RISK FACTORS OF EPILEPSY IN CHILDREN

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ABSTRACT

Aim and objective: To determine the risk factors in children with epilepsy.

Material and methods: This study was carried out in the Pediatric Outdoor patient in the department of Kuwait Teaching Hospital Peshawar, Pakistan. The study period was one year from 2012-2013. This was a descriptive observational study. All children presented in OPD with unprovoked seizures during last 5 years were included during study period. Patients with febrile seizure or focal deficit were excluded from study. Data was collected on the specially designed Performa and the risk factors were identified among the patients.

Results: We enrolled 193 patients as a whole. 19 were excluded from the study as EEG was normal in these patients. In our study about 46% of parents of patients were close relatives with 27.5% having family history of epilepsy. Perinatal risks include history of prolong labour in 25% of cases with meconium staining in 3% and history of delayed cry in16.6%. New born distress was present in 54.55% of cases. Post natal CNS infection was in 8.6 % of cases while history of head trauma was significantly present in 18.9% of cases. 48% was having history of developmental delay manifestation to variable extant.

Conclusion: Perinatal distress, family inheritance and head trauma were strongly associated with epilepsy which later on might manifest in the form of developmental delay or epilepsy syndrome. Early onset epilepsy was mostly associated with perinatal distress.

Key words: Risk factors, epilepsy, children.

INTRODUCTION

Epilepsy is a common neurological disorder in childhood and can have a major impact on a child's development[1, 2]. Epilepsy affects all age groups but more common in very young and old age. Epilepsy in childhood carries variety of issues including social stigma, health problems, learning problems and economical burdens for family[3,4]. Some people have associated disabilities or additional health problems which influence the etiology, prognosis, prevention of seizures, and management of the disease[5,6]. Approximately 70% of the children who suffer epilepsy during their childhood eventually out grow it. Children with epilepsy generally have normal intelligence but epilepsy can effect child education there by leading to trouble learning and low grades[2,4,6]. Often, the cause of a seizure is never identified; but certain factors have been associated with a higher-than-average risk. Perinatal insults such as hypoxia, metabolic derangement, and central nervous system (CNS) infections are important modifiable risk factors of epilepsy[7, 8]. Although common but association of risk factors in our area is not well defined. Perinatal factors have been suspected to predispose to childhood epilepsy. But the observations in epidemiological studies had been rather negative or conflicting. Identification of such risk factors for epilepsy in children would be the first step in the direction of prevention of epilepsy[9,10].

It is likely that precise identification of the risk factors for epilepsy would enable us to develop strategies to prevent it. Our objective in this study was to ascertain the risk factors in children with epilepsy.

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MATERIAL AND METHODS

This study was carried out in the Pediatric Outdoor patient in the department of Kuwait Teaching Hospital Peshawar, Pakistan. The study period was one year from 1st January 2011to 31st December 2012. This was a descriptive observational study. We enrolled all consecutive children from two months to 12years who presented in outpatient department with history of unprovoked seizure within the previous 5 years. Formal informed consent was not obtained from the guardians of the children but informal verbal consent taken. Those children having febrile seizure or focal deficit were excluded from study. The children were assessed on preformed structured questionnaire which contain all information regarding prenatal, postnatal and other related history with detailed physical examination including development assessment. EEG was done in all patients for the confirmation of diagnosis.

With regard to the various risk factors, we used the following operational definitions: (a) stay in the new born intensive care unit for 1 or more days as indicator of advanced resuscitation of the newborn; (b) history of significant head trauma: A witnessed or documented head trauma associated with amnesia

or loss of consciousness; (c) history of CNS infection: Documented history of meningitis or encephalitis confirmed by CSF examination; (d) neurocutaneous markers: presence of Café-au-lait spots, ash leaf macules, or shagreen patches; (e) newborn distress: Presence of any two of the following: (i) delayed cry after birth, (ii) prolonged labor more than 6 hours, (iii) meconium stained amniotic fluid, (iv) cyanosis, (v) incessant cry, and (vi) need for newborn resuscitation. The clinical data of the children were abstracted from their medical records. All the data were exported to an Excel spread sheet and were analyzed.

