JUVENILE MYOCLONIC EPILEPSY-A REPORT OF 11 PATIENTS AT THE UNIVERSITY HOSPITAL, KUALA LUMPUR

V Manonmani, C T Tan

ABSTRACT

This is a report on 11 cases of Juvenile Myoclonic Epilepsy (JME) from the University Hospital, Kuala Lumpur, all of whom were diagnosed in the last one and a half years. This genetic syndrome is seen in all the three main racial groups: Chinese, Malays and Indians. It accounts for 2% of the epilepsy patients seen at the neurology clinic. Lack of awareness is the main hindrance to diagnosis.

Keywords: *juvenile myoclonic epilepsy (JME), electroencephalography (EEG).*

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INTRODUCTION

Current trends in epileptology stress on a diagnosis of "epilepsy - disease[1] (Commission, 1989), and there is now better definition of epilepsy syndromes which were previously considered cryptogenic or idiopathic. Diagnostic precision has far reaching implications with regard to specific therapy, prognosis and genetics.

One of the most important epilepsy syndromes recognisd since 1957 is the JME of Janz.

Juvenile myoclonic epilepsy (JME) is easily recognised by its clinical and EEG characteristics:

1. Typical absence seizures, myoclonic jerks and generalised tonic clonic seizures (GTCS) in an orderly age related sequence.
2. Circadian distribution with frequent, characteristic, seizure precipitating factors like alcohol withdrawal and sleep deprivation.
3. Normal physical and computed tomography brain scan examinations.
4. Complete remission of seizures in 80% of the patients treated mainly with valproate and treatment has to be lifelong. Fits may recur with withdrawal of alcohol.
5. Electroencephalography (EEG) pattern of generalised spikes and/or poly-spikes and slow waves[2].

The diagnosis of JME is missed even in epilepsy clinics despite its distinctive features, and our report of this epilepsy syndrome in the multi-racial population of Malaysia is to highlight its presence.

METHODS

The patients were selected from the large group of neurology patients attending the adult neurology clinic at the University Hospital. The diagnosis of JME was based on strictly defined clinical and EEG criteria for JME.

RESULTS

Table I shows the clinical and other data of the 11 patients. The diagnosis of JME was established relatively recently in most of the patients, ranging from one month to 18 months prior to this report. In contrast, the duration of seizures in the patients varied from 4 months to as long as 28 years. The age at onset of seizures in our patients ranged from 7 years to 20 years, the average age being 13.5 years.

Absence seizures were observed in only one patient. Myoclonic jerks were present in all the patients. The myoclonic jerks tended to occur in the mornings. It was associated with falls in 2 patients. GTCS were present in all our patients. The circadian rhythm of the GTCS was as follows: nocturnal - 3 patients; diurnal (in the mornings) - 6 patients; on awakening - 1 patient. One patient, Case 9, had both nocturnal and diurnal fits.

Precipitating factors like stress, lack of sleep, and alcohol were obtained in some of the patients. Anyway most of our patients did not consume alcohol.

A strong family history of JME was present in one patient, Case 9. Her parents are first cousins and three of her siblings have JME. One other patient, Case 7, had a brother with idiopathic generalised epilepsy.

JME was observed in the Chinese, Malay, and Indian patients in the ratio 5:4:2 in the study. (The proportion of patients seen at our hospital by race is Chinese 40%, Malays 33% and Indians 26%) JME accounted for 2% of the epilepsy patients seen at the neurology clinic. The male:female ratio was 6:5. Only one of the 4 patients above the age of 25 was married.

Treatment was changed to sodium valproate in 4 patients after JME was diagnosed, as their epilepsy was not well controlled earlier. Case 2 did well on clonazepam. The more recently diagnosed cases were started on sodium valproate.

The EEG abnormality most often seen was generalised single spike/polyspike and slow wave discharge. In Cases 4, 5 and 9, repeat EEG's were done after a few years of treatment and the repeat EEG was normal in Case 9, showed suspicious sharp waves in Case 4, and in Case 5 EEG showed post-ictal changes after a bout of poorly controlled fits. Case 5, who had poorly controlled epilepsy, had a CT scan of the brain done in April 1991 which did not show any significant abnormality, and he had an MRI and repeat CT scan done a year later after a bout of status epilepticus. The repeat scans showed infarction of the left occipital lobe.

Department of Paediatrics
University Hospital
Lembah Pantai
59100 Kuala Lumpur, Malaysia

