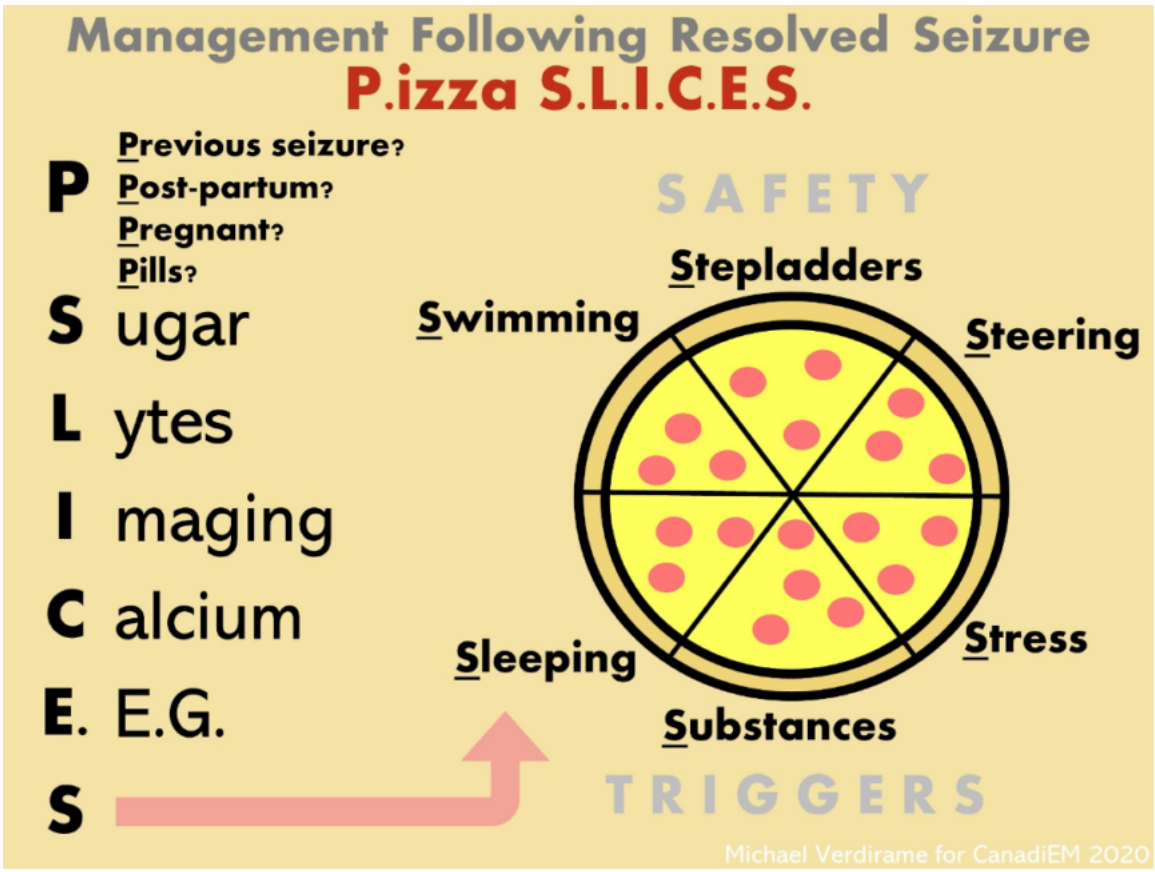

First Seizure Discharge Instructions: Serving Up The Pizza SLICES!

In Medical Concepts by Michael Verdirame / August 31, 2021 / Leave a Comment

It's a busy night in your emergency department when a 24-year-old confused female is brought in via EMS for a possible first seizure accompanied by her friend. Her friend reports calling 911 after witnessing the patient fall to the ground stiff and then convulsing for 30 seconds.

The patient is confused and has difficulty answering questions. From your collateral history, you gather that this confusion has been ongoing since the event. The patient's friend did not notice any directional head or eye movement or one area of the body that began convulsing first. The event was not associated with any complaints of headache, chest pain, or physical activity. The patient's friend doesn't know of recreational drugs or medications taken by the patient.

