Management of epilepsy

Yvonne M Hart

Abstract

A complete diagnosis of epilepsy involves the diagnosis of seizures (based on the clinical history), the epileptic syndrome, and the underlying aetiology. Epilepsy may be genetic or have a structural or metabolic cause (identified or unknown). The most common differential diagnoses are syncope and psychogenic non-epileptic seizures. Seizures may be generalized or focal, and take different forms. All patients developing seizures should have an ECG, and neuroimaging should be undertaken in all patients developing epilepsy in whom a focal cause is suspected, with the exception of genetic focal epilepsies. Antiepileptic medication should be tailored to the specific needs of the patient, with particular reference to the seizure type(s) and epilepsy syndrome. Other needs, such as the likelihood of pregnancy, and the presence of co-morbidities including learning disability and psychiatric disorders also need to be taken into account. Patients not responding to antiepileptic drugs may be candidates for surgery. The need for ongoing medication should be regularly reviewed in patients in long-term remission.

Keywords antiepileptic drug; epilepsy; focal seizure; generalized seizure; seizure; status epilepticus

What's new?

- Levetiracetam, along with lamotrigine and carbamazepine, appears to have low risk of teratogenicity
- Women taking enzyme-inducing antiepileptic drugs and requiring emergency contraception should be offered a copper-bearing intrauterine device
- Buccal midazolam is the treatment of choice for prolonged or serial seizures in the community setting
- Deep brain stimulation may be a treatment option for people with refractory epilepsy who are not candidates for resective surgery

Diagnosis

The diagnosis of epilepsy involves not only the diagnosis of seizures, but also an assessment of the nature of the epileptic syndrome and the underlying aetiology. Seizures are diagnosed clinically on the basis of the description of the event. This should include both the patient's own account and that of an eyewitness, if one was present. Particular points to be noted include any precipitating factors, the nature of any warning symptoms, the features of the event itself, the duration of the event, and the post-ictal period (Table 1). Common differential diagnoses include syncope and psychogenic non-epileptic seizures.

Syncope

Syncope is usually provoked by an obvious trigger, such as pain, strong emotion, dehydration, and standing for long periods in a hot atmosphere. Usually the patient experiences an aura, which may consist of nausea, greying of the vision, muffled hearing, or a feeling of lightheadedness. If no such warning is experienced or if there is no provoking factor, the diagnosis should be reconsidered, although syncope due to cardiac arrhythmias may appear to be without an obvious trigger and may not cause an aura (see chapter on T-LOC). Typically the patient appears pale and clammy. Loss of consciousness results in their falling to the ground: the body may be either stiff or limp. Brief, irregular, multifocal jerking movements may occur, but unless the patient is maintained in the upright position these invariably last less than 15 seconds (which may still seem a long time to an observer)[1]. Automatisms may also occur. Recovery to the point where the patient can hold a conversation almost invariably occurs within a minute or two, but recurrence of loss of consciousness that occurs on standing upright is a strong pointer

Questions for an eyewitness when diagnosing possible seizures

- What was the person doing just before the seizure?
- What alerted you to the seizure?
- What time of day did it occur?
- Describe what you saw during the seizure
  - Which parts of the body were affected?
  - Was one side affected more than the other?
  - Did the person go stiff?
  - What type of movements, if any, did the person make? (e.g. twitching, jerking, thrashing)
  - Were there any facial movements?
  - Was the person unconscious or was there a change in awareness?
  - Could they speak to you, and did their speech make sense?
  - Were their eyes open or shut?
  - Did their colour change? Were they flushed, clammy or pale?
  - Did their breathing change? If so, in what way?
  - How long did the seizure last?
  - Did the person injure him or herself?
  - Did you see anything else that you think might be important?
- How did the person behave after the seizure?
  - Were they sleepy, confused, or alert?
  - How long did they take to recover completely?
  - Did they want to sleep afterwards?

Table 1

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towards syncope. Despite the rapid recovery patients may feel 'drained' for some considerable period of time.

If the patient is maintained upright (e.g. supported by friends or if seated on a chair) a more prolonged convulsion may occur due to failure of the cerebral circulation to become adequately re-established. Similarly, if syncope is complicated by a head injury, recovery may be delayed by the occurrence of a concussive convulsion.[2] These begin within 2 seconds of the head injury and involve stiffening followed by myoclonic jerking, sometimes asymmetrical, which may last up to 150 seconds. Such convulsions do not lead to epilepsy, and neuroimaging is normal. Both types of seizure are considered to be 'provoked' seizures, and do not usually lead to a driving ban.

