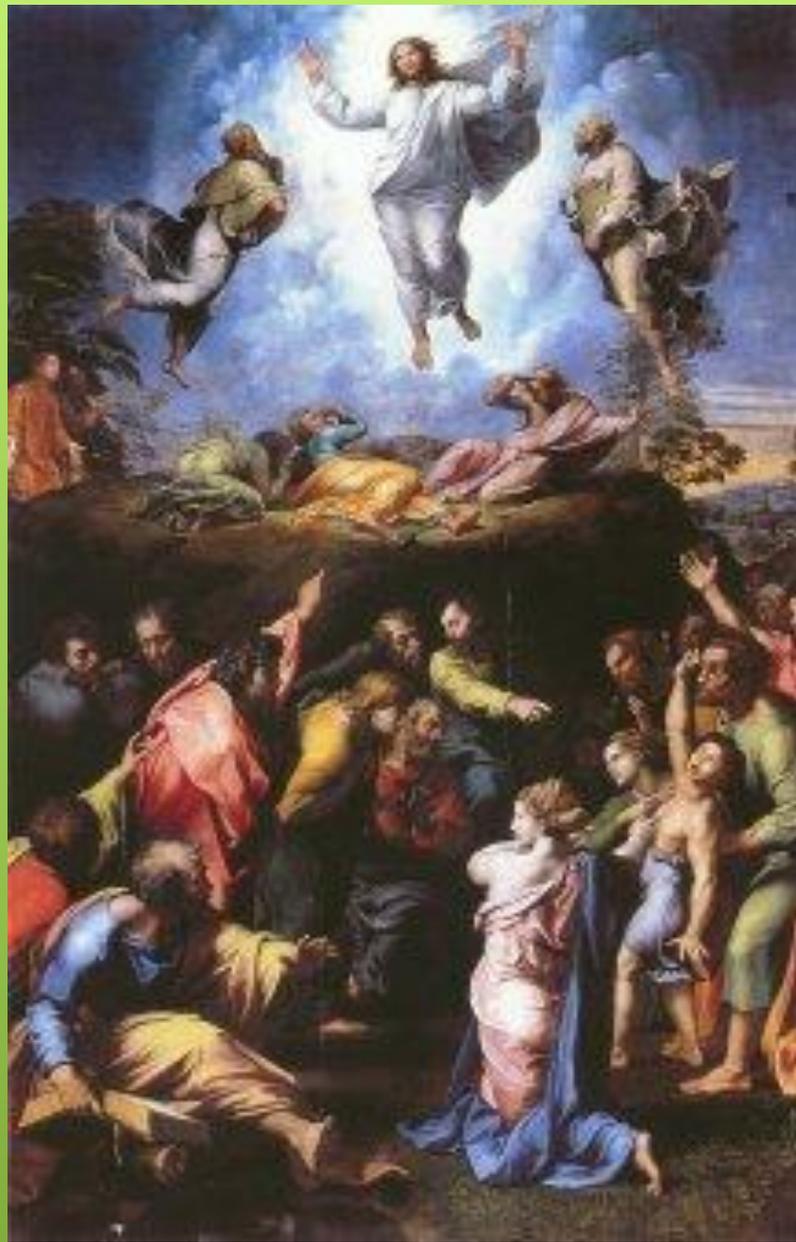


Recognizing Seizures

Dr. Hemang Shah

11-11-2014



transfiguration of Christ



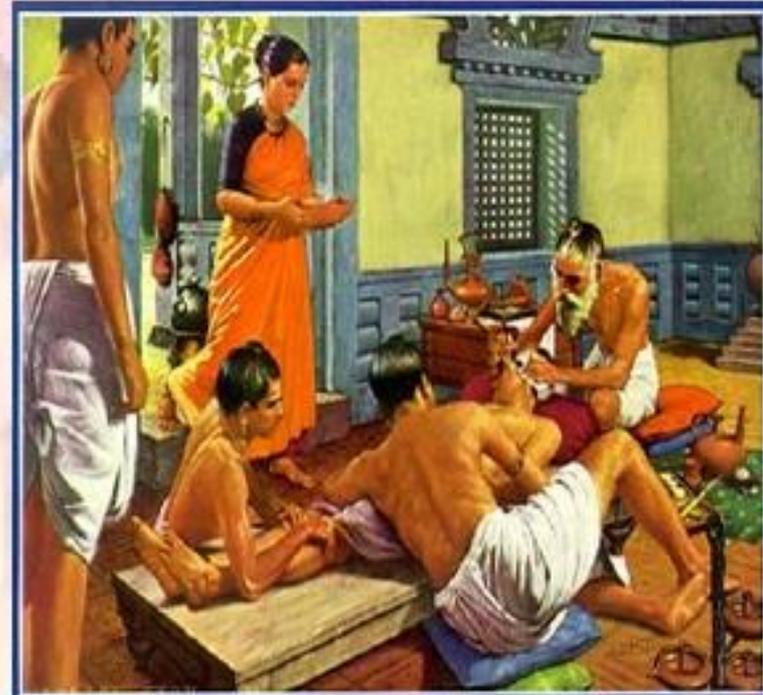
Teacher, I brought my son to you, because he has an evil spirit in him and cannot talk. Whenever the spirit attacks him, it throws him to the ground, and he foams at the mouth, grits his teeth and becomes stiff all over.' (Mark 9, 17-18)



**LEFT SUPPLEMENTARY
MOTOR AREA SEIZURE**

Historical Background

- ✦ **Epilepsy derived from a Greek term: Epilambanei** -to possess, to take hold of, to grab or to seize.
- ✦ **Vedic period of 4500-1500BC :** Ancient Indian Medicine refined and developed the basic concept of epilepsy
- ✦ **Charaka Samhita- The Ayurvedic literature 400 BC:** Describe epilepsy as '*Apasmara*' means loss of consciousness.





