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A Study of Newly Diagnosed Epilepsy in Malaysia

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ABSTRACT

Background/Aim of Study: To determine the characteristics of newly diagnosed epilepsy in the multiracial population of Malaysia.

Methods: This is a prospective study of 165 consecutive newly diagnosed cases of epilepsy presenting to the neurology laboratory of the University Hospital, Kuala Lumpur. The inclusion criteria were: two or more seizures with interval of > 24 hours, age > 1 month, residents of Klang Valley. All the patients underwent an awake and sleep EEG.

Results: One hundred and sixty-five cases were collected over 1992 – 1994. Their ethnic origin was: Chinese (36%), Indian (35%), Malay (29%). The mean age of onset of epilepsy was 18.7 years. Localisation related epilepsies accounted for 57.6% of cases while the remaining 42.4% were generalised epilepsies. Of the generalised epilepsies, subclassification was as follows: idiopathic generalised epilepsy 28.5%, juvenile myoclonic epilepsy 5.5%, childhood absence epilepsy 3.6%, West syndrome 3%, Lennox Gastaut syndrome 1.2% and photosensitive epilepsy 0.6%. Twenty-two percent of the cases were symptomatic and 78% were cryptogenic/idiopathic. The patients had a mean of 3.9 other siblings. Only 0.76% of the close relatives (parents and siblings) had a history of epilepsy.

Conclusion: The characteristics of epilepsy in Malaysia is largely similar to those reported elsewhere. Genetic factors may be playing a relatively minor role in causing epilepsy in this community.

Keywords: epilepsy, localisation related epilepsy, generalised epilepsy, symptomatic, cryptogenic

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INTRODUCTION

As in other countries, epilepsy is one of the most important clinical problems in the practice of neurology. The aim of this prospective study is to determine the relative incidence and characteristics of epilepsy in Malaysia, and is based on 165 consecutive cases of newly diagnosed epilepsy.

MATERIALS AND METHODS

The study was done at the University of Malaya Medical Centre (UMMC) in Kuala Lumpur. It serves a dual function as one of the two national referral centres for tertiary medical care, as well as one of the three public general hospitals serving the 3.5 million residents in the Klang Valley states of Kuala Lumpur and Selangor. Consecutive cases of newly diagnosed epilepsy who presented to the neurology laboratory, UMMC for an EEG were studied. All the patients were personally reviewed by the authors or one of the other neurologists from the medical centre. There must be two or more seizures 24 hours apart. The patients were residents of Kuala Lumpur or Selangor.

The classification of epilepsies and epileptic syndromes largely adheres to the ILAE classification but has been modified to simplify the study. Symptomatic/cryptogenic cases are not categorised separately.

RESULTS

The 165 consecutive cases were collected over the period 1992 – 1994. The ethnic origins were: Malay (29%), Chinese (36%) and Indian (35%). The sex ratio was M:F = 13:12. The age of onset of epilepsy ranged form 3 months to 77 years with a mean age of 18.7 years. The duration of illness was less than 3 months in 57 cases, 3 to 12 months in 31 cases and more than 12 months in 77 cases. The frequency of seizure was more than once daily in 38 cases, once daily to once weekly in 36 cases, once weekly to once monthly in 34 cases and less than once monthly in 57 cases.

Among the 77 cases who had epilepsy for more than a year before diagnosis, 18 had more than one seizure a week. The delay in diagnosis despite frequent attacks was due to failure to recognise the significance of the unusual seizure pattern such as absence, complex partial seizure and myoclonic seizures (11), seeking care from traditional healers (3) and no specific reason was given in 4 other patients.

The patients had a mean of 3.9 other siblings. Only 7 of the total 918 (0.76%) close relatives (parents and siblings) of the probands had a history of epilepsy and another 7 (0.76%) had a history of childhood febrile convulsions. By comparison, 11 cases among the proband had childhood febrile convulsions.

The clinical characteristics of the seizures were: generalised tonic clonic seizure (130); atonic seizure (12); generalised tonic seizure (4); generalised

clonic seizure (2); focal motor seizure (25); absence attacks (19); myoclonic seizure (11); sensory seizure (6); infantile spasm (5).

EEG's were done in sleep and wakefulness in all the patients. One hundred and thirty-seven cases had an abnormal EEG. The abnormalities were: focal or multifocal spike/sharp wave +/- slow wave (72), atypical generalised spike and wave (34), 3/sec spike and wave (7), focal slow wave (12), generalised slow wave (5), hypsarrhythmia (4), slow spike-wave < 2.5/sec (2).
Five of the patients had a photoconvulsive response.

