American Clinical Neurophysiology Society’s Standardized Critical Care EEG Terminology

TRAINING MODULE

Modified from 2012 Version
Why

- No current consensus on terminology for many periodic, rhythmic, quasi-periodic, quasi-rhythmic, and fluctuating patterns seen in encephalopathic patients.

- No consensus or data on which patterns are associated with neuronal injury, which require treatment, and how aggressively to treat.
Primary objectives

- Develop standardized terminology related to rhythmic and periodic EEG patterns seen in encephalopathic patients (not for neonates)
  - Avoid loaded clinical terms (e.g. triphasic waves)
  - Avoid “ictal”, “interictal” and “epileptiform” for these equivocal patterns (e.g. the E in PLEDs)
Not included in this nomenclature

- **Does not include** _unequivocal electrographic seizures:*
  - GS&W > 3/s
  - Evolving discharges that reach > 4/s

- **Does include** _all other rhythmic and periodic patterns:*
  - GS&W < 3/s
  - Evolving discharges that remain < 4/s
  - *This does not imply that these patterns are not ictal, simply that they may or may not be*
Main Terms for *Rhythmic and Periodic patterns*

- Describe with main term #1 followed by #2, with modifiers added as appropriate.

<table>
<thead>
<tr>
<th>Main term #1</th>
<th>Main term #2</th>
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<tr>
<td>(G) Generalized</td>
<td>(PDs) Periodic Discharges</td>
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<tr>
<td>(L) Lateralized</td>
<td>(RDA) Rhythmic Delta Activity</td>
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<tr>
<td>(BI) Bilateral Independent</td>
<td>(SW) (Poly)Spike- &amp;- Wave/Sharp-</td>
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<tr>
<td>(Mf) Multifocal</td>
<td>and-Wave</td>
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Main Term #1: Optional additional informations

- For the purpose of this nomenclature, the term “generalized” refers to any bilateral, bisynchronous and symmetric pattern, even if it has a restricted field [e.g. bifrontal]]’

- Bifrontal or bioccipital patterns are termed ‘generalized, with frontal predominance’ or ‘generalized, with occipital predominance’

- Patterns that are regional or focal would be called “lateralized”

- Patterns seen bilaterally but clearly more prominent on one side would be called “Lateralized, bilateral asymmetric” (NOT generalized)
Main Term #2

- **PD**: Periodic Discharges
- **RDA**: Rhythmic Delta Activity
- **SW**: Spike-and-Wave, Sharp-and-Wave or Polyspike-and-Wave
Main term 2: Periodic
Main term 2: Rhythmic

Discharge

No interdischarge interval
Main term 2: Spike-and-Wave

Alternating spike and wave

No interdischarge interval
Main terms #1,2 cont’d….

- **NOTE 1**: A pattern can qualify as rhythmic, periodic or spike-and-wave as long as it continues for at least 6 cycles (e.g. 1/s for 6 seconds, or 3/s for 2 seconds).

- **NOTE 2**: If a pattern qualifies as both GPDs and RDA, it should be coded as GPDs+R rather than RDA+.
Generalized Periodic Discharges (GPDs)
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Generalized Periodic Discharges (GPDs)
Lateralized Periodic Discharges (LPDs), unilateral
Lateralized Periodic Discharges (LPDs), unilateral
Lateralized Periodic Discharges (LPDs); despite their spike-and-wave morphology, these are PDs as there is a clear interdischarge interval.
Lateralized Periodic Discharges (LPDs); bilateral asymmetric
Bilateral Independent Periodic Discharges (BIPDs),
Lateralized Rhythmic Delta Activity (LRDA)
GSW (Generalized sharp-and-wave)
GSW (Generalized polysharp-and-wave). The slow wave is consistently preceded by one or two sharp waves; therefore, GSW is preferred over RDA+S. Also, there is no interdischarge interval; therefore, this does not qualify as GPDs.
Summary: Main Terms

- Generalized (G); OR
- Lateralized (L); OR
- Bilateral Independent (BI); OR
- Multifocal (Mf)

AND

- Periodic Discharges (PDs); OR
- Rhythmic Delta Activity (RDA); OR
- Spike-and-Wave or Sharp-and-Wave (SW)
Modifiers

- Prevalence
- Duration
- Frequency
- Phases
- Sharpness
- Amplitude
- Polarity
- Stimulus-Induced (SI)
- Evolving OR Fluctuating
- Plus (+)
Modifiers, cont’d: Stimulus-Induced (SI)

- Repetitively and reproducibly brought about by an alerting stimulus, with or without clinical alerting (may also occur without apparent stimulus--i.e. does not disqualify pattern as SI).

- If never clearly stimulus induced, report as spontaneous.
Generalized Rhythmic Delta Activity (GRDA), frontally predominant

(SI-GRDA since stimulus-induced)
Modifiers, cont’d: **Plus**

Additional feature which renders the pattern more ictal-appearing than the same pattern without the plus:

- **+F** superimposed **fast activity** (theta or faster; for **PDs** or RDA)

- **+R** superimposed **rhythmic** or quasi rhythmic **delta activity** (for **PDs** only)

- **+S** “frequent” superimposed **sharp waves/spikes** (frequent = >1/10s but not periodic and not SW), or **sharply contoured** (for **RDA** only)

- Does not apply to **SW**.
LRDA +S (being less than 4/s, this pattern is included in this nomenclature)
GRDA+S (in this case “+S” refers to “sharply contoured”)
GPDs+R (combination of RDA and PDs; therefore termed PDs+R, not RDA)
Seizure (NCSE; Since its frequency is more than 4/s, this pattern would not be included in this nomenclature)
The End!
Generalized Periodic Discharges (GPDs)
Generalized Periodic Discharges (GPDs)
Lateralized Periodic Discharges (LPDs)
Lateralized Periodic Discharges (LPDs), bilateral asymmetric
GPDs (with triphasic morphology)