EPILEPSY IN INFANCY

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ABSTRACT

The clinical and electroencephalographic (EEG) flatures of epilepsy in the first year of life were studied in 52 infants admitted with a history suggestive of seizures. The age incidence showed bimodal peaks at 2 and 12 months. Parial seizures with or without secondary generalisation were seen in 67.3% and primary generalised seizures in 32.7% of cases. Complex partial seizure with secondary generalisation was the single commonest seizure type seen in infancy. A significant developmental delay was seen in 63.5% of cases. The clinical and electroencephalographic features, underlying aetiological factors, and response to anticonvulsant therapy are described.

KEY WORDS

Epilepsy, Electroencephalography.

SING MED J. 1988; 29: 433 – 437

INTRODUCTION

The reports on epilepsy in infancy deal mostly with neonatal seizures and the occurence of infantile spasms in the later half of infancy. The first half of infancy has been refered to as a silent period for epilepsy (1). Some of these cases, partial seizures in particular, may escape diagnosis if not investigated by electroencephalography (EEG) since the clinical presentation may be complex and atypical (2). There is a high "convulsive threshold" in early infancy and epilepsy at this age is often symptomatic of a serious underlying brain disorder or abnormality. There is a paucity of literature on the patterns of seizures in infancy. The present study describes the clinical and EEG features in infantile seizures seen in Kelantan, Malaysia.

MATERIALS AND METHODS

The material consisted of 52 infants from newborn period up to the age of 1 year, admitted for epilepsy to Hospital Universiti Sains Malaysia from August 1984 to March 1987. Patients with febrile fits were excluded from the study. All cases were assessed by a detailed history, neurological examination and EEG. Developmental assessment was done in all the cases using Denver developmental scale. Investigations such as lumbar puncutre, skull x-ray, CT Scans and a limited metobolic screening including urine for amino acidurias and PKU were done if indicated. Serum electrolytes, blood sugar and calcium were done in all the cases. The seizures were classified based on the International Classification of Epilepsies (1981)(10) by analysis of clinical and EEG features. Anti-convulsants were administered in all cases and the response analysed.

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RESULTS

Out of the 16818 cases admitted during the period to Paediatric Wards, there were 52 cases (0.3%) of infantile epilepsies. The age incidence is shown in fig. 1. A bimodal distribution was seen with maximum incidence at 2 and 12 months of age. The breakdown of the different seizure types in shown in table 1. A striking feature was the high incidence of complex partial seizures especially at the age of 2 to 5 months. A significant developmental delay was seen in 60% of partial seizures and 70.5% of generalised seizures. All three cases of infantile spasms had significant mental retardation. The clinical manifestations of complex partial seizures were atypical in most of the cases and are shown in table 2. Identifiable aetiological factors were seen 54.2% of partial seizures and 70.5% of generalised seizures (table 3).

The EEG showed primary generalised seizure discharges in 17 cases (fig. 2) secondary generalisation was observed in 27 infants. Focal temporal seizure discharges were seen in 70% of the cases with partial (fig. 3) seizures with or without secondary generalisation. Hypsarrhythmia was present in 2 out of 3 cases diagnosed as infantile spasms. CT Scans done in 17 out of 35 cases of partial seizures showed significant brain atrophy in 7, hydrocephalus in 3, hydranencephaly in 1 and frontotemporal infarction in 2; in 4 cases, the scans were normal. In 5 cases with primary generalised epilepsy, CT Scan was normal in 3 and revealed subdural fluid collection in 2.

A detailed metabolic workout was not done for any of these cases since the facilities were not available. However, urine for phenyl ketonuria and chromatography done in selected cases were essentially normal. Blood urea, electrolytes, serum clacium and blood glucose were routinely performed, and were within normal range.

The infants were treated with a single or multiple drugs including phenobarbitone, carbamazepine, dilantin, clonazepam and sodium valproate. Combination therapy was given in 30% of partial seizures and an equal number of generalised seizures. 30.7% of cases were lost to follow up. Of those who were followed up, seizures were well controlled in 75% of the infants in both groups. The rest did not show significant control of seizures.

DISCUSSION

The prevalence of seizures other than infantile spasm in the first year of life has not been widely documented. Seizures

FIG 1 : Shows the age incidence of partial and generalised seizures which reveals a bimodal pattern.