Susruta Samhita

Stats

4th most
common
neurologic
al problem

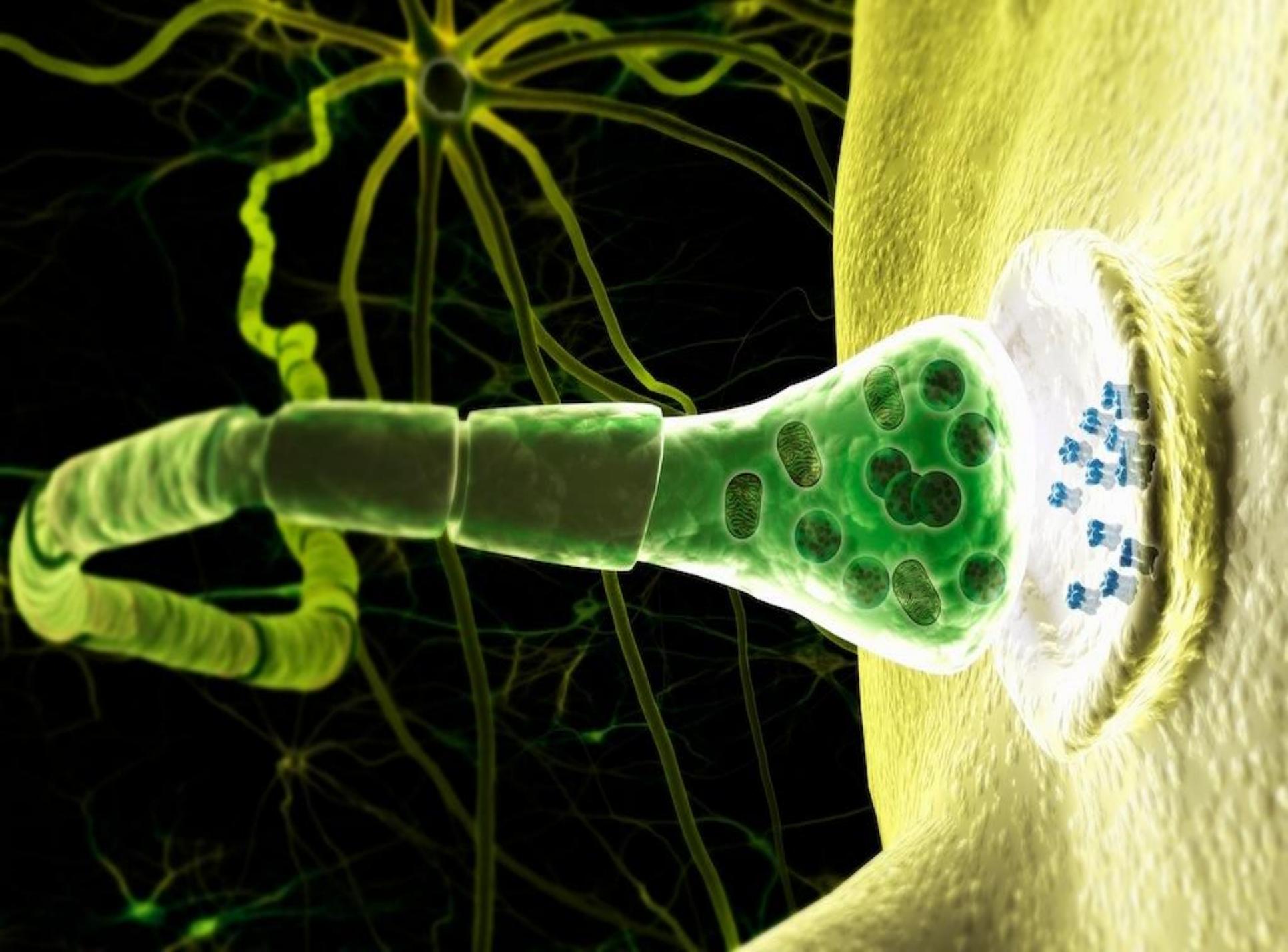
1 in 26 will
develop
epilepsy at
sometime in
our life

