

SEIZURES AND EPILEPSY IN THE ELDERLY

Epidemiology and etiology of seizures and epilepsy in the elderly in Asia

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After stroke and dementias, epileptic seizures and epilepsies constitute the 3rd most frequent neurologic disorders encountered in elderly in developed countries. However, there are limited published data on epidemiology and etiology of seizures and epilepsy in the elderly in Asia.

INCIDENCE

In developed countries, incidence of epilepsy follows a bi-modal distribution with 1st peak in first few years of life whilst a second and more pronounced peak is in those >65 years. Reported Incidence rates of epilepsy was >130/100,000/year in people >65 years, and >160/100,000/year in those >80 years.¹ Incidence of status epilepticus was reported to be 60 to 80/100,000/year after age 60 years, with mortality twice that of younger adults. About 35% of new seizures after age 75 were status epilepticus.² In the Rochester study, the overall incidence of epilepsy showed little change from 1935-1984.³ However, Incidence in patients <10 years decreased by ~50%, while incidence in elderly patients correspondingly almost doubled.³

In developing countries, it has been estimated that incidence rate for epilepsy was higher (about 100-190/100,000/year) than those in developed countries (40-70/100,000/year).⁴ The age-specific incidence and the bimodal distribution reported in the developed countries have not been seen in developing countries. It has been reported in some developing countries that the peak incidence of epilepsy occurred in early adulthood, with no increase in the elderly. There was only one study conducted in Asia that provided the incidence rate of epilepsy in the elderly: in India⁵, incidence was higher among children age 0-14 (61/100,000/year) and sharply declined in the elderly age >60 (23.2/100,000/year).

PREVALENCE

In developed countries, prevalence of epilepsy in

those >65 years has been estimated to be >0.9%, higher than those in the first two decades of life, a pattern similar to that of incidence. For those >75 years, prevalence could be as high as 1.5%.¹

However, in developing countries, prevalence rate for epilepsy in elderly decreases, as compared to those in the first two decades. Two probable reasons could have accounted for the lower prevalence rate: lower incidence and probable higher mortality rate related to seizures with advancing age.

A study conducted in urban region in China⁶ showed that prevalence of epilepsy was 0.34% at age 50-59 years, 0.39% at age 60-69 and 0.29 for those aged >70. In the same study, the highest prevalence rate was 0.58% at age 30-39 years, followed by 0.53 at 40-49 years. In India⁷, prevalence and incidence rates were also higher in the first 3 decades of life and lower in the elderly. Results from the meta-analysis⁷ showed that prevalence rate was the highest point at age group 10-19 year (0.89%), then continued to decline with age, reaching 0.21% for those >50 years. In Pakistan⁸, the highest prevalence rate of 1.25% was found at the age group 20-29 years. The prevalence rate steadily declined, reaching the lowest of 0.49% in the age group of 50-59. However, the rate increased again at age >60 years, reaching 1.1%. In Hong Kong⁹, prevalence rate of epilepsy peaked at age 25-30 years but gradually declined after that reaching the lowest after age 65 years.

ETIOLOGIES

In developed countries, etiology of epilepsy is also age-dependent. In children, about 20% are remote symptomatic, 50% are cryptogenic while 30% are idiopathic. However, in elderly, about 55% is remote symptomatic while 45% are idiopathic/cryptogenic.³

There is considerable variability in causes and risk factors for seizures and epilepsy in the elderly.^{10,11} The most frequently reported risk

factor was cerebrovascular disease (30-70%). Tumors, usually metastatic or aggressive gliomas, were less frequent (10-15%). Metabolic disorders (e.g. uremia, hepatic failure, non-ketotic hyperglycemia, hypoglycemia, hyponatremia, hypocalcemia, etc), toxic causes (e.g. drugs and alcohol), and cerebral hypoxia secondary to various causes of syncope accounted for 10% of all other seizures, especially for the acute symptomatic type. Other causes included head injury with/without intracranial hemorrhage, central nervous system and systemic infections, and other causes of dementia. Not uncommonly, there are mixed etiologies.

There are limited data of the etiologies of epilepsy in the elderly in Asia. In Japan¹², it was found that patients with late onset (50 years or older) had no family history; half had a past history of cerebrovascular accident or head injury as a presumed etiology.

Before considering pharmacotherapy, reversible etiologies causing acute symptomatic seizures should be identified. Thus it is crucial to distinguish unprovoked and provoked seizures during diagnostic procedures. For example, seizures occur in 4-43% of persons during stroke, with greatest frequency after cortical infarcts and large hemorrhagic infarcts.¹³ Patients with these provoked seizures during acute stroke may not need long-term antiepileptic drugs (AEDs). On the other hand, recurrent unprovoked seizures occur in 20-80% of patients after stroke, i.e. post-stroke epilepsy, and requires long-term AEDs. Other causes of provoked seizures include rapidly growing brain tumor, penetrating head injury with/without intracranial hemorrhage, central nervous system and systemic infections, electrolyte and metabolic disturbances.

Elderly people often have many risk factors for drug-induced seizures. These factors include a history of seizures, excessively high drug dosages or serum drug concentrations due in some cases to diminished ability to eliminate drug, increased pharmacodynamic sensitivity, abrupt dosage increase or decrease, intrinsic epileptogenicity, and concomitant therapy with an agent that lowers the seizure threshold. Seizures also can be precipitated by rapid withdrawal of many drugs including AEDs.

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