Epilepsy in Elderly People

Other relevant separate articles include Epilepsy in Adults and Status Epilepticus Management.

Epilepsy is characterised by the occurrence of at least two unprovoked episodes of periodic disturbance in neurological function, often with altered consciousness, due to abnormal excessive electrical discharge within the brain.

Compared with younger patients, older patients are more likely to have a seizure arising from sleep, focal seizures without generalisation, remote symptomatic aetiology, focal changes on electroencephalograph (EEG) and an epileptogenic lesion on neuroimaging.\(^1\)

Epilepsy in older people therefore poses several additional problems for the provision of services compared with the rest of the population:\(^2\)

- Diagnostic difficulties, especially in differentiating syncope attacks from seizures.
- Susceptibility to anti-epileptic drug (AED) side-effects and toxicity, and increased likelihood of interaction with other medication.
- Social difficulties - eg, increased impact of driving restrictions.
- Physical restrictions to lifestyle; seizures that cause falls are more likely to cause injury in older people.
- Multidisciplinary service requirements in the community, including liaison nurse, social worker and occupational therapist.

Epidemiology\(^1\)

- After childhood, the incidence of epilepsy increases with age.\(^3\) Epilepsy is the most common serious neurological disorder in the elderly after stroke and dementia.\(^4\)
- Old age is now the most common time to develop epilepsy.\(^5\) The annual incidence is 85.9 per 100,000 for people aged 65-69 years and 135 per 100,000 for those aged over 80 years.
- Dementia and neurodegenerative disorders account for 10-20% of all epilepsies in older people; patients with Alzheimer's disease are up to 10 times more likely to develop epilepsy than those without the condition.
- Cerebrovascular disease and stroke: stroke can account for up to 50% of cases where a cause can be identified and the risk of epilepsy increases up to 20-fold in the first year after a stroke.
- Status epilepticus appears to occur more frequently in individuals greater than 60 years and the morbidity and mortality of status epilepticus are significantly greater in this age group.\(^6\)

Aetiology of epilepsy in the elderly

- Underlying factors can be identified in a greater proportion of elderly patients than younger patients, including cerebrovascular disease, dementia and tumours.
- Cerebrovascular disease is the most common underlying factor.
- Dementias of non-vascular origin give rise to seizures that are often easy to control. Alzheimer's disease and epilepsy often co-exist.
- The most common tumours found to produce seizures in later life are gliomas, meningiomas and metastases. Seizures often have focal features but elderly patients do not always show neurological signs.
- Trauma is common in old age and older people are more likely to develop post-traumatic epilepsy. Subdural haematoma is a potentially treatable cause of epilepsy in elderly people.
- Other possible underlying causes are hypertensive encephalopathy and cerebral vasculitis.
Presentation

Establishing the diagnosis of epilepsy in old age can be more difficult than in younger patients, due to the extensive range of differential diagnoses and a higher prevalence of concomitant disease. The clinical presentation is different in the elderly. The most common seizures are focal in onset, with or without secondary generalisation. Confusion and memory problems are common presenting symptoms and the postictal phase is often prolonged.\[1\]

- A reliable history and a witnessed event are generally of more value than investigations.
- There may be a history of trauma with evident bruises, cuts or burns.
- There may be a witness report of pallor, cyanosis, abnormal movements, tongue-biting, urinary incontinence and impaired conscious level, or postictal features - eg, confusion, headache, drowsiness, and Todd’s paresis.

Because of the possibility of epilepsy being associated with dementia or cerebrovascular disease, in an older person with new-onset seizures, it is important to undertake cognitive function screening and assessment for the presence of cerebrovascular risk factors.\[1\]

Differential diagnosis

- Common problems that need to be considered include cardiac arrhythmias, hypoglycaemia, postural hypotension, carotid sinus sensitivity, adverse drug effects and syncope.
- The differential diagnosis of seizures in the elderly includes;\[8\]
  - Neurological: transient ischaemic attack, transient global amnesia, migraine, narcolepsy, restless legs syndrome.
  - Cardiovascular: syncope, orthostatic hypotension, cardiac arrhythmias, structural heart disease, carotid sinus syndrome.
  - Seizures resulting from anoxic brain injury may occur with respiratory as well as cardiac disease.
  - Infection.
  - Endocrine/metabolic: acute kidney injury, hypothyroidism, hypoclycaemia, hyperglycaemic non-ketotic states, electrolyte disturbances (eg, hyponatraemia, hypokalaemia, hypocalcaemia) and hepatic impairment.
  - Sleep disorders: obstructive sleep apnoea, hypnic jerks, rapid eye movement sleep disorders.
  - Psychological: non-epileptic psychogenic seizures.
  - The peak incidence of first seizures related to alcohol withdrawal occurs in late adult life.
  - Drug-induced seizures are most likely to be associated with use of more than one drug, high doses and co-existing illness. Drugs reported to cause seizures include antihistamines, antidepressants, antipsychotics and hypoglycaemic drugs.

