New-Onset Seizures in the Elderly: Epidemiology, Diagnosis, and Treatment

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Conflicts of interest
• None

Types of new-onset seizures in the elderly
1. Epilepsy
2. Acute symptomatic seizures
3. Unprovoked seizures
Epilepsy

- Recurrent unprovoked seizures
- Common etiologies:
  - Stroke
  - Unknown (cerebrovascular disease?)
  - Dementia
    - "Between 8 to 16 percent of patients with AD will develop seizures, a rate up to 10 times otherwise expected"
  - Other (tumors, trauma)

Acute symptomatic seizures

- Within 7 days of acute insult
- Common etiologies:
  - Stroke
  - Metabolic encephalopathy
  - Drugs
  - Other (trauma)

Unprovoked seizures

- 7+ days after insult, or no known insult
- Etiology not readily identifiable
- Subtypes:
  - Remote symptomatic seizure
  - Idiopathic seizure
Why does incidence peak in later life?

- "Stroke, brain hemorrhage, infection, and degenerative disease, such as dementia"
- 25% of new seizures occur after age 65
- Nearly 25% of epileptic patients are age 65+
- "The incidence of acute seizures in those older than age 60 has been estimated to be 100 per 100,000, and increases linearly with each decade of advancing age"

In older individuals, epilepsy has a unique presentation.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>DIFFERENCES IN SEIZURE PRESENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Older people</td>
</tr>
<tr>
<td>Seizure incidence</td>
<td>High</td>
</tr>
<tr>
<td>Location of focus</td>
<td>Frontal/frontal</td>
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<tr>
<td>Generalised seizures</td>
<td>Low</td>
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<tr>
<td>Structural lesions</td>
<td>More</td>
</tr>
<tr>
<td>Aura</td>
<td>Fewer</td>
</tr>
<tr>
<td>Automatism</td>
<td>More</td>
</tr>
<tr>
<td>Post-ictal confusion</td>
<td>Very long</td>
</tr>
</tbody>
</table>

Source: Adapted from Raskin et al (2006)
Acute symptomatic seizures are more easily addressed.
- Diabetic hypoglycemia and hyperglycemia
- Hyponatremia, uremia, hypocalcemia
- Abrupt discontinuation of sedative and anxiolytic drugs
- Medications that lower the seizure threshold: phenothiazines, antidepressants (esp. TCAs and buproprion), some antibiotics and analgesics
- CNS and systemic infections: meningitis, pneumonia, urosepsis
- Acute trauma
- Embolic stroke

Diagnosis is highly dependent on a witnessed description of the event.
- True seizure or not? (Posture, sleep, postictal mental/physical state)
- Epileptic or non-epileptic?
- Glucose, Ca, Mg, P, electrolytes, liver and renal function tests, CBC, urinalysis, toxicology screen, LP if CNS infection or cancer is suspected
- EEG recommended but not definitive...~50% of individuals with seizure have normal EEG.
- MRI w/ or without gadolinium: useful for detecting tumors, infections, and underlying cerebral pathology

Conditions that can mimic seizures
- Syncope
- Psychological disorders
- Sleep disorders
- Paroxysmal movement disorders
- Migraine
- Miscellaneous neurologic events
  - Transient ischemic attack
  - Transient global amnesia
  - Drop attacks
  - More common in elderly!
Treatment selection and scheduling should depend on the risk of seizure recurrence.

- Caution: Impaired clearance, polypharmacy, higher apparent sensitivity to AED side effects, and osteoporosis potential
- Dosing: “Start low and go slow”
- Around 60-70% will achieve seizure control with a single AED, and up to 80% can be expected to remain seizure free with AED treatment (Brodie and Kwan, 2005).
- Should the AED be continued or discontinued?
- Newer AEDs (lamotrigine, levetiracetam, gabapentin) are better tolerated and safer than older AEDs (carbamazepine, phenytoin, sodium valproate)

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