

convulsions and shaking as an epileptic seizure, less than 16% were aware that transient alteration of awareness, amnesia or a transient behaviour change could also be epileptic manifestations. The survey population included professionals and school-teachers. More needs to be done in the near future to address the education of first, targeted groups of non-medical professionals like teachers and employers on the condition of epilepsy and then the public at large who may come into contact with people with epilepsy. Education on seizure first-aid and prevention are currently inadequately communicated by the already taxed specialist doctor or general practitioner. There is a lack of specialist nursing staff currently able to serve in this capacity.

• Financial •

The older medicines are within the financial means of most of Singaporean people with epilepsy. Government subsidy is available through medical social worker application and recommendation for financially strapped people with epilepsy requiring newer, more expensive medicines. Even so, such financial aid is periodically reviewed and requires periodic re-application. Surgical fees for procedures

performed for epilepsy patients are capped if the patient chooses subsidized care over private-patient status. Patients are fully charged for ancillary equipment required for surgery or pre-surgical evaluation (e.g. invasive electrodes, vagal nerve stimulator, etc.) though financial assistance can still be sought through the medical social worker. Foreigners do not qualify for financial assistance under the current available avenues.

• Medical Social Services •

This is currently mainly limited to the assessment of patients for financial assistance and application for long-term residential care as required.

FAMILY & SOCIAL SITUATION

10% of people with epilepsy expressed strained family relationships, citing embarrassment, financial strain and being a burden to spouse and family members as chief reasons. 20% also admitted to difficulty making friends or maintaining a relationship at work or in social gatherings. Low self-esteem, fear of avoidance and embarrassment were among the common reasons. Almost 42% also chose not to divulge their medical condition to their friends.

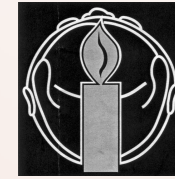
49 - 53% of responders cite resentment, depression and anxiety as their main psychological barriers. About 70% of people with epilepsy indicated that they would want to marry and have children. While 86% of community respondents (non-people with epilepsy) agreed that people with epilepsy should marry, only about 36% would allow their children to marry one.

VOCATION & SPECIAL EDUCATION

Vocational Assessment & Placement

While the Epilepsy Care Group does refer people with epilepsy, who approach them, to societies which aid the physically disabled in job placement and matching, there currently does not exist any vocational counseling or placement agencies dedicated to assisting people with epilepsy with career guidance or job selection.

Almost 80% of people with epilepsy polled indicated the need for the existence of such a service. This could aid their re-integration into society & remove any anxiety as to employer and colleague knowledge and understanding of their medical condition.



• Job Opportunities •

Up to 38% of employers would hire an epilepsy sufferer though 66% would do so if seizures did not interfere with the epilepsy sufferer's job. Almost half of the people with epilepsy polled keep their medical condition from their employers. As part of their employee medical benefits, employers in general do provide varying amounts of subsidy for

employee health care visits. Employers are understandably hesitant in employing people with chronic illnesses that could require frequent clinic visits and time off work. There currently do not exist any sheltered workshops or government initiatives to encourage employers to hire people with epilepsy. The type of jobs available to people with epilepsy could also be curtailed

by their level of education and their educational exposure and progress during their developing years.

CONCLUSION

There are currently many advanced facilities and specialist medical expertise available for the care of people with epilepsy in Singapore.



"First Aid of Seizures"

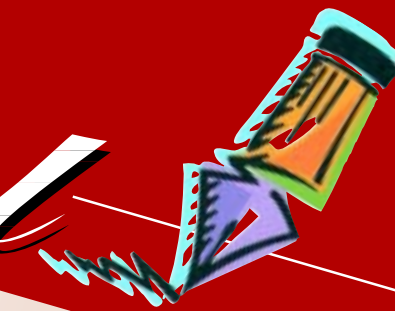
At every public SEF forum we still hear the same sad stories about inappropriate treatment of seizures by the general public. The most common and most dangerous misperception of the general public is that during a seizure something should be inserted into the mouth. THIS IS A HORRIBLE MISTAKE and can cause severe injuries to the person suffering the seizure as well as to the person wrongly inserting the object. We now recommend that each person suffering from seizures should tell friends and relatives NOT to insert anything into the mouth but to follow the below recommendations:

If you happen to witness a generalised convulsive seizures the most important thing is to make sure the person does not harm him/herself during or after the seizure.