The epilepsy/epileptic syndrome based on clinical features and investigation may be classified as generalised (42.4%) and localisation related (57.6%). Of the generalised epilepsies, sub-classification was as follows: idiopathic generalised (28.5%) juvenile myoclonic epilepsy (5.5%), West Syndrome (3%), childhood absence epilepsy (3.6%), Lennox Gastaut syndrome (1.2%), and photosensitive epilepsy (0.6%). In the localisation related category, the seizure type was as follows: secondary generalised (32.7%), complex partial seizures (CPS) with secondary generalisation (6.7%), CPS without secondary generalisation (3%), simple partial with secondary generalisation (9.1%), and simple partial without secondary generalisation (6.1%). Benign rolandic epilepsy accounted for 3% of the localisation related epilepsies.

Sixty-nine cases had age of onset at below 15 years. The classification for these childhood onset patients were generalised (53.6%) and localisation related (46.4%). Of the generalised epilepsies, sub-classification was as follows: idiopathic generalised (30.4%), childhood absence epilepsy (8.7%), West syndrome (7.2%), JME (2.9%), LGS (2.9%), and photosensitive epilepsy (1.5%). In the localisation related epilepsy category, seizure type was as follows: secondary generalised (27.6%), CPS with secondary generalisation (5.8%), CPS without secondary generalisation (1.5%), simple partial with secondary generalisation (10.1%) and simple partial without secondary generalisation 1.5%. Benign rolandic epilepsy accounted for 7.2% of the localisation related epilepsies. The patients had an average of 2.4 other siblings. None of the close relatives (parents and siblings) had a history of epilepsy.

Among the 46 cases with non-syndromic idiopathic generalised epilepsy, the racial composition was Chinese (16), Malay (16), Indian (14). The age of onset ranged from 6 months to 38 years with a mean of 17.2 years. The sex ratio was M:F = 15:8. The patients had a mean of 4.2 other siblings. Only 3 out of 286 (1%) close relatives (parents and siblings) had a history of epilepsy. The EEG was abnormal in 21 patients, with 19 cases showing atypical generalised spike and wave pattern. The sex ratio for this better defined group of 19 patients was M:F = 2:1. The racial composition was: Chinese (4), Malay (8), Indian (7). Between them, they have a total of 71 other siblings with one having a history of epilepsy.

As for the 15 cases with complex partial seizure, the ethnic composition was Chinese (7), Malay (5) and Indian (3). The sex ratio was M:F = 2:1. The mean age of onset was 18.2 years. The clinical manifestations consisted of: altered consciousness (15), automatism (9), oro-mandibular movement (4), laughing (1), and smiling (1). The precipitation factors were: meals (2), fever (2), fatigue (2), sleep (2), and sleep deprivation (1). Only 2 patients had past history of childhood febrile convulsions of which one was prolonged. Another 2 patients had past history of meningoencephalitis. No obvious cause could be found in the other 11 cases. The EEG was abnormal in 12 cases and normal in 3 cases. The epileptic focus based on surface EEG was bitemporal (5), one temporal (3), one frontal-temporal (2), one occipital (1), and multifocal (1).

Thirty-six cases (22%) were symptomatic and 129 cases (78%) were cryptogenic/idiopathic. The medical conditions associated with the symptomatic cases were: cerebral palsy/mental retardation (13), SLE (6), meningitis/encephalitis (4), stroke (4), glioma (1), meningioma (1), AIDS (1), moyamoya disease (1), hypoglycaemia (1), head injury (3) and alcohol related (1).

DISCUSSION

A hospital based study has the problem of patient selection with a bias towards more severe and complicated cases. However, these patients were thoroughly investigated and seen by a more select group of doctors. The UMMC serves as one of the community hospitals for the residents in the Klang Valley area, as well as a national referral centre. We have attempted to minimise the bias by including only the newly diagnosed cases from the Klang Valley area. The relatively low proportion of symptomatic cases (22%), compared to 36% from the population based national general practice study in UK[1] suggests that our study sample is fairly representative of the community in general.

The racial composition of the epilepsy cases of Malay (29%), Chinese (36%) and Indian (35%) was similar to the racial composition of the non-obstetric cases seen in the outpatient clinic in the UMMC in 1991, which was: Malay (33%), Chinese (39%), Indian (26%), Others (2%). There is thus no evidence of any ethnic predisposition to epilepsy among the three main racial groups. The mean age of onset in this series at 18.7 years is young. This is probably due to a larger proportion of young population in this country.

The overall classification of epilepsy/epileptic syndrome, shows localisation related epilepsies accounting for 57.6 of cases while the remaining 42.4% were generalised. A number of the clinical generalised tonic clonic seizures had localising features on investigation and were classified as secondary generalised. Reclassification of the initial

seizure in the light of additional information was not attempted. The high proportion of clinical generalised seizures which in fact were secondary generalised based on investigation, points to the importance of a thorough history which is emphasised by Sanders[1].