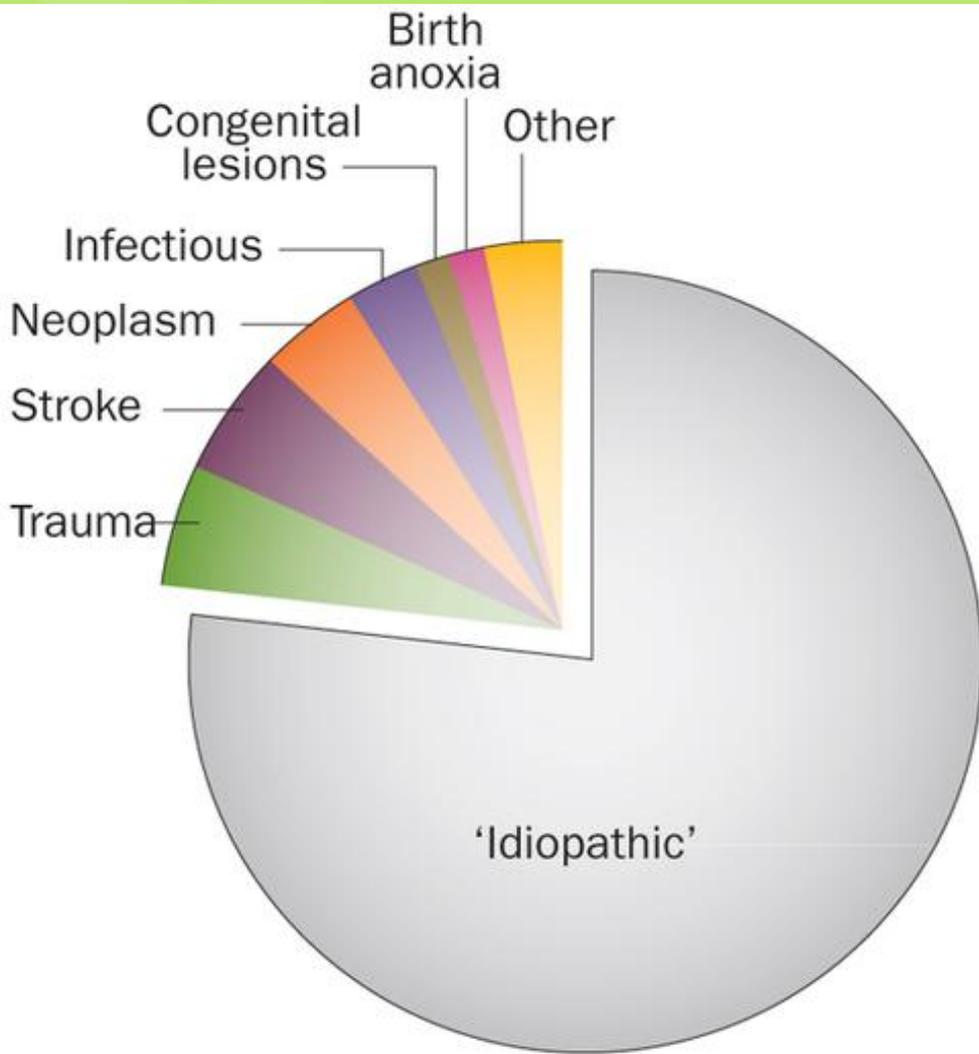
An epileptic seizure is a transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain.