- 1) Lie the person on his side in the recovery position.
- 2) Keep the airways free. Remove loosely fitting dentures and solid objects that may have been vomited up during the seizures.
- 3) DO NOT insert a spoon or any other object into the mouth as this will result in two things: Injury to the mouth and teeth of the person and potential injury to you! (the person will often bite as a reflex action and fingers may be severely damaged or even lost!!)
- 4) Do not restrain the convulsive movements as you may injure the person.
- 5) Call for medical help.
- 6) Time the duration of the seizure.



editorial



The main thrust of the Singapore Epilepsy Foundation is to provide you with good all-round information on issues concerning epilepsy. So we are continuing our series on the ABC of epilepsy and now reach the letters H I J K L and M in this newsletter.

In this edition, we have a special section covering "present state of Epilepsy in Singapore". This will be of special interest to all suffering from epilepsy as it provides you with detailed information on the epidemiology, medicines used (and available) for the treatment of epilepsy in Singapore as well as the range of medical and psychosocial support services currently operating in Singapore. This is a very important article for all who are dealing with epilepsy or suffering from epilepsy.

This year the Society is continuing to plan public forums and talks on epilepsy education. We will keep you informed to the dates and locations!

Please enjoy the issue and pass it on to someone who you know may benefit from it!

The Editor

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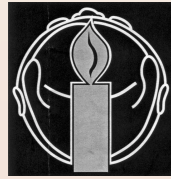
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ABC of Epilepsy

History of Epilepsy

As early as 3000 B.C., one of the kings of ancient Babylon mentioned epilepsy in his laws hewn in stone tables. The ancient laws greatly impaired the freedom of people suffering from epilepsy. For instance people suffering from fits were not allowed to marry or act in a legal capacity.

The understanding of the nature of epilepsy began with the writings of Hippocrates who called epilepsy "the sacred disease" and was one of the first to look at epilepsy from a more anatomical point of view. However it was only in the 19th century that the major breakthrough in understanding occurred, when John Hughlings Jackson described epilepsy as a sudden excessive discharge of the nervous tissue in the brain. This understanding was further broadened by the invention of the Electroencephalogram (EEG) by a German Physician, Hans Berger, in 1929. In the 20th century, the understanding of epilepsy was supplemented by detailed high resolution imaging of the brain.

Incidence of Epilepsy

The word incidence means the number of new cases per 100'000 people reported annually. In the United States of America this is between 30-50. Approximately 1% of all persons reaching the age 20 will suffer from epilepsy. This increases to 3% by the age of 75.

Juvenile myoclonic epilepsy

This is a form of epilepsy that is genetically transferred in the majority of cases. The typical manifestations include generalized epileptic seizures associated with brief muscle twitches particularly in the morning period. The EEG is very helpful in diagnosing this conditions and shows a typical pattern. Treatment with antiepileptic medication such as Valproate is usually successful.

Lamotrigene

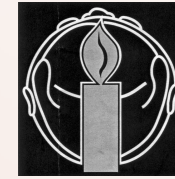
Lamotrigene is one of the newer generation of antiepileptics with a broad spectrum of anti-seizure activity. The most common side effect is an allergic skin rash.

Monotherapy

Monotherapy means that only one medicine is given to treat the seizures. This is the preferred method for epilepsies as compared to polytherapy (which means more than one medicine used) as there are fewer side effects.

Midazolam

Midazolam is a sedative medicine used in the treatment of ongoing seizures. It is usually administered through the veins but can also be administered rectally or as a tablet.



Special article Present State of Epilepsy in Singapore

(Dr Andrew Pan, Singapore General Hospital)

No other neurological or even medical condition remains so much steeped in social-cultural misbeliefs. As we proceed into the new century, it is prudent to examine the present state of affairs for people with epilepsy in Singapore.

EPIDEMIOLOGY

There have been no exhaustive epidemiological studies conducted to determine the incidence (number of people with epilepsy per 10,000 of the population) or prevalence (number of people suffering from epilepsy at the time being) of epilepsy among the different age groups in Singapore. K. Puvanendran studied all primary school entrants (6 to 7 year olds) in 1991 and excluding children with febrile fits and single unprovoked seizures, noted an active prevalence of **0.7 per 1000**. This was, however, entirely

dependant on parental reporting. He also looked at the pre-enlistment medical records of 185 661 army draftees between 1987 - 1991 and found 709 men who had epilepsy sometime or other. This yielded a lifetime prevalence of **3.8 per 1000** among 18 - 21 year-old men. NK Loh et al surveyed 20 542 men born in 1974 at their compulsory enlistment into the Singapore army at 18 years of age. They found 121 men with epilepsy yielding a cumulative incidence of **5 per 1000**. No studies have looked at the prevalence or incidence of epilepsy in the middle or older age groups.