The patient is oriented only to self and the remainder of the physical examination is unremarkable. You order routine bloodwork and an EKG which both return normal. Urine pregnancy test is negative.

You suspect this was a seizure and you are keen to send this patient home with neurology follow-up as soon as she returns to baseline. While many questions remain unanswered, you want to avoid over-investigation. How do you know when you have been thorough enough to ensure both patient and public safety?

Management of a Resolved First Seizure

Seizures account for about 1% of all emergency department visits and the complexity of their workup and management has led to cross-centre and cross-practitioner inconsistencies.[1] Once the patient is stable, a broad differential diagnosis of syncope and "can't miss" seizure mimics, such neurologic or cardiac causes, must be considered. Syncopal episodes can present as involuntary movements, and careful history must be taken to differential seizure from a syncopal episode.

Once the seizure mimics are ruled out, the workup and management of a resolved single seizure includes:

1. Investigating for structural and metabolic triggers.
2. Checking for seizure sequelae which include the musculoskeletal, respiratory (aspiration), cardiac, renal and/or metabolic systems.
3. History-taking for any previous seizures that may lead to an epilepsy diagnosis.
4. Ensuring both patient and public safety following discharge.

The mnemonic **Pizza SLICE SSS SSS** (six slices!) can help us recall these multifaceted investigation and management goals. The patient is served six Slices of information pertaining to both safety and triggers.

Previous seizure – Approximately half of patients with a reported first-time seizure have had a previous event that may suggest an epilepsy diagnosis.[2] In these patients there is a substantial delay from reported first seizure presentation to the initiation of appropriate drug therapy.[2,3]

Ask specifically about nonconvulsive events. These may be myoclonic jerks shortly after waking which raise suspicion for juvenile myoclonic epilepsy. They could also be staring spells, visual, gustatory, or olfactory hallucinations, or episodes of sudden fear and panic as auras raising suspicion for focal seizures.

Postpartum / Pregnancy Test – Ensure the patient is not pregnant or has not recently been pregnant. Eclampsia presents 21% of the time in the postpartum period with 90% of cases within one week of delivery.[4]

Pills – Look for a toxidrome that could indicate an acute intoxication and review the patient's current medications. Ask specifically about the most common culprits for drug-induced seizure: bupropion and other antidepressants, diphenhydramine and other anticholinergics, stimulants, tramadol, and isoniazid.[5]

Sugar -Hypoglycemia is both a trigger and sequelae of seizure.

Lytes – Hyponatremia is a seizure trigger. Think about this cause in patients presenting after extreme physical exertion (such as in a marathon), or in a partygoer who has used MDMA (Ecstasy).

Imaging – CT scan in the emergency department has been shown to alter management in 9-17% of first-time seizure presentations[6] and the American Academy of Neurology recommends CT Scan in the emergency department for all first-time, unprovoked seizure patients. Epilepsy Ontario guidelines state to consider CT imaging in all adults presenting with first-time, unprovoked seizure as well as in children if there is evidence of focal onset seizure, persistent neurological deficits, history of head injury, or history of malignancy.[6,7]

That said, MRI is much more likely to detect epileptogenic abnormalities and is the preferred neuroimaging method is both adults and children.[7] Given a reliable patient, you may speak with your neurologist about their interest in an outpatient non-urgent MRI when arranging follow-up.

Calcium – Consider checking extended electrolytes for hypocalcemia or hypomagnesemia as seizure triggers.

EEG – EEG has a strong yield for determining risk of seizure recurrence in first-time, unprovoked seizures.[8] If done within 24 hours it is more likely to show abnormalities,[9] but realistically this may be difficult to arrange.

▲

Steering – Follow your provincial reporting guidelines on patient fitness to drive and give notice to the patient accordingly. Reporting applies irrespective of whether the patient has a driver's license. Advise the patient not to operate heavy machinery.

Stepladders – The patient should be advised not to work at heights or climb ladders.

Swimming – The patient should be advised not to swim alone and to shower instead of taking baths.

Sleep – Counsel on sleep deprivation as a seizure trigger.