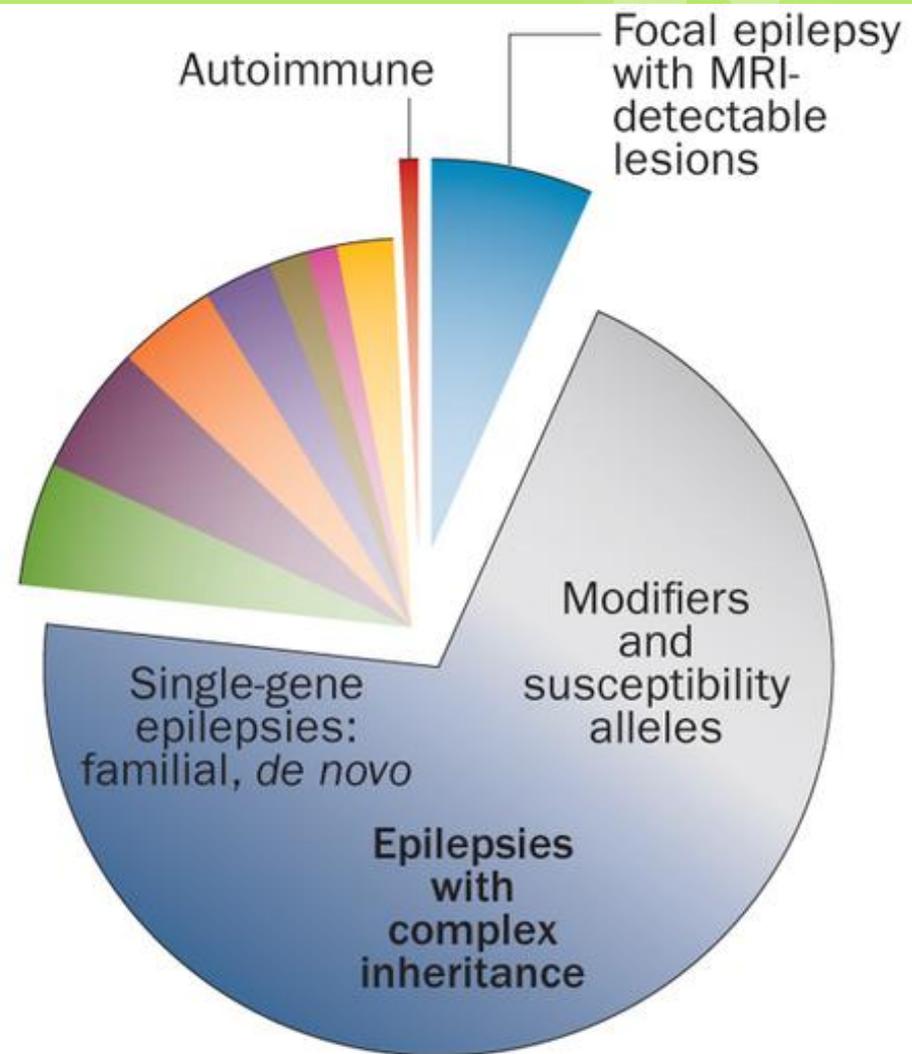
Epilepsy

- A person has had 2 or more seizures greater than 24 hours apart
- Or 1 seizure with a risk for recurrent seizures
- The seizures are unprovoked and not caused by any known medical condition
- A person has a tendency to recurring seizures.
- The term seizure disorder is the same as epilepsy





1975 (Hauser & Kurland¹⁵)



2014 paradigm

Syncope

Movement

Metabolic

Psych

Seizure

Migraine

GI

Vascular

Sleep

Seizures?



Psychogenic non-epileptic Attacks (pseudoseizures)

7-10 years of delayed diagnosis

Resistance to AEDs

High frequency of seizures (multiple daily spells)

Specific triggers (stress, being upset, pain, sound)

Audience (physician's office)

Young woman

Diagnosis (fibromyalgia, chronic pain, chronic fatigue syndrome, Lyme disease), long list of symptoms

Exam

Dramatization

Level of concern

Give away weakness

Tip of tongue biting, minor injuries

Absence of post-ictal confusion, incontinence, from sleep

Spell Characteristics

Gradual onset and termination

Back arching

Pelvic thrusting

Prolonged duration of spell

Lack of stereotype

Side to side head movement

Asynchronous (out of phase) limb thrusting

Closed eyes

Stuttering

Aware with bilateral motor activity

Suggestible / induced with ammonia capsule

Pseudoseizure (?)



Right Temporal
lobe Seizure

INFANTILE SPASM



A photograph of a person lying in a hospital bed, wearing a black t-shirt and blue shorts. They are surrounded by medical equipment, including a blue bag and various wires. A person in a light-colored patterned shirt is standing to the right, and another person in a blue and white striped shirt is in the foreground, looking towards the patient. The background shows a hospital room with a wooden floor and a wall outlet.

Juvenile Myoclonic Epilepsy

A photograph of a patient lying in a hospital bed. The patient is wearing a patterned hospital gown and has several EEG electrodes attached to their head. They are looking towards the camera with a slight smile. The bed is covered with white linens. In the background, there is a wooden cabinet and a metal stand with a coiled cable. The entire image is framed by a green border with a floral pattern.

Absence Seizure

A photograph showing a person in a pink long-sleeved shirt leaning over a person seated in a wheelchair. The person in the wheelchair is wearing a white head covering and a blue top. They are in a dining room with a table set with plates of food. A wooden cabinet is visible on the left. The text "Drop Attack" is overlaid in the center.

Drop Attack

A woman with glasses and a light-colored sleeveless top is sitting upright in a hospital bed. She is looking directly at the camera. In front of her is a white table with a white cup, a black remote control, and an open book. The room has a light-colored wall, a television on a stand to the right, and a bed with blue pillows. The entire image is framed by a green border with a floral pattern.

Temporal lobe Epilepsy

Good Old STRETCH



Syncope Vs Seizure

- History from patient and witness
- Circumstances (posture, hydration, micturition)
- Pre – aura?
- During – stereotype, autonomic,
- Post – confusion, post-ictal Todds
- Not diagnostic – convulsion, bowel/bladder incontinence, amnesia of the event, tongue bite,
- Must do – orthostatic
- No seizure causes flaccid motionless episode of LOC

From: Historical criteria that distinguish syncope from seizures

J Am Coll Cardiol. 2002;40(1):142-148. doi:10.1016/S0735-1097(02)01940-X

	Sensitivity	Specificity	Likelihood Ratio	P Value (Chi-Square)
Factors Most Strongly Predictive of Seizures				
Out tongue	0.451	0.973	16.460	< 0.001
Head turning	0.431	0.968	13.481	< 0.001
Unusual posturing	0.363	0.973	12.880	< 0.001
Bedwetting	0.235	0.964	6.447	< 0.001
Blue color observed by bystanders	0.326	0.944	5.813	< 0.001
Limbs jerking noted by others	0.086	0.877	5.566	< 0.001
Prodromal trembling	0.294	0.941	4.951	< 0.001
Prodromal preoccupation	0.078	0.982	4.284	0.002
Prodromal hallucinations	0.078	0.982	4.284	0.002
Behaviors not recalled	0.529	0.888	3.998	< 0.001
Loss of consciousness associated with stress	0.569	0.849	3.773	< 0.001
Muscle pain	0.157	0.954	3.433	0.004
Prodromal deja vu	0.137	0.959	3.341	0.009
Observed unresponsiveness	0.765	0.749	3.045	< 0.001
Postictal confusion	0.941	0.690	3.031	< 0.001
Postictal headaches	0.490	0.636	2.862	< 0.001
Prodromal mood changes	0.235	0.918	2.853	0.002
Abnormal behaviors* noted by bystanders	0.922	0.671	2.803	< 0.001
Factors Most Strongly Predictive Against Seizures				
Presyncopal spells before loss of consciousness	0.275	0.274	0.378	< 0.001
Self-reported high blood pressure	0.098	0.690	0.316	0.002
Presyncope with hot/warm environments	0.078	0.731	0.291	0.004
Presyncope with needle	0.039	0.883	0.286	0.052
Prodromal vertigo	0.059	0.785	0.274	0.010
Any presyncope	0.235	0.137	0.273	< 0.001
Presyncope after exercise	0.078	0.712	0.273	0.002
Hypertension (physician reported)	0.078	0.708	0.268	0.002
Warmth before a spell	0.078	0.662	0.232	< 0.001
Any chest pain	0.088	0.543	0.215	< 0.001
Nausea before a spell	0.059	0.722	0.211	0.001
Remembered loss of consciousness	0.118	0.425	0.204	< 0.001
Presyncope with prolonged sitting/standing	0.059	0.676	0.181	< 0.001
Diaphoresis before a spell	0.059	0.653	0.169	< 0.001
Chest pain before a spell	0.020	0.872	0.153	0.025
Palpitations before loss of consciousness	0.039	0.662	0.116	< 0.001
Dyspnea before loss of consciousness	0.020	0.763	0.083	< 0.001
Coronary heart disease	0.020	0.749	0.078	< 0.001
Loss of consciousness with prolonged sitting/standing	0.020	0.603	0.049	< 0.001