RESULTS

We enroll 193 patients as a whole. 19 were excluded from the study as EEG was normal in these patients. Mean age in the children was 4.6 years and mean age of onset of epilepsy was 3.7 years. Among 174 patients 99 were male and 75 were females. Mean age of mothers in the study was 32.4 years. In our study about 46% of parents of patients were close relatives with 27.5% having family history of epilepsy. Regarding maternal factors hypertension was there in10.30% while gestational diabetes was present in 6.35%. Antenatal specific drug exposure was narrated in 5.7% of mothers. Perinatal risks include history of prolong labour in 25% of cases with meconium staining in 3% and history of delayed cry in16.6%. Admission in NICU was in 27% of patients for multiple reasons, as a whole new born distress was present in 54.55% of cases. Post natal CNS infection was in 8.6 % of cases while history of head trauma was significantly present in 18.9% of cases. 48% was having history of developmental delay manifestation to variable extant.

Table: Risk factors of epilepsy in children

PARAMETERS	NO. PATIENTS	PERCENT AGE
New born distress	95	54.50%
Developmental delay	84	48%
Consanguinity	80	46%
Family history	48	27.50%
Admission in NICU	47	27%
Prolong Labour	44	25%
Head trauma	33	18.90%
Delayed cry	29	16.6%
Pre&posterm delivery	22	12.60%
Maternal hypertension	18	10.30%
Cyanosis	18	10.30%
CNS infection	15	8.60%
Gestational diabetes	11	6.30%
Drug exposure	10	5.70%
Neurocutaneous	9	5.10%

DISCUSSION

In our setup most of the deliveries are still carried out at homes or small clinics where events are not properly documented. That's why some of the data was based on total recall of the mother. While those deliveries that carried out in tertiary care hospital records were available with them. In our study four groups of risk factors were identified (1) familial clustering (2) maternal (3) perinatal and (4) postnatal factors. Several factors were found to be significantly association with epilepsy. In our study developmental delay, perinatal distress, familial history and head trauma was found to have significant association with epilepsy. In many of the patients multiple factors were found simultaneously.

Consanguinity leads to an increase in the incidence of monogenic recessive disorders including epilepsy. In our setup interfamily marriages are common in successive generations, which are associated with many other familial disorders, are also associated with epilepsy. A family history of epilepsy in close relations was obtained in 27% of the cases, and the consanguinity rate among the parents was 46%. A study conducted in Saudi Arabia also showed a family history of epilepsy in close relations in 23% of the cases, and the consanguinity rate among the parents was 53%. This is because cousin marriages are more common in Muslim countries[11,12].

Perinatal factors were the other major risk after inherited predisposition. In our setup most of the deliveries are conducted at homes or small clinics under supervision of untrained staff and poor hygienic setup. This lead to increase incidence of prolong labour with perinatal distress that lead to increase incidence of epilepsy that account for about 54% in our study. A study conducted in Saudi reports the similar association. This is very important factor as it can be potentially minimized if perinatal health services are improved. In a Chinese study, perinatal factors were the most frequently found cause of epilepsy[13].

Among the postnatal factors head trauma was the most significant factor associated with development of epilepsy. In a study conducted on a large sample size to find out association shows the risk of posttraumatic seizures after severe injury was 7.1% within 1 year and 11.5% in 5 years. The incidence of seizures after mild head injuries was not significantly greater than in the general population. In a study conducted in Turkey most important risk factors for epi-

lepsy were neurological impairment, history of atypical febrile seizures, severe head injury and a low apgar score[12,14].

As perinatal insult was found among one of the major factor of epilepsy, it was found to be most significant in development of early onset epilepsy. In a Saudi Arabian study, perinatal factors accounted for 40% of etiology for those with epilepsy onset less than 5 years[11]. Limitations of our study were that most of the data was based on recall of mother which might be having misinterpretation. A case control study on a large sample size might be much better to find the association of risk factors in this common disorder.

CONCLUSION

In our study some of the factors were found to have significant association in development of childhood epilepsy. Perinatal distress, family inheritance and head trauma were strongly associated with epilepsy which later on might manifest in the form of developmental delay or epilepsy syndrome. Early onset epilepsy was mostly associated with perinatal distress.

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