

## Profile of Children with Epilepsy in a Tertiary Care Center in North-West India

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### Abstract

**Objective of the study:** The study was undertaken to see the age association, sex preponderance and pattern of epilepsy in North West India.

**Methodology:** This is a prospective hospital based study conducted in a tertiary care center in North-West India. Cases fulfilling the definition of epilepsy as defined by ILAE were selected. Hundred such children between 1 and 15 years age with epilepsy were selected over a period of 1 year. Data were analyzed in reference to age, sex, age at occurrence of first seizure and pattern of epilepsy.

**Result:** Out of 100 epileptic patients most patients were between 1-10 years age. Mean age at first seizure was 4.18 years. Males were commonly involved with a male to female ratio being 2.1:1. Generalized epilepsies were more common than focal epilepsies (81% vs 19%).

**Conclusion:** In this part of India also mean age at onset of epilepsy is younger. Males are more involved than females. Generalized epilepsy is more common than focal epilepsy.

**Key Words:** Children, Epilepsy, North-West India.

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### Introduction

Epilepsy is a non-communicable disease affecting children as well as adults. There are 50 million people living with epilepsy worldwide and most of them reside in developing countries.<sup>1</sup> Fear, misunderstanding, discrimination and social stigma have surrounded epilepsy for centuries. Some of the stigma continues today in many countries and can impact the quality of life of people with the disorder and their families. Epilepsy is a disorder of the brain characterized by an enduring predisposition to generate seizures and by the neurologic, cognitive, psychologic, and social consequences of this condition. For epidemiological and commonly for clinical purposes, epilepsy is considered to be present when 2 or more unprovoked seizures occur in a time frame of longer than 24 hours.<sup>2</sup> Epilepsy occur in many forms which are broadly categorized into generalized and focal epilepsies. Treatment differs depending on the type of epilepsy. This study was undertaken to see epilepsy in relation to age, sex, and mean age at

initial seizure, pattern of seizure. The study was conducted in a tertiary care hospital in North-West part of India which receives patients from rural as well as urban locality (Bikaner and villages nearby) and also from cities included in Bikaner Zone.

### Material and Method

This is a prospective, hospital based study performed in the Department of Paediatrics, S.P. Medical College & Associate Group of Hospitals, Bikaner from January 2014 to January 2015. Patients were recruited from inpatient as well as outpatient departments. Case selection was done in children between 1 and 15 years age on the basis of detailed history, clinical examination and relevant investigations like electroencephalography, Neuroimaging, blood biochemical studies (e.g. ionic Calcium) as required.

Cases of neonatal seizures, single unprovoked seizure, provoked seizures (e.g. febrile seizures), seizures due to metabolic disturbances (e.g. hypocalcemic seizures etc.) and those with

established neuropathology (e.g. meningitis, tuberculoma, neurocysticercosis, tubercular meningitis etc.) were excluded from the study. The diagnosis of epilepsy was made if the child had at least two unprovoked seizures. If child had multiple seizures in a 24 hours period, it was considered to be single episode. Milestones of children were assessed under various domains of development in all epilepsy patients and mental retardation was defined as a mental development (IQ) of  $\leq 70$ .<sup>3</sup> All collected data was tabulated and statistically analyzed by using SPSS software.

## Results

Analysis of data of 100 epileptic paediatric patients revealed following : 41% patients were in 1 to 5 years age group, 40% were in 5-10 years age group and rest 19% were adolescents aged 10 to 15 years i.e. most patients with epilepsy were relatively young (1-10 years). There were 68 (68%) males and 32(32%) females with a male to female ratio of 2.1:1. Mean age at occurrence of first seizure was 4.18 years. Detailed developmental history under various domains of development detected 15 patients who had developmental delay. Rest 84 patients were having a normal development. One patient had regression of milestones. Most of the patients had generalized seizures (81%) including generalized tonic clonic, generalized tonic, absence, myoclonic, myoclonic astatic while others (19%) had focal seizures including rolandic epilepsy and complex focal seizures. Electroencephalographic abnormalities were found in 77 of these patients, in the form of generalized discharges (68%), 3 Hz spike and wave discharges (4%), centro-temporal spikes, paracentral spike and wave pattern and other focal pattern (5%).

## Discussion

There is variation among various studies in reference to age at onset, sex predominance, type of seizure activity.

**Age at occurrence of first seizure:** In our study mean age at first seizure was 4.18 years. This was comparable to study by Topbas et al with age of onset in their study being  $3.9 \pm 4.2$  years.<sup>7</sup> Similarly mean age at initial seizure was 4 years in the study by Sidenvall et al.<sup>6</sup> In the study by Kramer et al from Israel 64% of patients had onset in 2-10 years of age.<sup>8</sup> In the study by Shawki et al 78% of the cases of epilepsy developed their first seizure

before age 12 years of age.<sup>9</sup> In the study done at Kathmandu Medical College Teaching hospital by Shakya KN et al 40% patients had their first seizure between 2 and 5 years age.<sup>10</sup> In the study by Anne T. Berg et al the median age at the time of first seizure was 5.3 years.

**Sex preponderance:** Our study had a male to female ratio of 2.1:1. Other studies as by Wong et al, Karabiber et al also found male preponderance.<sup>4, 5</sup> In contrast, the studies by Sidenvall et al and Topbas et al showed a female preponderance for epilepsy.<sup>6, 7</sup>

**Type of Seizures:** Most of our study patients had generalized seizures (81%), while focal seizures were seen in only 19% patients. Study on prevalence of epilepsy in children and adolescents by Cowan et al also revealed more prevalence of generalized epilepsy than focal.<sup>11</sup> In the study done at Kathmandu Medical College Teaching hospital by Shakya KN et al, generalized seizures (78%) were 3.54 times commoner than partial seizures. Malik et al also found generalized seizures (78%) commoner than partial seizures.<sup>10</sup> This was in contrast to study by Topbas et al who found partial (now called focal) seizures to be more common in their study population.<sup>7</sup>

In the present study 15% patients were mentally retarded. In the study done by Sidenvall et al 21% patients had mental retardation. Percentage was much higher (80%) in the study by Malik et al and these patients had severe mental retardation.<sup>12</sup>

## Conclusion

In paediatric age generalized epilepsy is more common than focal epilepsy. Males are twice more commonly involved than females and epilepsy has an early age of onset mostly in first 5 years of life.

**Conflict of Interest: None**

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