Table Title:

Comparison of the Most Significant Historic Features in Patients With Seizures and Established Diagnoses of Syncope

Factors Most Strongly Predictive of Seizures

Cut tongue

Head turning

Unusual posturing

Bedwetting

Limb jerking noted by others

Prodromal trembling

Prodromal preoccupation

Prodromal hallucinations

Behaviors not recalled

Factors Most Strongly Predictive of Seizures

Muscle pain

Prodromal déjà vu

Observed unresponsiveness

Postictal confusion

Postictal headaches

Prodromal mood changes

Abnormal behaviors* noted by bystanders



From: Historical criteria that distinguish syncope from seizures

J Am Coll Cardiol. 2002;40(1):142-148. doi:10.1016/S0735-1097(02)01940-X

Criteria	Regression Coefficient (SE)	p Value	Points
Waking with cut tongue	6.85 (2.03)	0.001	2
Abnormal behavior noted*	3.82 (1.37)	0.005	1
Loss of consciousness with emotional stress	3.97 (1.30)	0.002	1
Postictal confusion	3.52 (1.33)	0.008	1
Head turning to one side during loss of consciousness	3.67 (1.43)	0.010	1
Prodromal deja vu or jamais vu	2.75 (1.43)	0.055	1
Any presyncope	-4.70 (1.34)	< 0.001	-2
Loss of consciousness with prolonged standing or sitting	-5.37 (1.71)	0.002	-2
T _a Diaphoresis before a spell	-5.73 (1.80)	0.001	-2

Point Scores for the Diagnosis of Seizures, in the Absence of Knowledge of the Numbers and Historic Duration of Losses of Consciousness and Lightheaded Spells



From: Historical criteria that distinguish syncope from seizures

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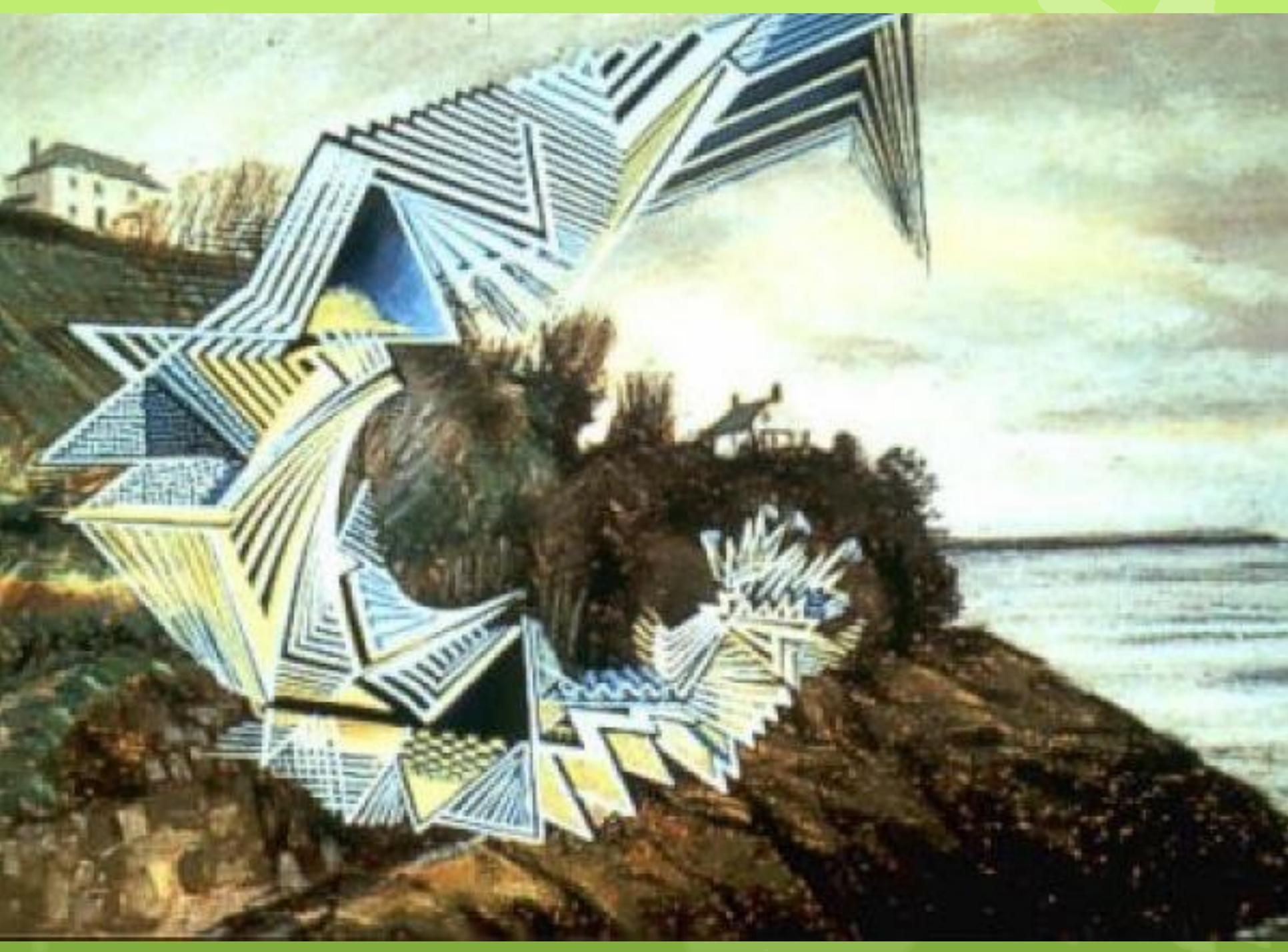
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Point Scores for the Diagnosis of Seizures, in the Absence of Knowledge of the Numbers and Historic Duration of Losses of Consciousness and Lightheaded Spells

