

Review article

Population of the ictal-interictal zone: The significance of periodic and rhythmic activity

Emily L. Johnson ^{*}, Peter W. Kaplan*The Johns Hopkins School of Medicine, Department of Neurology, 301 Mason Lord Drive, Baltimore, MD 21224, USA*

ARTICLE INFO

Article history:

Received 17 January 2017

Received in revised form 21 March 2017

Accepted 9 May 2017

Available online 26 May 2017

Keywords:

Ictal-interictal continuum

Periodic discharges

Rhythmic delta activity

ABSTRACT

Seizures contribute to patient mortality and are usually treated aggressively. Rhythmic and periodic patterns – the “ictal-interictal continuum” – are often associated with seizures, yet the optimum method of treating these patterns is not known: should they be aggressively suppressed, or monitored without treatment? Understanding which patterns are more strongly associated with seizures and which are highly associated with mortality is important to help the clinician decide how to treat these findings. We present an overview of the etiologies, association with seizures, and mortality of periodic and rhythmic patterns, and one approach to treatment.

© 2017 International Federation of Clinical Neurophysiology. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Contents

1. Introduction	108
2. Lateralized periodic discharges (LPDs)	109
2.1. Definition	109
2.2. Prevalence	109
2.3. Etiologies	109
2.4. Association with seizures	110
2.5. Imaging and supportive tests	110
2.6. Outcomes	110
3. Bilateral independent periodic discharges (BIPDs)	111
3.1. Definition	111
3.2. Prevalence	111
3.3. Etiologies	111
3.4. Association with seizures	111
3.5. Imaging	111
3.6. Outcomes	112
4. Generalized periodic discharges (GPDs)	112
4.1. Definition	112
4.2. Prevalence	112
4.3. Etiologies	112
4.4. Association with seizures	113
4.5. Imaging	113
4.6. Outcomes	113
4.7. Triphasic waves	113
5. Lateralized rhythmic delta activity (LRDA)	113
5.1. Definition	113
5.2. Prevalence	113
5.3. Etiologies	113

* Corresponding author.

E-mail address: ejohns92@jhmi.edu (E.L. Johnson).

- 5.4. Association with seizures 113
- 5.5. Imaging 113
- 5.6. Outcome..... 113
- 6. Generalized rhythmic delta activity (GRDA)..... 114
 - 6.1. Definition 114
 - 6.2. Prevalence 114
 - 6.3. Etiologies 114
 - 6.4. Association with seizures 114
 - 6.5. Imaging 114
 - 6.6. Outcome..... 115
- 7. Stimulus-induced rhythmic, periodic, or ictal discharges (SIRPIDs) 115
 - 7.1. Definition..... 115
 - 7.2. Prevalence 115
 - 7.3. Etiologies 115
 - 7.4. Association with seizures 115
 - 7.5. Imaging 115
 - 7.6. Outcomes..... 115
- 8. Treatment approach..... 116
- 9. Concluding remarks 117
- Conflict of interest 117
- References 117

1. Introduction

Seizures and status epilepticus carry a high risk of morbidity and mortality. A large seizure burden is associated with unfavorable outcomes after hospitalization; in some settings, every additional hour of seizure recorded on EEG increases the risk of later disability and mortality (De Marchis et al., 2016; Payne et al., 2014). Therefore, recognition of seizures and EEG patterns strongly associated with seizures, is vitally important.

Some EEG patterns are recognizably ictal (i.e., patterns with clinical and EEG improvement after IV AED, epileptic discharges occurring at >2.5 Hz, or those with typical spatiotemporal evolu-

tion (Beniczky et al., 2013)), and some are clearly non-ictal. However, neurophysiologists frequently encounter more ambiguous patterns, with periodic discharges or rhythmic activity found in more than one-third of patients undergoing continuous EEG monitoring in a large multicenter database (Lee et al., 2016). This activity lies on a spectrum now known as the “ictal-interictal continuum (Chong and Hirsch, 2005)” (Fig. 1). These patterns present a challenging management situation, especially in comatose patients.

We will review here the prevalence, etiologies, and outcomes of these patterns (Table 1), as well as an approach to treatment.

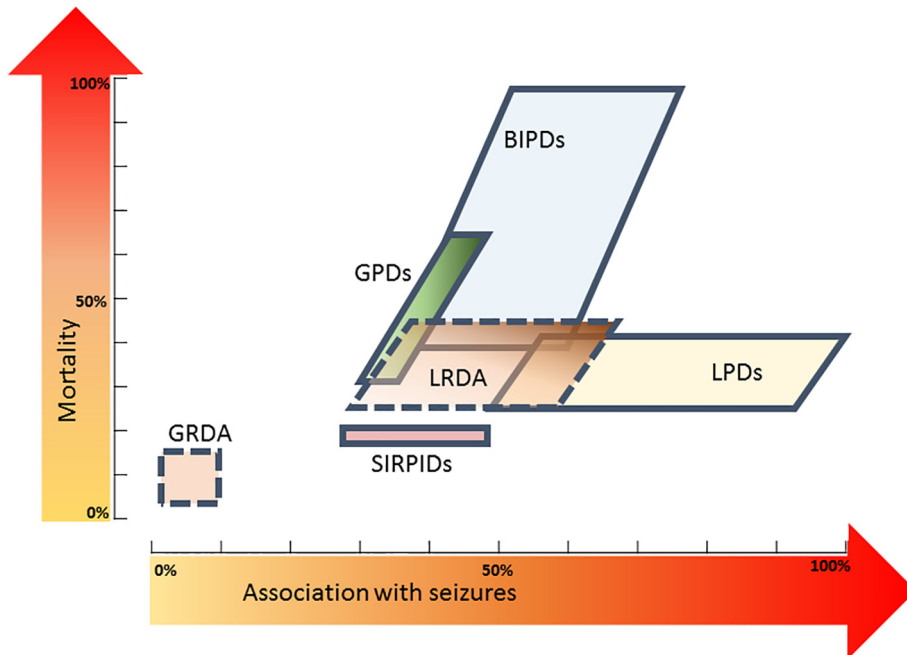


Fig. 1. Quantitative ictal-Interictal Continuum. This figure (inspired by Chong and Hirsch, 2005) shows the reported relative association with seizures and published mortality of patterns on the ictal-interictal continuum. On the x-axis is increasing association with seizures; on the y-axis is increasing mortality. LPDs = lateralized periodic discharges; BIPDs = bilateral independent periodic discharges; GPDs = generalized periodic discharges; LRDA = lateralized rhythmic delta activity; GRDA = generalized rhythmic delta activity; SIRPIDs = stimulus-induced rhythmic, periodic, or ictal discharges. Mortality rates not available for GRDA and LRDA.

Download English Version:

<https://daneshyari.com/en/article/8683335>

Download Persian Version:

<https://daneshyari.com/article/8683335>

[Daneshyari.com](https://daneshyari.com)