V Manonmani, MRCP (UK)
Lecturer

Department of Medicine
University Hospital

C T Tan, MD
Professor and Consultant Neurologist

Correspondence to: Prof C T Tan

Table I - The subject characteristics

PATIENT NUMBER	1	2	3	4	5	6	7	8	9	10	11
Present Age (years)	39	18	26	17	16	18	33	14	48	19	18
Age at onset (years)	12	7	15	13	13	14	10	10	20	17	18
Duration of Fits (years)	27	11	11	4	3	4	23	4	28	2	4/12
Sex	♂ male	♀ female	♂ male	♂ male	♂ male	♂ male	♂ male	♀ female	♀ female	♀ female	♀ female
Duration (of diagnosis of JME)	12 months	12 months	3 months	6 months	6 months	3 months	3 months	18 months	12 months	1 month	1 month
Race	C	C	M	M	C	M	C	C	M	I	I
Marital Status	S	S	S	S	S	S	S	S	Married	S	S
School Performance		Failed Form 3		Satisfactory	Failed Form 3	Good		Satisfactory	Satisfactory		
Job	Jobless		Teacher				Shoe Maker		Nurse	Receptionist	Machine Operator
Treatment before diagnosis of JME	T & D	Clonazepam	E	T	T & D	E	T & D	E	Clonazepam & E		
Treatment after diagnosis of JME	E	Clonazepam	E	E	E	E	E	E	Clonazepam & E	E	E
Neurological Status	N	N	N	N	N	N	N	N	N	N	N
EEG	GSWD with frontal emphasis in sleep	Spikes & Waves posteriorly	GSWD	GSWD with frontal emphasis	GSWD	GSWD	GSWD	Spikes & Waves over L & R central parasagital area	GSWD 5 - 6/sec	GSWD 4/sec	GSWD
Myoclonic jerks	+	+	+	+	+	+	+	+	+	+	+
GTCS	+	+	+	+	+	+	+	+	+	+	+
Absence	–	–	–	–	+	–	–	–	–	–	–
Associated psychiatric problems	+										
Precipitating factors											
Alcohol							+				
Stress							+		+		
Lack of Sleep	+					+	+		+	+	
Family History of JME/Epilepsy	–	–	–	–	–	–	+	–	+	–	–

T = Carbamazepine
E = Sodium Valproate
P = Phenytoin
S = Single
N = Normal
TD = Carbamazepine and Phenytoin
+ = Present
- = absent
GSWD = Generalised Spike and Wave discharges
I = Indian C = Chinese M = Malay
♂ = Male ♀ = Female

DISCUSSION

JME is an "awakening epilepsy" with a prevalence of 8% in adult populations and lower prevalence in paediatric studies. Janz and Christian in 1957 fully described the clinico-encephalographic syndrome of awakening myoclonias and GTCS combined with generalised polyspike-wave EEG paroxysms. The age of onset is usually between 12 years and 19 years and seizures often persist until late in life[3]. Failure to recognise JME which is a relatively benign condition, may result in uncontrolled seizures, status epilepticus, irreversible brain damage, social-educational failure and even death[2]. The majority of our patients had a benign course despite failure to control the fits prior to the diagnosis of JME. However, Case 5 developed left occipital lobe infarction after a bout of status epilepticus.

The reason for the relatively recent diagnosis of JME in our study is an increased level of awareness. The diagnosis of JME is not difficult if myoclonic jerks which is the hallmark of the disease, and the circadian rhythm is looked for. Often our patients do not spontaneously disclose myoclonic jerks and their existence must be specifically elicited in the history, so as not to overlook the diagnosis. Myoclonic jerks are most often consistently manifested on awakening from sleep. They may be so mild, that they are misinterpreted as clumsiness. Focal myoclonic jerks should not be interpreted as simple partial seizures. GTCS occurred in 100% of our patients. It is the second most frequent seizure type and other studies report 80% - 90% of patients with JME having GTCS[4]. Nocturnal GTCS occurred in 4 of the 11 patients which is higher than the figures of Janz (1985)[5], who gave a rate of 94% of GTCS on awakening. Absence seizures, the third seizure type which is seen in 1/3 - 1/2 of patients may antedate the jerks and GTCS by an average of 4.5 + 2.5 years[6,7]. Our study revealed only one patient with absence seizures. It is possible that it was missed in the others, as absence seizure in JME is mild and may go unnoticed even by an experienced observer, and the only patient complaint may be a transient lack of concentration[6,7].

The EEG was helpful in suggesting the diagnosis in almost all our patients. The EEG yield is likely to be higher in untreated patients; and in two of our patients, Cases 4 and 9, the initial EEG was helpful, but repeat EEG's after a few years of treatment showed rather non-specific findings or had normalised. A photoconvulsive response was not seen in any patient, which is in contrast to Alving (1990)[3] who reported marked photosensitivity in about 30%. In doubtful cases, the best diagnostic procedure is to perform a video-EEG on awakening after a night of partial sleep deprivation combined with a modest intake of alcohol the evening before[3].

One of our patients, Case 9, has very strong family history of JME while another, Case 7, has a brother with GTCS. This is significant as JME is a genetic epilepsy thought to be possibly autosomal recessive with the gene on Chromosome 6, with an increased incidence of both JME as well as other forms of idiopathic generalised epilepsy in family members. This genetic syndrome occurs in all major races in Malaysia and it accounts for 2% of the epilepsy patients seen at the neurology clinic.

Sociocultural factors play a major role in the lives of epileptic patients in our society and have a largely negative effect on them. The educational, employment and marital status of our patients are shown in Table I.

The significance of correct diagnosis is reflected in the treatment results. Once JME was diagnosed, 4 of our patients were switched over to treatment with valproate, resulting in a remarkable improvement in seizure control. Valproate is the therapeutic choice in JME. Treatment has to be life long as there is a high relapse rate of up to 90% of seizures after withdrawal of antiepileptic[4,5,8] treatment. Clonazepam which is very effective in the control of myoclonic jerks[8] was prescribed as the sole medication in one with good result. However, Obeid and Panayiotopoulos[8] advise that clonazepam

should be used only as adjunctive treatment in JME as it does not prevent GTCS. A high proportion of the older patients were on phenytoin and carbamazepine initially. Carbamazepine is the drug of choice in partial or secondarily GTCS and may have a negative effect in JME. Phenytoin may reduce myoclonic jerks and control GTCS but has no effect on absence seizures[2].

CONCLUSION

JME is a genetic epileptic syndrome which occurs in all major races in Malaysia and the lack of diagnosis previously is due to unawareness. It is important as prognosis depends on appropriate treatment and sodium valproate is the drug of choice, and treatment has to be life long.

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