Stress – Counsel on stress as a seizure trigger.

Substances – Counsel on alcohol and other substance use as seizure triggers.

Case Conclusion

Once your patient is back to baseline, you go through your Pizza SLICES and realize you have got a few more questions to ask. You confirm your collateral history and that she is otherwise healthy, takes no medications, and has no history of head injury. She was not recently pregnant and does not recall any history of seizures or nonconvulsive events suspicious for focal seizures.

You have a shared decision-making discussion about deferring CT imaging given her lack of risk factors for an obvious intracranial lesion. You arrange outpatient MRI, neurology follow-up, and call the EEG lab to expedite the study. You counsel on seizure safety and triggers and make a decision regarding the patient's safety to drive, completing any relevant reporting documentation and informing the patient accordingly.

You discharge her accompanied by her watchful friend with clear return-to-clinic instructions – assured that you have successfully navigated the complexities of emergency department seizure management.

Take Home

While the Pizza SLICES approach is not an exhaustive list, hopefully it will assist you in recalling the essential work-up and management priorities in resolved, first-time seizures. Additional items not covered in the above mnemonic are "can't miss" seizure mimics such as stroke and TIA. It is intended to be applied once insidious causes have already been considered.

Next time you are about to discharge someone home after their first seizure, stop and ask yourself – have you served them all of their Pizza SLICES… SSS SSS?

This post was edited and copyedited by Daniel Ting.

Read more:

- CRACKCast Episode 206: Seizure
- Tiny Tips: Seizures and STATUS EPILEPsy

▲

References

1. Williams J, Doherty J, Di B, Mabarak D, Kennedy U, Doherty C. Seizure care in the emergency department. Identifying and bridging the gaps. A study of care and outcomes from 644 seizure presentations. *Epilepsy Behav*. 2018;78:226-231. doi:10.1016/j.yebeh.2017.08.042

2. Firkin AL, Marco DJT, Saya S, et al. Mind the gap: Multiple events and lengthy delays before presentation with a "first seizure." *Epilepsia*. Published online August 31, 2015:1534-1541. doi:10.1111/epi.13127

3. Gasparini S, Ferlazzo E, Sueri C, Aguglia U. The relevance of "diagnostic delay" in epilepsy. *Epilepsia*. Published online January 2016:165-165. doi:10.1111/epi.13237

4. Berhan Y, Berhan A. Should magnesium sulfate be administered to women with mild pre-eclampsia? A systematic review of published reports on eclampsia. *J Obstet Gynaecol Res*. Published online April 1, 2015:831-842. doi:10.1111/jog.12697

5. Chen H-Y, Albertson TE, Olson KR. Treatment of drug-induced seizures. *Br J Clin Pharmacol*. Published online September 17, 2015:412-419. doi:10.1111/bcp.12720

6. Harden CL, Huff JS, Schwartz TH, et al. Reassessment: Neuroimaging in the emergency patient presenting with seizure (an evidence-based review): Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology*. Published online October 29, 2007:1772-1780. doi:10.1212/01.wnl.0000285083.25882.0e

7. *Provincial Guidelines for the Management of Epilepsy in Adults and Children*. Critical Care Services Ontario; 2015:1-50. https://epilepsyontario.org/wp-content/uploads/2015/03/Provincial-Guidelines-for-the-Management-of-Epilepsy-in-Adults-and-Children_Janurary-20151.pdf

8. Krumholz A, Wiebe S, Gronseth GS, et al. Evidence-based guideline: Management of an unprovoked first seizure in adults: Report of the Guideline Development Subcommittee of the American Academy of Neurology and the American Epilepsy Society. *Neurology*. Published online April 20, 2015:1705-1713. doi:10.1212/wnl.0000000000001487

9. Hirtz D, Ashwal S, Berg A, et al. Practice parameter: Evaluating a first nonfebrile seizure in children: Report of the Quality Standards Subcommittee of the American Academy of Neurology, the Child Neurology Society, and the American Epilepsy Society. *Neurology*. Published online September 12, 2000:616-623. doi:10.1212/wnl.55.5.616

▲