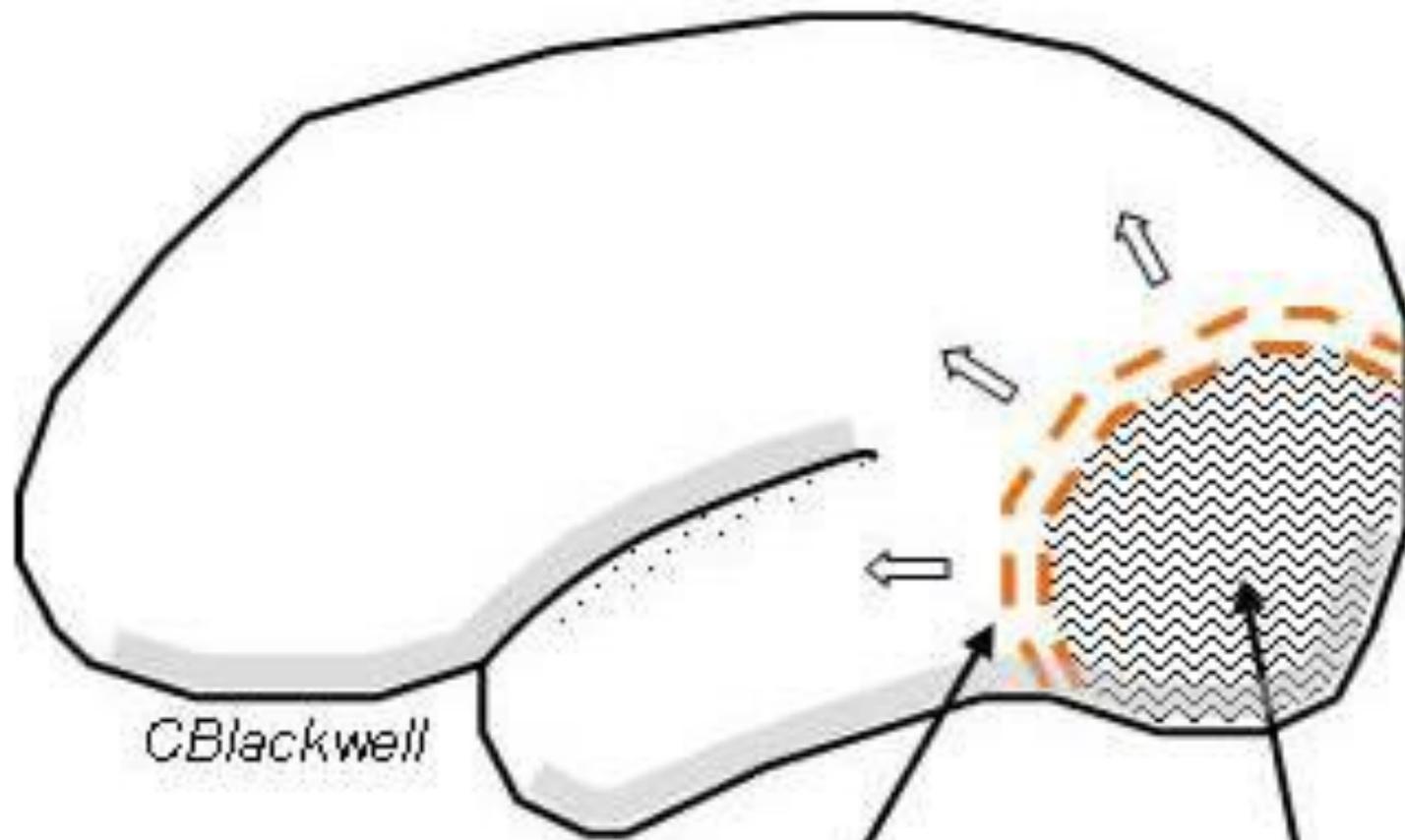
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Prodromal deja vu or jamais vu	0.055	1
Any presyncope	< 0.001	-2
Loss of consciousness with prolonged standing or sitting	0.002	-2
Diaphoresis before a spell	0.001	-2