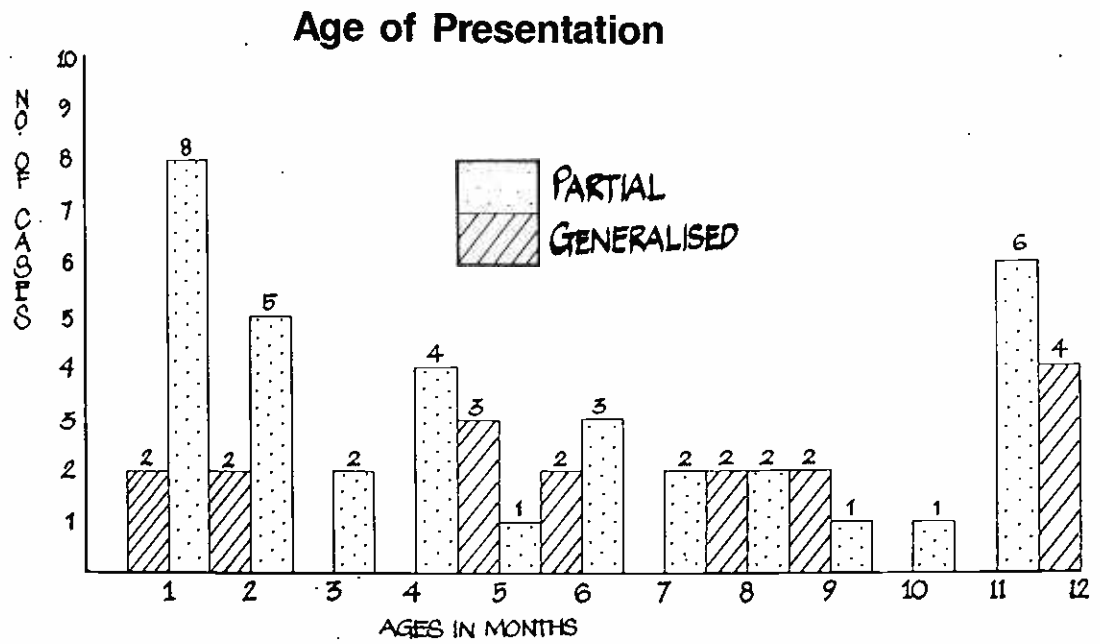

Table 1

CLASSIFICATION OF SEIZURES IN 52 INFANTS

PARTIAL SEIZURES [(NO = 35 (67.3%)]

1. Simple partial seizures 5(9.6%).
2. Complex partial seizures 3(5.7%).
3. Complex partial seizures with secondary generalisation 27(51.9%)

PRIMARY GENERALISED SEIZURES [(NO = 17 (32.7%)]

1. Generalised tonic/clonic/tonic clonic seizures 14(26.9%).
2. Infantile spasms 3(5.7%).

in the early infancy are difficult to recognise and are often partial, fragmented and disorganized (1). Recently there has been an increasing awareness that significant numbers of cases of temporal lobe epilepsy have their onset in early childhood (4). The incidence of partial seizures in the infancy found in our study is high, with the highest incidence of the partial seizures in the first 6 months of life. The presence of significant developmental retardation is partial seizures during infancy has been documented by O'Donohoe(5). This is confirmed by the findings of our study where 60% of infants with partial seizures and 70.5% of infants with primary generalised seizures ahd significant developmental retardation. It is interesting to note that all the cases with infantile spasms had developmental delay. The aetiology of infantile seizures is debatable. Although the initial suggestions by Penfield that in most of the cases of temporal lobe epilepsy, birth asphyxia played a major role in producing scarring of the temporal lobe have been strengthened by many studies(6), recently there have been a number of large scale studies, (3),(7) which question the relationship between low apgar scores and seizures in childhood. In our study, the most striking feature has been a documented birth asphyxia, or other perinatal factors such as neonatal meningitis, neonatal hypoglycemia, kernicterus and intra uterine infection; they were responsible for the infantile seizures in 59.6% of the cases. This is in keeping with the observation by O'Donohoe that seizures in early infancy are often symptomatic of underlying structural brain disease(1). In the state of Kelantan where this study was conducted, the infant mortality rate is believed to be 28/1000 live births and is known to be the highest amongst the states of Malaysia; yearly more than 28,000 out of 35,000 deliveres are conducted at homes by unskilled village midwives, the remaining 7000 deliveries take place in hospitals. The occurrence of birth asphyxia among these babies delivered at home is possibly significantly high. This is confirmed by the fact that 17% of the total admissions to the sick nursery was formed by new-born with birth asphyxia or respiratory distress.

