

Review Article

Seizure Disorders in Children with Special Needs, Approach to Management

Khalid Ibrahim*

Senior Attending Pediatric Neurologist, Sidra Medicine, Doha, Qatar

***Corresponding Author:** Khalid Ibrahim, Senior Attending Pediatric Neurologist, Sidra Medicine, PO Box 26999, Doha, Qatar, E-mail: kibrahim@sidra.org

Received: 19 May 2020; **Accepted:** 01 June 2020; **Published:** 05 June 2020

Citation: Khalid Ibrahim. Seizure Disorders in Children with Special Needs, Approach to Management. *Journal of Pediatrics, Perinatology and Child Health* 4 (2020): 038-041.

Abstract

Seizure is a common symptom in the pediatric age group. The prevalence of seizure disorder is higher in children with special needs. Seizures, their etiology, associated comorbidities, their treatment and the other management needs do have an impact on these children's quality of lives, their educational needs, provision of other care needs as well as impact on their caregivers. This review gives, an overall assessment of seizure disorder in the group of children with special needs, highlighting the challenge in diagnosis, selection of therapeutic agents, the impact on education, the need for comprehensive care plans as well as the combined effect of seizures and the associated underlying comorbidities on these children and their families.

Keywords: Seizure disorder; Epilepsy; Special needs; Management

1. Introduction

Seizure is a rather common presenting symptom in children with 4% of children have one seizure and 1% have two or more. The overall prevalence of epilepsy in children has been reported to be around 3 to 5.7/1000 in different studies. The incidence of learning difficulties in children is about 0.3-0.8% and 20-30% of them may have epilepsy [1-3]. Symptomatic seizures were reported in significant percentage of school children with epilepsy and focal seizures are the more prevalent [4, 5]. Children with epilepsy have higher incidence of learning difficulties (35%). The majority of seizures start in the first or second year of life [6]. The increased incidence of epilepsy in cerebral palsy was recognized from the days of Freud more than 100 years ago. Nearly 50% of CP children develop epileptic seizures. This depends on the type of CP and the degree of involvement of the grey matter. The prevalence of

epilepsy is higher in children with language and communication disorders, including the autism spectrum disorders. A figure ranging from 14-25% has been quoted [7]. The incidence of seizures in autism increases during puberty. 20-30% of adolescents with autism are found to have seizures.

2. Facts and Observations

- There is a higher incidence of behavioral disorders in children with disabilities. These can mimic seizures and can have an impact in management [8].
- The management of children with disabilities involves different agencies.
- The seizure disorders in these special groups and the psychosocial impact can be lifelong [9].
- Seizures, including subclinical ones, can affect the cognitive functions of children with hemiplegic CP.

3. Etiological Consideration

- Most of the seizures are either symptomatic or remote symptomatic.
- Seizures can be part of the underlying metabolic, genetic or chromosomal abnormalities.
- Positive family history increased the risk of epilepsy in CP.
- Neonatal seizures also increase risk.
- Seizures induced by therapeutic interventions e.g. Baclofen introduction or sudden withdrawal.
- Hypoxia/Anoxia related e.g. reflux, choking.
- Trauma.
- Munchausen by proxy, NAI or self-inflicted.
- Consider pain and other stresses as triggers.

4. Clinical Presentation

- Seizure occurs more in quadriplegic and hemiplegic CP.
- Less frequent in athetoid and diplegic and usually very less so in ataxic.
- Epilepsy is more in right hemiplegia compared to left.
- Generalized tonic-clonic, tonic, atonic (drop), myoclonic (reflex), complex absences as well as infantile and epileptic spasms can be seen [6].
- Focal seizures with or without secondary generalization do occur.
- Complex partial seizures are frequently reported especially in the hemiplegic CP.
- Onset at an earlier age in tetraplegic compared to other forms.
- Non-convulsive seizures are important, as manifestations are not easy to spot. It can present as behavioral arrest, impairment of awareness (less interactive or responsive, lethargic and sleepy), excessive drooling and or loss of tone e.g. poor head control. Also lack of interest in feeding and other enjoyments.
- Self-stimulating seizures and other induced activities are common. E.g. in pattern or photosensitive seizures. Also beware of self-gratification.

5. Diagnosis and Investigations

- History from parents or carers including teachers.
- Video recording is invaluable in this group of children.
- Clinical assessment is helpful in localization and interpretation of the movements.
- Co-morbidities like reflux and other sources of pain and distress e.g. spasticity, constipation, UTI, dislocations and fractures.

- EEG is very helpful, especially in non-convulsive seizures.
- Brain imaging, either CT acutely but MRI is the preferred imaging choice.
- Others e.g. Biochemistry, drug levels and PH study.

