Genotype/Phenotype Correlation in Sudden Unexpected Death in Epilepsy

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Case-Based Questions (please see page 3 for answers)

1.	A 57-year-old man with a single witnessed generalized tonic-clonic seizure with associated urinary incontinence is said to have a diagnosis of epilepsy when that seizure:	
	a.	Is followed by a second unprovoked seizure
	b.	Leads to unconsciousness
	c.	Occurs after alcohol withdrawal
	d.	Responds to anti-epileptic drugs
	e.	Results in death

2.	A 12-year-old girl with epilepsy is found submersed in a full bathtub, and comes to the emergency room. Despite intensive medical management, she is declared brain dead by neurologic criteria after 3 days. The cause and manner of death would best be certified as:	
	a.	Brain death; Natural
	b.	Cardiac arrest; Natural
	c.	Drowning: Accident
	d.	Sudden Unexpected Death in Epilepsy; Accident
	e.	Sudden Unexpected Death in Epilepsy; Natural

3.	A 3-month-old boy is found dead after a sleep period, and no anatomical cause of death is found after complete autopsy, scene investigation, and microbiologic testing. The most statistically likely molecular genetic alteration is in:	
	a.	FLNA
	b.	GFAP
	c.	SCN2A
	d.	TSC2

Scroll to Page 3 for answers

Correct Answers and Rationales

Question 1 Correct Answer and Rationale**: A. Is followed by a second unprovoked seizure**

Rationale: By definition, 2 unprovoked seizures must occur, along with an appropriate medical evaluation, for the diagnosis of epilepsy to be appropriate.

Question 2 Correct Answer and Rationale: **C. Drowning: Accident**

Rationale: Even though it is likely that the girl had a seizure leading her to become submerged and drown, an accidental death trumps a natural death as manner. Drowning is not considered an example of SUDEP, but is rather an accident. Brain death is not an etiologically specific cause of death, but may follow any kind of brain injury.

Question 3 Correct Answer and Rationale: **C. SCN2A**

Rationale: In a seemingly healthy infant found dead with no anatomical cause of death (sudden infant death syndrome), the most likely genetic alteration identified would be in sodium channel genes, wither SCN1 or 2. GFAP alterations result in Alexander Disease, which is much rarer. FLNA and TSC2 genetic variants are more commonly detected at autopsy in older adults.