

## Retrospective analysis of a neonatal population with seizures: new ILAE classification and etiology

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**Objective.** Seizures are the most common neurological emergency in the neonatal period, with an incidence of 1-5 per 1000 live births. In 2021 the International League Against Epilepsy (ILAE) presented a new classification of neonatal seizure (NS) type and recent studies suggest that clinical features of NS correlate with etiology. The aim of this study is to demonstrate the correlation between certain NS types and specific etiology.

**Materials and Methods.** This retrospective cohort study comprised neonates (gestational age 23+0-44+6 weeks at seizures presentation) with NS confirmed by EEG (electroencephalogram) or aEEG (amplitude-integrated electroencephalography), admitted during a 14-year period to our third level neonatal intensive care unit.

**Results.** A total of 141 patients with confirmed EEG/aEEG NS were included in our study: preterm = 43 (30.5%), term = 98

(69.5%), male = 80 (56.7%), female = 61 (43.3%), mean birth-weight 2771 g (SD 917 g). The mean age at seizure onset was 7.6 days (SD 14.1): 3.4 days (SD 5.6) in term infants and 17.1 days (SD 20.7 days) in preterm infants. The incidence of NS in our centre was 1.1 per 1000 live births. The most common etiologies were vascular disorders (26.2%), hypoxic-ischemic encephalopathy (23.4%), genetic (17%) and infection (15%). NS according to ILAE classification was significantly different between vascular disorders (54.1% clonic seizure), hypoxic-ischemic encephalopathy (48.5% electrographic-only seizure) and genetic etiology (62.5% sequential seizure) (Fisher Exact test  $p < 0.05$ ).

**Conclusions.** Our data confirm the correlation between NS types and specific etiologies. These correlations may help to reach an early etiological diagnosis in patients with NS and to establish an appropriate treatment.