6. Approach to Management

6.1 Acute management and special considerations

- **Management Plan:** Prepared, beforehand, for each child [10, 11].
- **First Aid:** Precautions for the special seating, head support, plaster casts and jackets. Beware of seizures occurring during therapy e.g. frames and hydrotherapy.
- **Rescue medications:** Buccal Midazolam and Rectal Diazepam. The latter can be used for the younger age group, but it has a lot of limitation in children with physical disabilities and children in wheelchairs [10, 12].

7. Antiepileptic Drugs

- Selection of AED depends on the type of the seizure and occasionally on the underlying etiology and other comorbidities.
- Special attention should be paid to the formulation considering route of administration (NG, PEG or rectal) [13].
- Drug interactions, as these children can be on more than one medicine.
- Side effects. Sleepiness interfering with therapy, effects on bones and hygiene e.g. dental.
- For focal or focal with generalization, Carbamazepine, Oxcarbazepine, Topiramate and Levetiracetam are good options [13].
- For generalized seizures, Sodium Valproate, Levetiracetam, Clobazam and Topiramate are some of the usual selections with some of the

children end being tried on other medications like Rufinamide, Zonisamide etc. [13].

- Phenytoin and Phenobarbitone are usually given initially (in the acute stage) to control prolonged seizures and status but a lot of children end on them for longer periods, despite the concern about some of their long term side effects.

8. Other Approaches

- Ketogenic diet is a useful option especially when seizures become resistant to polytherapy and with significant number of those children are on gastrostomy feeds which makes diet compliance and acceptance easier.
- Epilepsy surgery for selected cases.
- Vagus Nerve Stimulator.
- No treatment!!
- Psychiatric and psychological input. Helpful in non-epileptic events, like panic attacks.
- Consider the impact of seizures on quality of lives of patients and carers.

9. Factors affecting management outcome

- Underlying pathology, e.g. structural or metabolic. May necessitate prolongation of treatment courses.
- Timing of medication administration. The need to involve schools or other special institutes.
- Cortical, non-vascular, frequent and multiple types of seizures usually predict pharmacoresistance.
- There seems to be a strong relation between the degree of cognitive impairment and the epilepsy.
- Good communication between all professionals involved in the care of this group of children.

References

1. Corbidge P. Teacher training-attitudes towards epilepsy. In Eds.: Oxley J and Stores G. *Epilepsy and Education*. London, Education in Practice (1987): 31-34.
2. Steffenberg U, Hedstrom A, Lindroth A, et al. Intractable epilepsy in a population-based series of mentally retarded children. *Epilepsia* 39 (1998): 767-775.
3. Tidman L, Saravanan K, Gibbs J. Epilepsy in mainstream and special educational primary school settings. *Seizure* 12 (2003): 47-51.
4. Waaler PE, Blom BH, Skeidsvoll H, et al. Prevalence, classification, and severity of epilepsy in children in western Norway. *Epilepsia* 41 (2000): 802-810.
5. Kramer Y Nevo, Neufeld MY, Fatal A, et al. Epidemiology of epilepsy in childhood: a cohort of 440 consecutive patients. *Pediatric Neurology* 18 (1998): 46.
6. Singh P, Jagirdar S, Khandelwal N. Epilepsy in Children With Cerebral Palsy. *J Child Neurol* 18 (2003): 174-179.
7. Canitano R. Epilepsy in autism spectrum disorders. *Eur Child Adolesc Psychiatry* 16 (2007): 61-66.
8. Somoza MJ, Forlenza RH, Brussino M, et al. Epidemiological survey of epilepsy in the special school population in the city of Buenos Aires. A comparison with mainstream schools. *Neuroepidemiology* 32 (2009): 129-135.
9. Camfield L Breau P Camfield. Impact of pediatric epilepsy on the family: a new scale for clinical and research use. *Epilepsia* 42 (2001): 104.
10. Lanfear C Rashid. Who cares for students with epilepsy in mainstream education? *Seizure* 7 (1998): 189.
11. Swiderska N, Gondwe J, Joseph J, et al. The prevalence and management of epilepsy in secondary school pupils with and without special educational needs. *Child Care Health Dev* 37 (2011): 96-102.
12. McIntyre J, Robertson S, Norris E, et al. Safety and efficacy of buccal midazolam versus rectal diazepam for emergency treatment of seizures in children: a randomised controlled trial. *Lancet* 366 (2005): 205-210.
13. Appleton R. Antiepileptic drug treatment in children. *The Pharmaceut J* 295 (2015).



This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC-BY\) license 4.0](https://creativecommons.org/licenses/by/4.0/)