- Complex focal seizures presenting as confusion may be misdiagnosed as psychiatric symptoms.
- Transient global amnesia: anterograde amnesia that resolves fully within 24 hours, with no neurological or cognitive sequela.
- Sleep disorders: patients may only suffer night-time seizures.
- Hypothyroid neuropathy can be confused with focal seizure activity.
- Non-epileptic seizures may present for the first time in later life but this is unusual.

Investigations\[1, 9\]

- Investigations will depend on the presentation but include ECG, ambulatory ECG, carotid and basilar artery ultrasound, orthostatic blood pressure measurement, tilt table testing (see the separate Syncope article) and routine biochemical and haematological screening, which can help differentiate between possible underlying causes.
- Initial blood tests should include FBC, ESR, glucose, renal function tests, electrolytes, LFTs, calcium and TFTs.
- EEG: less specific and sensitive than neuroimaging in the investigation of epilepsy in elderly people. EEG abnormalities in healthy elderly individuals are common. EEG can occasionally help to identify seizure type. The diagnosis of non-convulsive status epilepticus can be confirmed when continuous epileptiform activity is recorded in a confused patient.
- Neuroimaging to detect intracerebral lesions. MRI is usually the preferred investigation, being more accurate than CT, with the exception of subarachnoid haemorrhage.

Management

See also the separate Anticonvulsants used for Generalised Seizures and Anticonvulsants used for Focal Seizures articles.

AED treatment can be complicated by the frequent co-existence of epilepsy and dementia, co-medication and the increased likelihood of dose-related and idiosyncratic adverse effects.\[10, 11\] With appropriate management, older people with epilepsy appear to have a better prognosis than younger adults, with a significantly higher percentage becoming seizure-free, often on lower AED doses.\[1\]

Lamotrigine or possibly levetiracetam should be considered when starting AED treatment in older people with focal-onset seizures. Gabapentin is an alternative monotherapy or adjunctive therapy option in older people with epilepsy.\[1\]

Do not discriminate against older people and offer the same services, investigations and therapies as for the general population (therefore, see also the separate Epilepsy in Adults article). Pay particular attention to pharmacokinetic and pharmacodynamic issues with polypharmacy and comorbidity in older people with epilepsy. Consider using lower doses of AEDs and, if using carbamazepine, offer controlled-release carbamazepine preparations.\[9\]

- An elderly person suspected to have had new-onset seizures should ideally be referred to an epilepsy specialist for rapid assessment and initiation of treatment if indicated.\[8\]
Education of patients, carers and relatives about cause, cautions and treatment of seizures.

Treatment for provoked seizures should be directed towards the underlying cause.

Whether treatment should be started after a single unprovoked seizure remains controversial.  
Calcium and vitamin D supplements should be considered in view of the increased risk of osteoporosis with AED treatment. Some authorities recommend calcium and vitamin D supplements and regular bone density measurements for elderly patients at particular risk of osteoporosis.  

AEDs

- Low-dose drug regimens can help to keep adverse effects and drug interactions to a minimum. Most elderly patients require smaller doses than younger adults. Adverse effects can be kept to a minimum by starting with a low dose and titrating slowly.
- Elderly patients are more at risk of side-effects and idiosyncratic reactions.
- There is an increased risk of pharmacological interactions due to polypharmacy and the elderly are more sensitive to adverse events of AEDs.
- Long-term AED treatment is an independent risk factor for osteoporosis.  
- Drugs with a high risk of neurotoxicity should be avoided.
- Few clinical trials of AEDs have been performed specifically in the elderly.

Complications

- The postictal phase is frequently extended in elderly patients and can contribute to physical injury sustained during seizure activity. Falls, burns, fractures, lacerations, strains and severe bruising can greatly reduce quality of life.
- Those affected often lose confidence and independence. Poor mobility and impaired self-confidence can result in admission to residential care.
- Epilepsy is associated with an increased prevalence of mental health disorders including anxiety, depression and suicidal thoughts.
- Older people with epilepsy have a mortality rate 2-3 times higher than the general population.
Prognosis

- The prognosis for an individual presenting with suspected epilepsy is very variable and depends on the epilepsy syndrome, the frequency of seizures and the response to treatment. Inadequate seizure control should raise the suspicion of poor adherence or progressive neurodegenerative disease.
- Most older patients will remain seizure-free on AED monotherapy. Older people who present with a single seizure are more likely than younger individuals to have a further seizure.

Further reading & references

- Transient loss of consciousness ('blackouts') management in adults and young people; NICE Clinical Guideline (August 2010)
- Epilepsy: NICE CKS, December 2014 (UK access only)
- British National Formulary (BNF); NICE Evidence Services (UK access only)
- Epilepsy Action
- Epilepsy Society
- Epilepsy Scotland
- Epilepsy Wales

1. Diagnosis and management of epilepsy in adults; Scottish Intercollegiate Guidelines Network - SIGN (2015)
2. The Role of Primary Care in Epilepsy Management; Epilepsy Action, 2005
9. Epilepsies: diagnosis and management; NICE Clinical Guideline (January 2012)

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