Migraine Vs Seizure

- Duration of aura – minutes Vs seconds
- Associated symptoms
- Basilar migraine can cause LOC







CBlackwell

Depolarization
→ *Scintillations*

Depression
→ *Scotoma*



Other organic causes

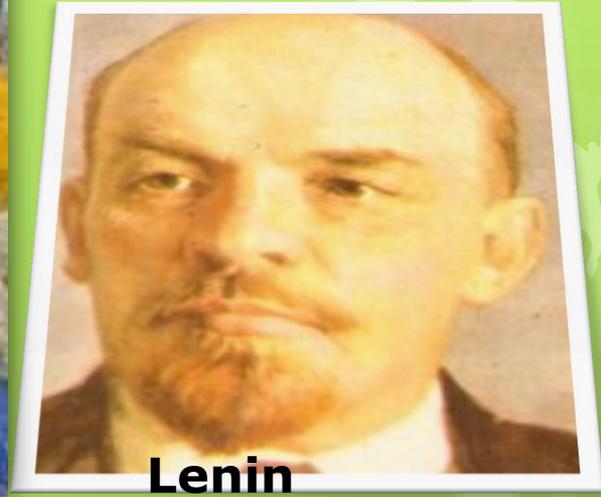
- Hypoglycemia
- Panic Attacks
- Acute dystonic reactions
- Nonepileptic myoclonus (hiccups, hypnic jerks)
- Cataplexy
- TIAs
- Transient Global Amnesia