Both partial and generalised seizures were found to be the sequalae of significant perinatal brain damage in 56% of cases of our study. The high incidence of brain atrophy in the CT Scans is supportive of the fact. Frank infarction was found in only two cases, as against brain atrophy, which was found in 7 out of 19 cases of partial seizures by CT Scans.

When the clinical description of fits is studied, it is obvious that most of the cases of complex partial seizures can be missed if not subjected to Electroencephalography . Although generlised tonic/clonic or both were found in 14 out of 35 cases of partial seizures, blue spells, apnic spells and sudden pallor secondary to vasomotor phenomena were found in 33% of complex partial seizures; these findings, and the others such as staring spells, atonic spells, confusional states and automatism have been described as a common feature in temporal lobe seizures, (2),(9). However, all three infants with infantile spasm had the characteristic flexor spasms. In primary generalised seizures, autonomic or automatic features were uncommon.

Electroencephalography plays a very important role in the diagnosis of seizures in infancy. It is an essential investiga-

Table 2

CLINICAL DESCRIPTION OF FITS

	Partial Seizures	Primary Generalised Seizrues
• Generalised Tonic/Clonic or both	14	15
• Flexor Spasm	2	3
• Blue Spells/Apnic Spells/ Sudden Pallor	10	1
• Staring Spells	2	1
• Atonic Spells	4	2
• Jitteriness	0	1
• Lip Smacking	2	0
• Confusional States	1	0
• Vacant Smiling	1	0
• Up Rolling of Eye Balls (Without Gen Fits)	3	0
• Vomiting with Fits	2	0
• Blank Look	1	0
• Clenching of Fists	1	0
• Extensor Spasm	2	0

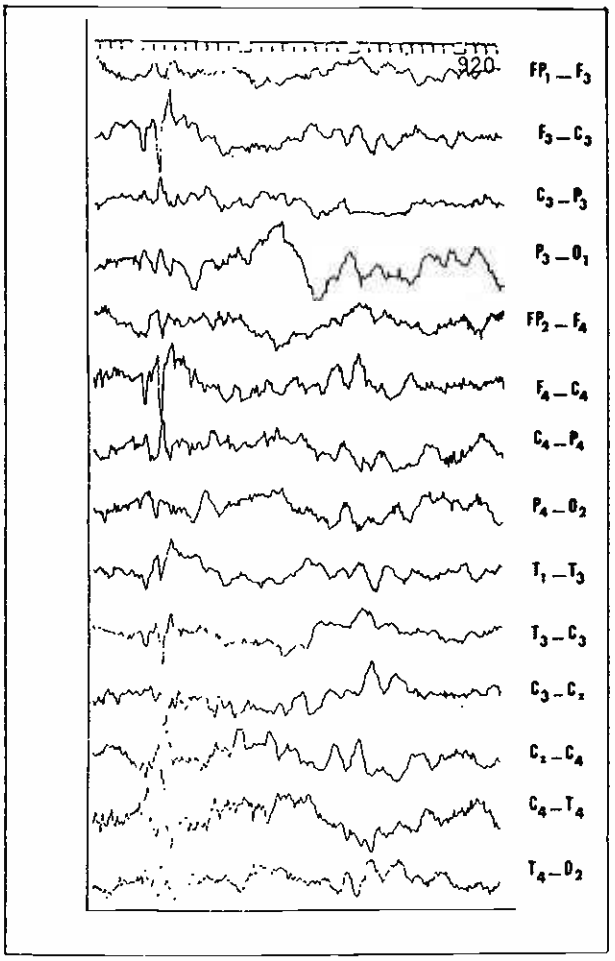

FIG 2 : EEG showing generalised spike discharges.

