FIRST SEIZURE EVALUATION (Dr. M. Banovic)

INTRODUCTION

- A first seizure is one that a patient has experienced for the first time in their life. This includes an episode of status epilepticus and multiple seizures within a 24 hour period. Any seizure after 24 hours is considered a second seizure. The risks of getting a second seizure are 20-45% depending on underlying features.
- Symptomatic seizures have identifiable causes such as underlying brain injury or brain tumors, whereas idiopathic seizures have no known underlying cause. Metabolic derangements can cause acute symptomatic seizures.
- There is currently no consensus on the evaluation of a patient with a first seizure and no standardized algorithm has been agreed upon. Treatment is patient specific.

ETIOLOGY

Although there are many causes of first seizures, it has been found that new onset epilepsy is the commonest cause and as a result, the definition of epilepsy has included first seizure with a high risk of recurrence(>60% risk). 1

Other common causes include but are not limited to

- Pre or perinatal brain injury (4.4%)
- Cerebrovascular disease (3.9%)
- Head injury (3.2%)
- Brain tumor (1.7%)
- Alcohol use (0.3%)

EMERGENCY TREATMENT

Patients coming to the ED whilst seizing should be treated as per the local protocol to abolish the ongoing seizure.

If not currently seizing, the physician should ensure normal oxygenation, vitals and glucose level.

INVESTIGATIONS

Investigations for patients should be tailored to the patient after collecting a thorough history and examining the patient. Some tests must be done for all patients as shown below. This may be considered the most important step as further decisions rely heavily on results of imaging and blood tests. 2

FIRST SEIZURE

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STABILIZE PATIENT

MANDATORY TESTS

- Glucose levels
- Electrolyte levels
- EEG within 24-48 hrs.
- MRI (CT scan if suspect hemorrhage)
- Pregnancy test for all women of childbearing age

PATIENT SPECIFIC TESTS

- Comprehensive metabolic panel plus ammonia (in cirrhotic patients)
- HIV test
- Toxicology (drug addicts)
- Lumbar puncture (immunocompromised patients)
- Serum prolactin (to rule out psychogenic seizures)

TO TREAT OR NOT TO TREAT?

- The decision to start anti-epileptic drugs(AEDs) should be patient specific. Positive findings on EEG or MRI showing brain lesions should prompt immediate treatment to prevent recurrence as this may be an enduring predisposition to epilepsy.
- In general treatment is with-held until a patient develops a second seizure if there are negative findings on EEG and neuroimaging, provided any underlying cause is treated or not found.
- On the other hand, it may be prudent to start AEDs early in patients whose livelihoods depend on their being seizure free, e.g. long distance drivers, pilots, etc.
- Patients should be advised over driving limitations. Patient can hold a commercial vehicle license if seizures were due to underlying medical condition (fever, infection, dehydration, drug reaction or acute metabolic disturbance). 3

References

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3. Krumholz, A., Wiebe, S., Gronseth, G., Gloss, D., Sanchez, A., Kabir, A., Liferidge, A., Martello, J., Kanner, A., Shinnar, S., Hopp, J. and French, J. (2015). 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*, 84(16), pp.1705-1713.