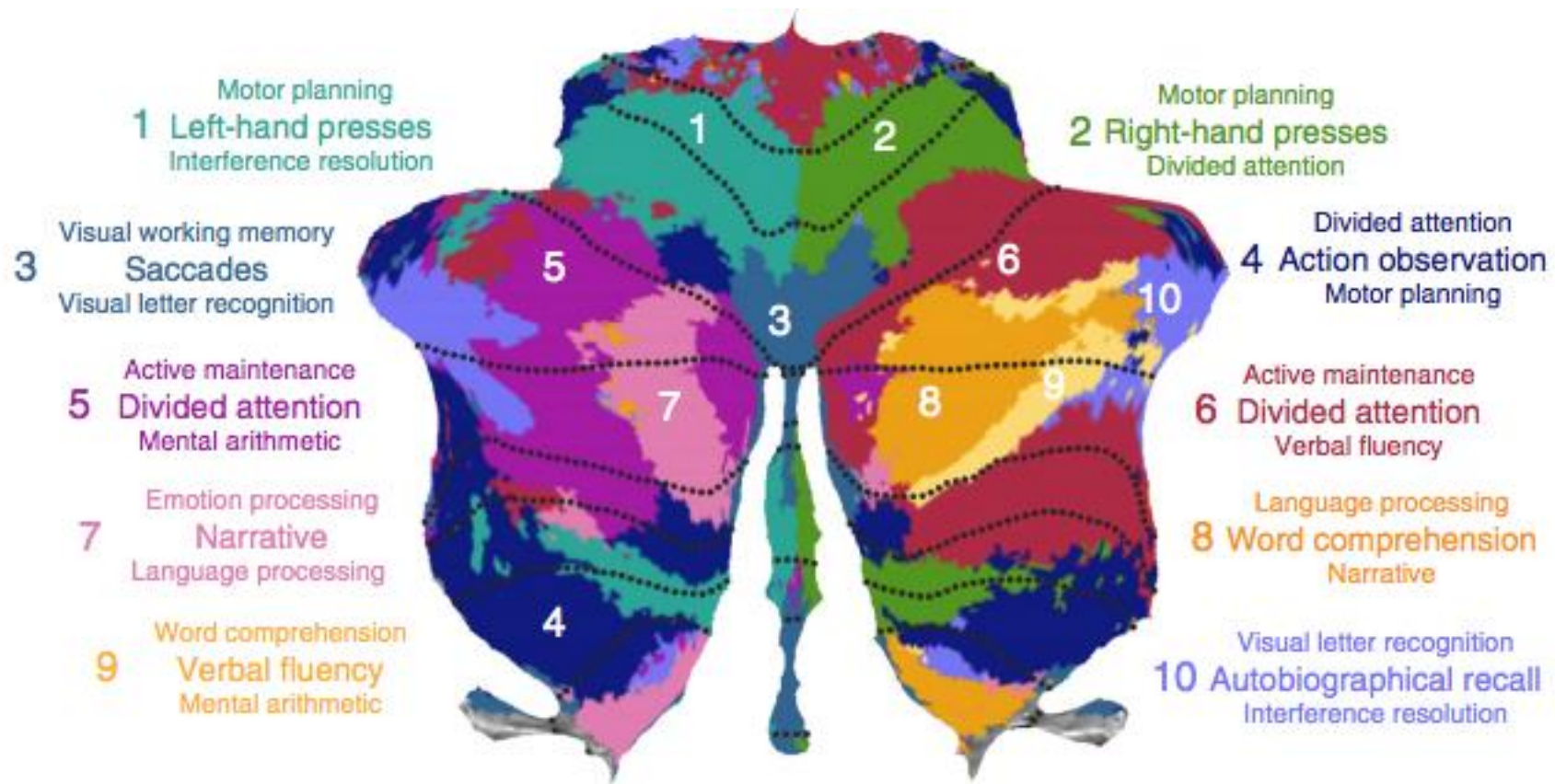


Fig. 5 | Cognitive descriptors for the ten functional regions in the MDTB parcellation. The three features that best characterize each region are listed. The font size indicates the strength of these feature weights.

King M, et al., Nat Neurosci. 2019 Aug;22(8):1371-1378.

Recommendations

- 1. In everyone with PMS, irrespective of age, caregivers should be alert for seizures and epilepsy**
- 2. In everyone with PMS in whom seizures are suspected but EEG studies are non-conclusive, overnight prolonged EEG studies should be considered**
- 3. Brain imaging, preferably MRI, is advised in every individual with PMS who has epileptic seizures, and indicated when new neurological signs and symptoms, including seizures, occur**
- 4. A pediatric neurologist or neurologist should be involved in the therapy for epilepsy**
- 5. Anticonvulsant treatment of epilepsy in individuals with PMS should be provided according to local guidelines (see also ILAE guidelines on <https://www.ilae.org/>).**

Working group, Epilepsy in PMS

- **Thomas Bourgeron, FR**
 - **Carlo Sala, neuroscience, IT**
 - **Sarah Jesse, DE**
 - **Roberto Toro (patient representative), FR**
 - **Linh Thuy-Linh, FR**
 - **Claire Leblond-Manry, FR**
 - **Aline Vitrac, FR**
 - **René de Coo, NL**
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- **European Phelan-McDermid syndrome consortium.**