5.5% of epilepsy in this study is due to juvenile myoclonic epilepsy (JME). This corresponds to the 5.4% obtained by Tsuboi from Heidelberg[2], Germany and 4.1% obtained by Mai et al from Milan, Italy[3]. On the other hand, the prevalence of benign rolandic epilepsy (3%) appears to be low. When children with onset of epilepsy at below 15 years were considered, benign rolandic epilepsy and childhood absence epilepsy constituted 7.2% and 8.7% of the cases. Based on the EEG record over a three-year period, we have earlier estimated that 4.8% of our epileptic children suffered from benign rolandic epilepsy[4]. Blom et al reported a prospective study of epileptic children below 16 years from a Swedish county. The proportion with benign rolandic epilepsy and absence epilepsy were 25.6% and 9.3% respectively[5]. Our study is hospital based and may miss mild cases of BRE. The prevalence of infantile spasms, accounting for 7.2% of children below 15 years with epilepsy is rather high. Blom et al ascribed 2.3% of their cases to infantile spasms[5]. The apparent high prevalence of infantile spasms may be contributed by the biased sample of the medical centre in attracting the more severely ill patients. The photoconvulsive response rate of 3% in our country which has sunshine throughout the year is similar to the 2.8% reported in the United Kingdom by Jeavons based on patients referred for EEG examination[6].

As for the group with non-syndromic idiopathic generalised epilepsy, there is an unusually low prevalence (1%) of family history of epilepsy. Males accounted for 65% in this group. Oller-Daurella & Oller F-V from Spain reported a male predominance of 62%, and family history of epilepsy among the next of kin at around 23%[7]. The low prevalence of epilepsy among the close family suggests that epilepsy is non-genetic, or low penetrance of genes for idiopathic generalised epilepsy among the local population and a further detailed study is planned.

The high proportion of SLE (3.6%) among the causes of symptomatic epilepsy reflects the high prevalence of SLE in the community. The relatively low occurrence of tumour (1.2%) is probably partly contributed by the younger age group of our patients. Sander et al from UK reported that 6% of their patients overall had brain tumour. However, it was only 1% for those under 30 years of age, but 19% for the 50 – 59 years age group and 11% for the > 60 years age group[1].

The overall prevalence of epilepsy among the siblings and parents at 0.76% was low. The risk of epilepsy among the family members is dependent on the age of onset and the type of epilepsy. Anderson & Hauser reported an 11.6% risk of any seizure and 3.6% risk of epilepsy among the siblings of probands with initial diagnosis of idiopathic epilepsy before 15 years of age[8]. None of the siblings and parents of the 69 patients with onset of epilepsy below 15 years had history of any form of epilepsy. In our earlier studies, 19% of benign rolandic epilepsy and 18% of JME had siblings with history of fits[4,9]. This corresponds to reports from elsewhere[10,11]. The overall low prevalence of epilepsy among close relatives among our hospital based patients may thus be a combination of low prevalence of benign rolandic epilepsy where there is a strong family history, and possible non-genetic nature or low penetrance of genes of patients with idiopathic generalised epilepsy.

The low prevalence of 0.76% childhood febrile convulsions among the close relatives (parents and siblings) of the probands is most likely due to the method of case ascertainment. The prevalence of childhood febrile convulsion varies from 0.1% to 15%, depending on the case ascertainment method. Thus, the mean prevalence rate was 2.7% by questionnaire survey, 4.3% by reports of general practitioners or medical record reviews, and 8.1% by examination[12]. The estimated prevalence in this study was based on questionnaire and it was ascertained on close relatives of patients with epilepsy. The low prevalence of childhood febrile convulsion in the local population needs to be confirmed or refuted by further studies. In a Singapore study the cumulative incidence of febrile seizures by age 6 years was 4.47%[13].

CONCLUSION

A study of 165 newly diagnosed "unselected" cases of epilepsy from Kuala Lumpur/Selangor states revealed many patients continued to have long delay before diagnosis, particularly those in whom the seizure characteristics were unusual. There is no evidence to suggest a predisposition to epilepsy in the three main ethnic groups, Chinese, Malay and Indian. The overall classification of epilepsy was generalised (42.4%) and localisation related (57.6%). Benign rolandic epilepsy accounted for 7.2% of childhood onset epilepsy, which is lower than reported elsewhere. Twenty-two percent of the cases were symptomatic. The associated medical conditions were: cerebral palsy/mental retardation (36%), SLE (17%), meningo-encephalitis (11%), brain tumour (6%), and stroke (11%). This reflects the young population and high prevalence of SLE in the community. The prevalence of epilepsy among the close relatives was low at 0.76%. This is probably a combination of expected low incidence of benign rolandic epilepsy in a hospital based study and possible non-genetic etiology or low penetrance of genes of patients with idiopathic generalised epilepsy, which is scheduled for further study.

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