ETHIOPIAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 12, Issue 07, July-2025 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980 2024: 7,662

EPILEPSY IN CHILDREN: LITERATURE REVIEW

Kamoldinova D.B.

Assistant Department of Neurology of ASMI

Abstract. Epilepsy is one of the most common neurological disorders in children, characterized by a tendency to recurrent unprovoked seizures due to excessive neuronal activity in the brain. The condition exhibits a wide spectrum of clinical manifestations, forms, and degrees of severity. Early diagnosis, proper classification of seizures, and adequate therapy play a crucial role in the disease prognosis and quality of life of the patient. This review presents modern approaches to the classification, diagnosis, and treatment of epilepsy in children, discussing genetic and structural causes, clinical features, as well as the role of neuroimaging and electroencephalography in confirming the diagnosis.

Keywords: epilepsy, children, seizures, electroencephalography, treatment, diagnosis.

Introduction. Epilepsy in children is a chronic neurological disorder characterized by recurrent convulsive or non-convulsive seizures arising from abnormal neuronal activity. According to the WHO, the prevalence of epilepsy among children reaches 5–8 cases per 1,000 of the pediatric population. The condition may manifest at any age, including the neonatal period, and requires a multidisciplinary approach to diagnosis and treatment.

Epidemiology. Epilepsy most often presents in childhood and adolescence, especially within the first three years of life. According to international studies, about 50% of all epilepsy cases begin before the age of 10. The risk of developing epilepsy is higher in children than in adults due to increased neuronal excitability, immaturity of the central nervous system, and genetic predisposition.

Classification of Childhood Epilepsies

According to the classification of the International League Against Epilepsy (ILAE, 2017), childhood epilepsies are categorized based on:

By type of seizures:
- Focal (partial)
- Generalized
- Unknown

By etiology:
- Genetic
- Structural
- Metabolic
- Immune
- Infectious
- Idiopathic

By clinical course:

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 12, Issue 07, July-2025 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980 2024: 7,662

- Benign (e.g., Rolandic epilepsy)
- Malignant (e.g., Lennox–Gastaut syndrome, West syndrome)

Etiology

The etiology of epilepsy in children is diverse. In early childhood, the main causes include:
- Genetic mutations (e.g., SCN1A, CDKL5)
- Perinatal trauma
- Congenital malformations of the brain
- CNS infections (encephalitis, meningitis)
- Metabolic disorders (e.g., pyridoxine-dependent epilepsy)
- Idiopathic epilepsy (with no obvious cause)

Clinical Presentation

Symptoms depend on the form of epilepsy and the localization of pathological activity:
- Focal seizures: unilateral twitching, sensory symptoms, perceptual disturbances
- Generalized seizures: tonic-clonic convulsions, absences, myoclonus
- Infantile spasms: clusters of sudden flexion movements of the trunk, typical for West syndrome
- Atypical forms: diagnostic challenges, especially when combined with delayed psychomotor development

Diagnosis

Diagnosis of epilepsy in children requires a comprehensive approach:
1. Clinical history: detailed characterization of seizures, timing, and triggers
2. EEG: primary method for detecting epileptiform activity
3. Neuroimaging (brain MRI): used to exclude structural abnormalities
4. Metabolic and genetic tests: in suspected congenital or drug-resistant forms
5. Video EEG monitoring: particularly useful in ambiguous clinical cases

Treatment

The main goal of therapy is to achieve remission and prevent the development of cognitive impairments. Approaches include:
- Pharmacological therapy:
  - First-line drugs: valproates, levetiracetam, lamotrigine
  - Drug choice depends on seizure type and age
- Ketogenic diet: effective in pharmacoresistant forms
- Surgical treatment: considered for structural epilepsy (e.g., focal cortical dysplasia)
- Neurostimulation (vagus nerve stimulation): an alternative in inoperable cases

Prognosis and Course

Prognosis depends on the form of epilepsy, age at onset, and timeliness of treatment:
- Benign forms: often resolve by adolescence
- Malignant forms: often resistant to treatment and associated with severe cognitive impairment
- With properly selected therapy, 60–70% of children achieve complete remission

Psychosocial Development

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 12, Issue 07, July-2025 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980 2024: 7,662

Children with epilepsy often experience:
- Attention, memory, and learning difficulties
- Emotional instability
- Social isolation and low self-esteem

Early corrective intervention, family support, and psychological adaptation are essential aspects of patient management.

Conclusion

Epilepsy in children is a complex and heterogeneous disorder requiring an individualized approach to diagnosis and treatment. Advances in molecular genetics, improved neuroimaging techniques, and new antiepileptic drugs have significantly improved patient outcomes. Key to success remains early detection, timely treatment initiation, and continuous interdisciplinary monitoring.

References:

1. Fisher R.S., et al. Operational classification of seizure types by the International League Against Epilepsy. Epilepsia. 2017.

2. Berg A.T., Cross J.H., et al. Classification of the epilepsies: New concepts for a new era. Epilepsia. 2017.

3. Wirrell E.C., et al. Incidence and classification of epilepsy in childhood. Epilepsia. 2011.

4. Guerrini R. Epilepsy in children. Lancet. 2006.

5. Camfield P., Camfield C. Incidence, prevalence and aetiology of seizures and epilepsy in children. Epileptic Disord. 2015.

6. Specchio N., Curatolo P. Pediatric epilepsy: Diagnosis and therapy. Italian Journal of Pediatrics. 2009.

7. Cross J.H. Epilepsy in the WHO European Region: Fostering epilepsy care in children and adolescents. Epilepsia. 2014.