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# Use of the new ILAE axis classification in a pediatric epilepsy clinic in the Indian subcontinent

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*Background and Objective:* One of the authors (SR) had earlier classified cases of pediatric epilepsy as per the syndromic classification 1989.[1] Our intention was to see whether the new axis scheme adds clarity in classification and aids in better management.

*Methods:* Between January 2006 and December 2007, 996 cases were referred, 383 patients were excluded as indeterminate. 613 unequivocal cases of epilepsy were classified as per the new ILAE proposed diagnostic scheme[2] on four axes. Seizure semiology, detailed examination, EEG and follow-up were used for categorizing, with neuro-imaging performed when feasible.

*Results:*
*Axis 1***:** 613 patients had total of 813 epileptic phenomena**,** 571 (70%) were motor manifestations, amongst which GTC was commonest (50%) followed by tonic motor (15%) and myoclonic (10%). 8.8 % phenomena could not be classified.

*Axis 2:* Out of 682 seizure types, secondarily generalized (46%) was predominant, followed by generalized (25.6 %) and focal motor (8.8 %). 10.4% seizures could not be classified.

*Axis 3:* The most frequent category included patients with identifiable etiology and/or focus on EEG or neuro-imaging, classified as symptomatic focal epilepsy (39.2%). Patients with remote neurological insult but no focus on EEG or neuro-imaging were classified as probably symptomatic focal epilepsy (27.4%). A specific syndrome was identified in 15% of patients, mainly West syndrome (5.2%), followed by BECTS (2.2%). 2.9% patients could not be ascribed to any syndrome.

Lacunae in the current classification precluded inclusion of the following groups:

1. 7.5% patients with generalized seizures, no etiological factor and no focus on EEG/ neuro-imaging; were grouped by us as idiopathic generalized epilepsy with generalized tonic clonic seizures only.
2. 4.8% patients with generalized seizures, generalized abnormalities on EEG but who did not conform to the known idiopathic generalized epilepsy syndromes i.e. juvenile absence epilepsy, juvenile myoclonic epilepsy etc. were classified by us as idiopathic generalized epilepsy with variable phenotype.
3. In the absence of genetic studies, patients who had febrile as well as afebrile seizures with family history of seizures were classified as GEFS+ (2.9%).

*Axis 4:* Etiology could be determined in 59% patients, mainly perinatal insult (hypoglycemia, sepsis, low birth weight etc in 20%) followed by birth asphyxia and hypoxic-ischaemic encephalopathy (HIE, 12.6%) and primary mental retardation (9%).

*Discussion and Conclusion:* One other study by Akiyama[2] which used axis 2 and 3 was comparable to our results particularly for specific syndromes in Axis 3. They did not use the category of symptomatic/ probably symptomatic focal epilepsy. These patients were left unclassified.

The Diagnostic Scheme is an excellent attempt to categorize seizures, epilepsies and syndromes utilizing etiology. However there are issues to be deliberated. The age of onset of seizures and the point-time of diagnosis has received little attention. In *Axis 1:* Detailed ictal semiology appropriate for

adults and surgical candidates with aura is difficult to elicit in children. It is less user-friendly. New terms should be coined for seizures presenting with only impairment of consciousness, uprolling of eyes, blackouts etc. *Axis 2:* We find duplication between the terms in axis 1 and axis 2, and suggest both be combined to make a more composite user-friendly axis that can be customized to the requirements of the application. E.g. "secondarily generalized seizure" may be used for individuals or community based study; and phenomena like aura, automatisms etc. detailed when required for pre-surgical evaluation, drug trials, research etc. *Axis 3:* The separate category of epileptic encephalopathies is mandatory as they include a group of disorders with similar course, prognosis and response to treatment. A distinct intermediate group between the 'partial' and 'generalised' categories is required to classify the patients on the basis of severity of EEG changes, e.g. those having bilaterally symmetrical, hemispheric or multifocal abnormalities. *Axis 4* is of help in understanding current co-morbidities and to prognosticate and plan preventive strategies. Advanced neuro-imaging, metabolic and genetic studies will decrease the proportion of unclassified patients.

## References


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