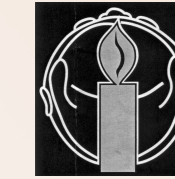
K. Puvanendran also scrutinized 1311 EEG requisitions and records between 1989 and 1991 and found Grand mal seizures to be the most common specified seizure type (46.22%), followed by partial epilepsy at 40.6%.

Reviewing the Report of The Registrar of Births and Deaths for the period of 1986 - 1989, K. Puvanendran concluded a mortality rate of **0.4 - 0.6 per 100 000** population due to epilepsy.

There is currently no registry of epilepsy patients in Singapore. A more exhaustive incidence and prevalence study will require greater manpower support, funding and commitment from government agencies.

TREATMENT

From K. Puvanendran's review of history from EEG requisitions between 1989 and 1991, 43% of epilepsy patients were taking anti-epileptic medications (AEDs), 88.3% being on monotherapy. The commonest monothe-rapeutic agent was phenytoin (43%), followed by phenobarbitone (38.4%), carbamazepine (12%) and



valproate (5.8%).

The available AEDs in Singapore are: phenytoin (oral [PO] & intravenous [i/v]), phenobarbitone (PO & i/v), primidone, carbamazepine (regular & CR), valproate (regular & CR PO & i/v), clonazepam, clobazam, diazepam (PO, per rectal, i/v), lorazepam (PO & i/v), gabapentin, topiramate, lamotrigine, levetiracetam.

In a survey of people with epilepsy in 1989, 81.6% of the responders had sought initial consultation with a Western physician (26.5% family or general practitioner; 55.1% neurologist in hospital) while the remaining had sought traditional practitioners.

In a community survey by Pan et al in 1998, almost 60% of respondents believed that Western medicine was effective in treating epilepsy while 33.2% felt that traditional medicines, acupuncture or health foods were efficacious. With regards to first aid measures when witnessing a generalized tonic-clonic seizure, only 12.3% of respondents knew the right procedures while 33.6% of respondents would do something unknowingly potentially harmful like putting an object into the epilepsy sufferer's mouth. Up to 20% of respondents

did not know what to do when witnessing a generalized tonic-clonic seizure.

MEDICAL & PSYCHO-SOCIAL SUPPORT SERVICES

• Medical Services •

There are currently 5 subspeciality-trained adult epileptologists and 6 paediatric neurologists spread over 4 institutions caring for people with epilepsy in Singapore. In general, these are responsible for the initial evaluation of patients who present with a first seizure-like episode or patients who appear intractable to AEDs. They are also responsible for the care of patients with intractable epilepsy, which may involve therapeutic drug monitoring, adjusting AEDs and pre-/post- surgical or brain/vagal nerve stimulator implantation assessments. Services available in these institutions include routine and long-term EEG video monitoring facilities, invasive EEG monitoring and equipment and expertise for cortical stimulation and intra-operative corticography, epilepsy surgery, vagal nerve stimulator implantation and maintenance, magnetic resonance imaging (MRI), magnetic resonance spectrography (MRS), single photon emission computed tomographic (SPECT) scanning, WADA assessment, functional MRI

scanning, neuropsychological and neuropsychiatric services.

The majority of people with epilepsy with infrequent seizures are seen by their family physicians or general practitioners in government polyclinics.

The Singapore Epilepsy Society, Singapore's professional body of representatives to the International League Against Epilepsy (ILAE) was commissioned in August 2000 in Buenos Aires.

• Support / Care Groups •

The Singapore Epilepsy Foundation (Singapore chapter of the International League Against Epilepsy) and the Epilepsy Care Group (Friends of International Bureau for Epilepsy) both organize educational and support activities for people with epilepsy. The Epilepsy Care Group concentrates its efforts on improving the psycho-social aspects of care for people with epilepsy. The Singapore Epilepsy Foundation seeks to keep people with epilepsy updated with the latest developments in the field on an ad hoc basis. There has been no coordinated large-scale drive to educate the public about the condition or its medico-social implications. In the community survey by Pan et al in 1998, while only 68% of responders identified