Emergency Department's (ED) Case of the Month is a series of articles discussing topics important to family physicians working in the ED. This department covers selected points to help you avoid pitfalls and improve patient care in the ED. Submissions and feedback can be sent to ***diagnosis@sta.ca****.*

Case of the month

"What Happened? Did I Faint?"

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Mr. Smith, a 22-year-old student, is brought into the emergency department after collapsing while sitting at his computer. There is a vague history of seizure activity from a witness.

The man complains of a headache. He denies prior medical problems, specifically denying any history (or family history) of syncope, seizures or hypoglycemia. He has a small laceration and bruise on the left side of his tongue.

Mr. Smith's Stats

- Vital signs are within normal limits.
- Bruise on the left side of his forehead.
- No evidence of incontinence.
- Detailed neurologic exam is completely normal, apart from mild confusion, which clears rapidly.
- Other systems are found to be normal.
- Complete blood count, electrolytes, and glucose are normal.

Questions:

1. What is the significance of the tongue wound?
2. What investigations need to be performed, and how urgently, in a patient suspected of having a first seizure?
3. Is he epileptic?
4. Should he be started on anticonvulsants?
5. What about driving?

Answers:

1. What is the significance of the tongue wound?

Lateral tongue biting during reported loss of consciousness strongly suggests a tonic-clonic seizure with a sensitivity of 24% and a specificity of 99%. Simple syncope is not associated with lateral tongue biting.

2. What investigations need to be performed, and how urgently, in a patient suspected of having a first seizure?

It is very important to get a good history from the patient. Electrolytes, including calcium and magnesium, blood urea nitrogen, complete blood count, creatinine and a glucose level should be done at the initial visit.

Neuroimaging is part of the initial workup. In hospitals with no scanners, an urgent (one to two days) computed tomography (CT) scan should be booked unless there are serious structural lesions suspected, in which case transfer for immediate scan should be performed (Table 1). If meningitis is suspected, intravenous antibiotics should be administered before transfer.

Table 1
Risk Factors for Serious Structural Lesions

- New focal deficits.
- Persistent alteration of mental status.
- Fever.
- Recent trauma.
- Persistent headache.
- A suspicion of acquired immune deficiency syndrome.
- A history of cancer or anticoagulant therapy.

Lumbar puncture (LP) only needs to be done if the history and physical examination warrant it. Up to 16% of subarachnoid hemorrhages present with a seizure, and this diagnosis should be suspected in any patient with an unusually severe postictal headache, in which case a normal CT should be followed by an LP.

Electroencephalography (EEG) is not part of the initial workup. This can be booked for a later date, preferably within a few weeks.

3. Is he epileptic?

We don't know yet. Convulsive syncope, seizure activity provoked by cerebral ischemia during a syncopal episode, is commonly misdiagnosed as epilepsy. Many patients who respond poorly to treatment and are labelled as having "treatment-resistant epilepsy" may have a cardiovascular cause. A history of vaso-vagal symptoms would favour a diagnosis of convulsive syncope. The EEG will help in the final diagnosis. In equivocal cases, elective tilt-table testing during EEG monitoring may be indicated.

Table 2

Risk Factors for Recurrence

It is reasonable to allow one "free" seizure in most cases, unless there are risk factors for recurrence. These risk factors include:

- Neurologic abnormalities.
- Epileptiform abnormalities on the electroencephalogram.
- Partial rather than a generalised seizure.
- Development of seizures in the elderly or in patients below the age of 16 years (febrile seizures excluded).

The Case of Mr. Smith

Our patient most likely had a tonic-clonic seizure. Blood work plus computed tomography head scan were all that is necessary at this visit, and they were all normal (Figure 1). An electroencephalogram was booked as an outpatient. Anticonvulsants are not necessary at this stage, but he should be told not to drive or operate machinery.

Figure 1. Mr. Smith's CT scan.

4. Should he be started on anticonvulsants?

The risk of recurrence after an initial seizure is about 40% in untreated patients, more than half of which will occur within six months (Table 2). Anticonvulsants halve the recurrence rate. Yet starting every patient on treatment would expose more than 50% of patients to unnecessary treatment and side effects.

5. What about driving?

Patients should definitely be told not to drive. In some provinces, reporting seizures in people with driver's licences to the licensing department is mandatory. The re-instatement of their licenses can be supported if they are compliant with treatment (if prescribed) and are seizure free for two years. Some neurologists will support patients driving if they are seizure free for one year. Dx