Psychogenic non-epileptic seizures

Psychogenic non-epileptic seizures (PNES) (functional seizures, dissociative seizures) are common, particularly in neurology clinics and emergency departments. Clues to the diagnosis in the history may include reference to 'thrashing' or 'flailing', directed violence, a tendency for the seizure repeatedly to stop and start, pelvic thrusting and opisthotonus, the occurrence of seizures at times of acute stress (although they may also occur when the patient is apparently relaxed) and long duration with rapid recovery. Patients may report such seizures occurring from sleep, although EEG evidence of occurrence from sleep would point to epileptic seizures. At times injury may occur during PNES. Some PNES take the form of 'swoons', in which the patient slumps and lies still for a long period of time, 'as if they are asleep', while others take the form of absence-like episodes. It may be difficult to identify an underlying cause for PNES, but if they are suspected, every attempt should be made to secure the diagnosis (for example by ambulatory EEG or EEG-videotelemetry if the seizures are sufficiently frequent), and a 'trial of antiepileptic drugs' is not indicated. However, it should be remembered that frontal lobe seizures (which commonly occur in the early stages of sleep) may appear bizarre, are often short-lived but repeated, and are often followed by a quick recovery: the differentiation from PNES is made more difficult by the fact that ictal EEG may not demonstrate obvious epileptic activity, or may be obscured by movement artefact. It is also not uncommon for PNES to occur in people who have epilepsy, and if the circumstances of the original diagnosis are not known, for example if it was made elsewhere, any attempt to withdraw antiepileptic drugs should be undertaken with extreme caution.

Other conditions mimicking tonic–clonic seizures

Hypoglycaemic seizures may need to be distinguished from unprovoked seizures, particularly in people with diabetes mellitus, and blood glucose should be measured immediately after the episode to give a reliable indication of this.

Breath-holding attacks typically occur in young children who are thwarted or frustrated: the child cries then stops breathing, becoming cyanosed and then limp and unresponsive, often with a few clonic movements. Day-dreaming may sometimes be confused with absence seizures in children but differ in that the child can be alerted out of them.

Table 2 lists other diagnoses that may be confused with focal seizures.

Differential diagnosis of partial seizures

Migraine	The aura is typically visual, commonly taking the form of black and white 'fortification spectra', and is usually of longer duration than the visual aura of occipital epilepsy (often taking the form of elementary coloured lights). Both migraine and epileptic seizures are associated with a gradual spreading of symptoms
TIA	Usually of sudden onset, unlike the gradual spread of symptoms in a seizure, and typically causing negative symptoms (weakness, numbness) in contrast to the usual (but not invariable) positive symptoms occurring in seizures (jerking, paraesthesiae)
Panic attacks	Typically occurring with physical symptoms such as dyspnoea, tachycardia, sweating and tremulousness, sometimes difficult to distinguish from focal seizures of temporal lobe origin. Hyperventilation may also occur, causing dizziness and paraesthesiae in the limbs distally and in a peri-oral distribution
Parasomnias	*Hypnic jerks* may be mistaken for myoclonus, but are common in the general population, taking the form of a single jerk in the early stages of sleep, causing a feeling of falling followed by arousal. Other sleep disorders need to be distinguished from partial seizures of frontal or temporal origin. *Rapid eye movement (REM) sleep behaviour disorder* occurs in elderly people, often in the context of a neurodegenerative condition such as Parkinson's disease, and takes the form of 'acting out' of dreams, sometimes with apparently directed violence. *Sleep walking*, which involves automatic behaviour occurring during non-REM sleep, is common in children. *Narcolepsy* is rarely difficult to distinguish from epilepsy, and the typical associated features of sleep paralysis, hypnagogic hallucinations and cataplexy should be sought (though they are not always present). *Night terrors* typically occur in children, arise from slow-wave sleep, and involve the child suddenly sitting up and crying or screaming, with dilated pupils, as if terrified (although they have amnesia for the attack afterwards). *Periodic limb movements* of sleep are very common over the age of 50, and involve knee flexion, ankle dorsiflexion and extension of the big toe, lasting a few seconds but occurring every 20–40 seconds for considerable periods of time. Although the patient is unaware of this it may cause concern to their bed partner.