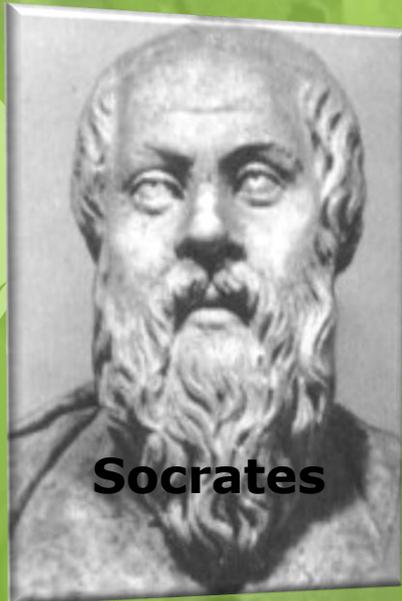
Heracles /
Hercules



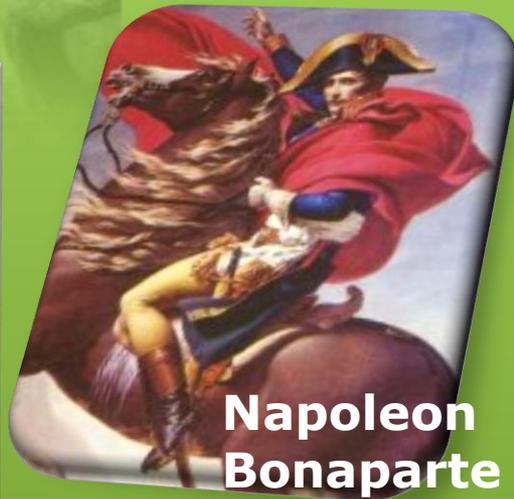
Vincent van
Gogh



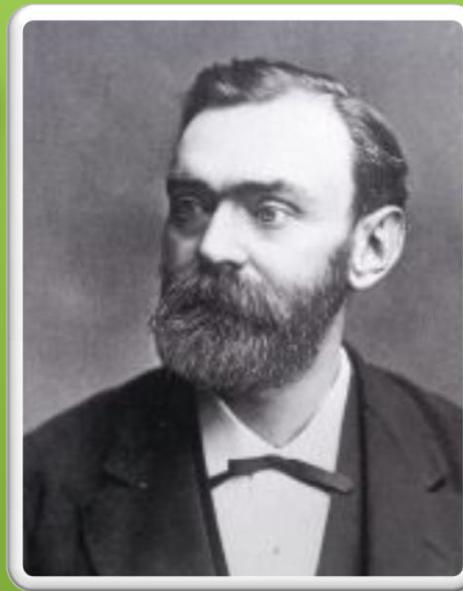
Lenin



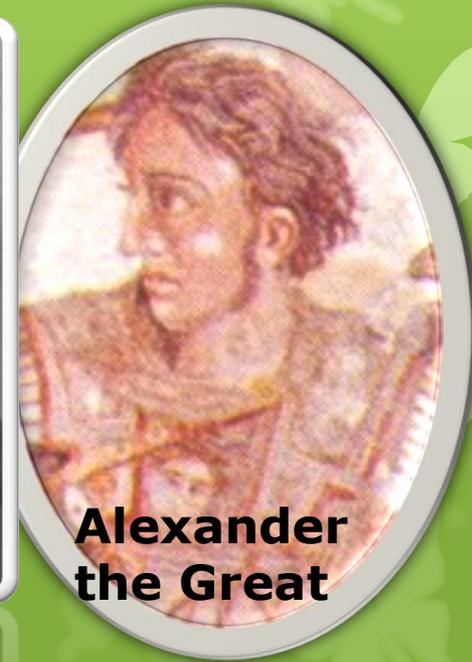
Socrates



Napoleon
Bonaparte



Alfred Nobel



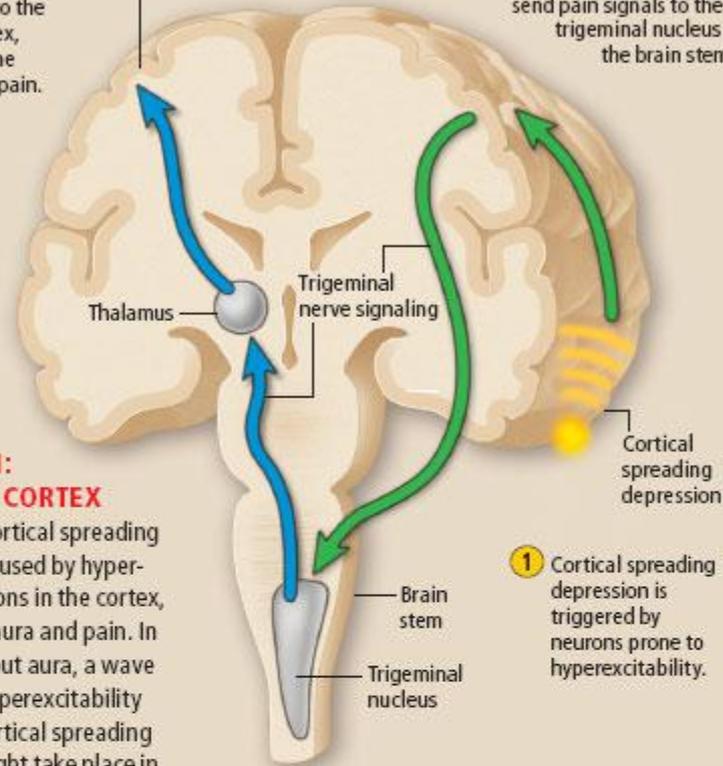
Alexander
the Great





the thalamus, which relays them to the sensory cortex, involved in the sensation of pain.

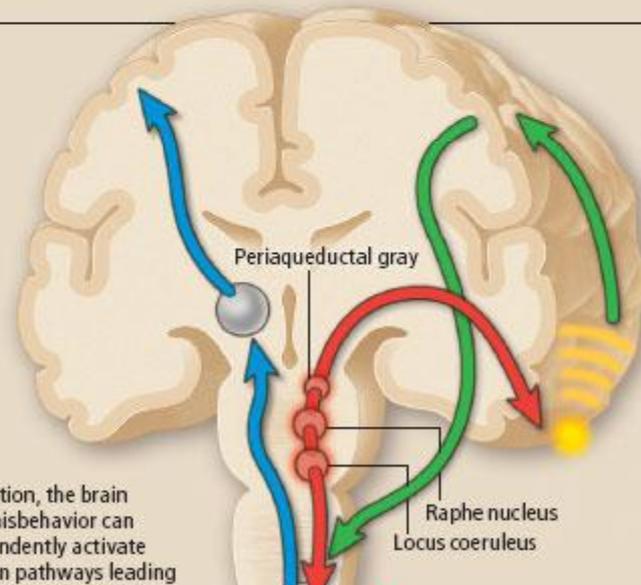
Trigeminal neurons send pain signals to the trigeminal nucleus in the brain stem.



SCENARIO 1: BLAME THE CORTEX

In this view, cortical spreading depression, caused by hypersensitive neurons in the cortex, induces both aura and pain. In patients without aura, a wave of neuronal hyperexcitability resembling cortical spreading depression might take place in subcortical regions.

1 Cortical spreading depression is triggered by neurons prone to hyperexcitability.

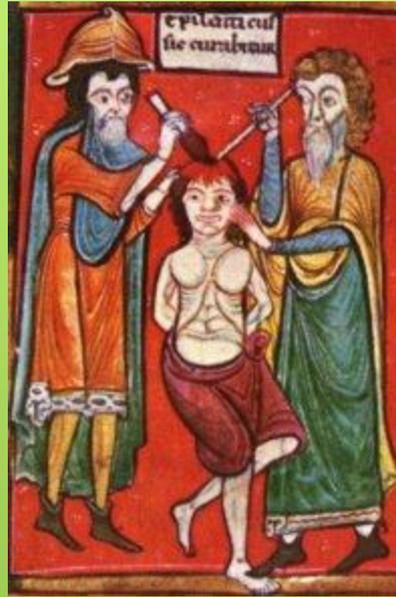


3 In addition, the brain stem misbehavior can independently activate the pain pathways leading



Hans Berger (1873 - 1941)

The German psychiatrist Hans Berger was the first person to prove the existence of electric potentials (voltage fluctuations) in the human brain using an amplifying machine (an electroencephalograph).



- trepanation (the opening of the skull) was occasionally carried out on people with epilepsy.





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