Table 3

IDENTIFIABLE AETIOLOGICAL FACTORS

	PartialL Seizures	Generalised Seizures
1 — Birth Asphyxia	8	5
2 — Nonatal Meningitis	3	4
3 — Neonatal Jaundice	3	2
4 — Neonatal Hypoglycemia	2	0
5 — Congenital Hydro-cephalus	2	0
6 — Hydranencephaly	1	0
7 — Intra Uterine Infections (CMV)	0	1
	Total = 19	Total = 12

tion providing supportive evidence for clinical diagnosis of epilepsy by demonstration of epilepsy discharges(11), although normal EEGs do not exclude the presence of a seizure disorder. Fortunately, epileptic discharges are more readily recordable in infantile or childhood epilepsy(4). In our study the EEG revealed evidence or epilepsy in all the cases studied and was of immense value in detecting seizure type especially when seizure phenomena were atypical.

Among the drugs used for management of epilepsy in infants, we found carbamazepine and phenobarbitone extremely useful for both partial as well as primary generalised seizures. Carbamazepine was free of significant side effects unlike pehenobarbitone which tended to produce drowsiness or hyperkinesis.

The other drugs used included Dilantin, Clonazepam and Sodium valproate. Generally, infants with primary generalised seizures responded better; 25% of infants with partial seizures and 11.7% of generalised seizures proved to be difficult to control with varios drug combinations. Nearly one third of all the cases were lost for followup. However, an overall poor prognosis is a documented feature in infantile seizures (1), (12).

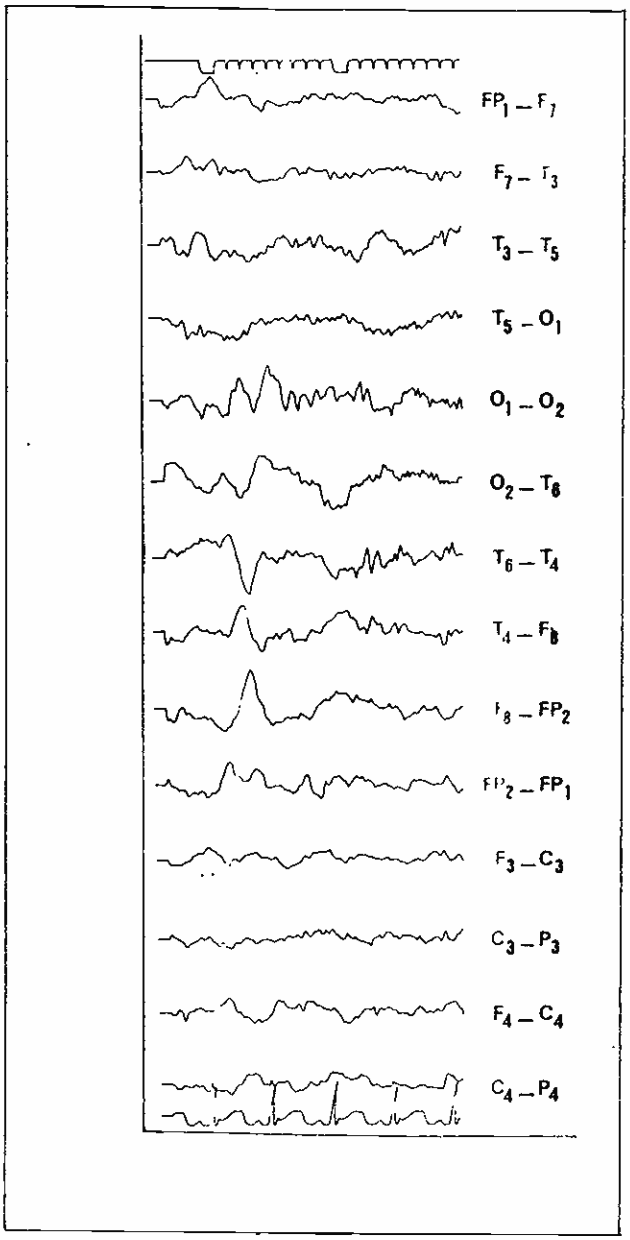

FIG 3 : EEG showing sharp waves in phase reversal across T4 indicating a tempiral lobe focus.

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