

The Collapsing Canine: Differentiating Syncope from Seizure

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Outline

- Definitions
 - What is a seizure?
 - What is syncope?
- Common history/signalment
- Make a diagnosis
- Cases
 - Signalment/Hx/PE
 - Video
 - You make the diagnosis!
 - Diagnostic tests performed



SYNCOPE



Definition

- Transient loss of consciousness
 - inadequate blood flow to brain
 - reduction in blood flow by 50%
- Pre-syncope
 - temporary weakness/ataxia



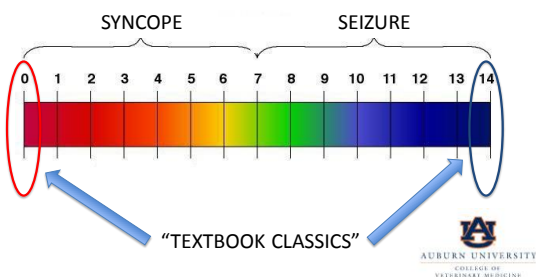
What does it look like?

- Often during exercise
 - greater demand for CO
- Flaccid muscle tone
 - responsive to stimuli
 - motionless
- ≤ 60 seconds duration
- Immediately "back to normal"

"TEXTBOOK
CLASSIC"



What does it REALLY look like?



The art of the history

- Unconscious – yes or no?
 - eyes stay open for both
 - most owners don't know
 - ask about responsiveness
 - voice or touch
- Duration of collapse
 - often seems longer in the moment
 - ask for owner's "list of actions"



The art of the history

- Time to recovery
 - owners hold/comfort
 - "If you had put Max on the ground, do you think he could have walked/acted normally?"
- Motionless while collapsed?
 - don't assume
 - tail wag = responsive
 - partially unconscious may move legs to get up
 - mimic generalized seizure
 - differentiate repetitive motion leg-flailing
 - profound ↓ CO may lead to cerebral hypoxia
 - brief period of opisthotonus



The art of the history

- Activity afterwards
 - "seemed out of it" can be complicated
 - owners may assume and project
 - ask about specific actions
- Urination / Defecation
 - generalized seizures and cardiogenic syncope



The art of the history

- Unremarkable
- Recent behavior/habits change
- Pacing, wide circling
- "Gazing off into space"
- Is it really a seizure?
 - What the dog was doing prior?
 - Was the dog responsive to the owner during the event?
 - What was the dog's behavior after the event?

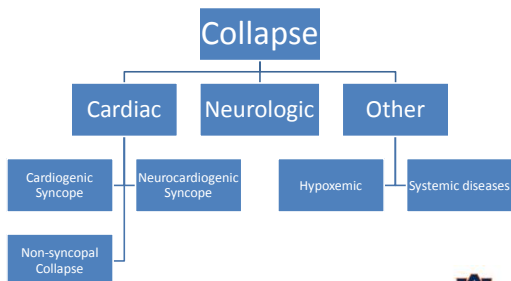


Signalment

- Breeds
 - Doberman Pinschers
 - Boxers
 - English Bulldogs
 - Any
- Age
 - Bimodal
 - very young (congenital cardiac dz)
 - very old (acquired cardiac dz)



Underlying causes

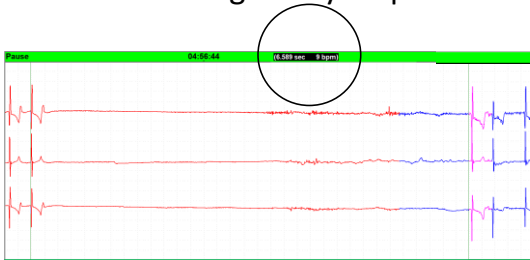


Cardiogenic syncope

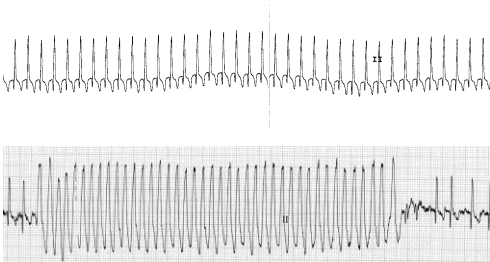
- Intermittent, often profound \downarrow CO
- Ddx:
 - Arrhythmia
 - tachyarrhythmia, bradyarrhythmia
 - Sick sinus syndrome, Vtach, SVTach
 - HR > 250 10-30 seconds
 - Ventricular asystole > 6 seconds
 - High-grade 2nd degree or 3rd degree AV block



Cardiogenic syncope



Cardiogenic syncope



Neurocardiogenic syncope

- Profound hypotension:
 - bradyarrhythmia
 - reflex vasodilation
- Ddx:
 - Vasovagal syncope
 - young Boxer dogs
 - GI / abdominal dz
 - tussive syncope in older dogs
 - Bezold-Jarisch reflex
 - Subaortic stenosis
 - Severe blood volume depletion



Cardiac collapse (non-syncopal)

- Weakness/collapse
 - without severe reduction in blood flow to brain
 - no loss of consciousness
- Ddx:
 - Pulmonary hypertension
 - primary or secondary
 - Severe MMVD
 - Severe congenital obstructions
 - SAS or PS
 - Pericardial effusion



Hypoxemic collapse

- Laryngeal paralysis
- Severe pulmonary parenchymal dz
 - may lead to PH
- Tracheal / Airway collapse
 - may be related to LA compression
- Brachycephalic upper airway syndrome



Collapse from systemic disease

- Hypoadrenocorticism
- Hypoglycemia
- Hypothyroidism
- Hypotensive shock
 - hemoabdomen
- Compromised vascular tone
 - sepsis
 - toxemia



SEIZURES



What is a seizure?

- Seizure (Ictus)
 - Sudden dysfunction of part or all of the brain
 - Hypersynchronous neuronal activity
 - Marked neuronal excitation/insufficient inhibition
- Dysfunction of the following:
 - Involuntary movement
 - Autonomic nervous system
 - Consciousness
 - Behavior change



Phases of seizure activity

- Preictal
 - Aura
- Postictal
- Interictal



Types of seizures

- Generalized
 - Bilateral, symmetrical
 - Both cerebral hemispheres involved
- Types
 - Tonic-Clonic
 - Tonic
 - Clonic
 - Atonic
 - Myoclonic
 - Absence
- Petit mal/Grand mal? – Humans Only



Types of seizures

- Partial/Focal
 - Discrete area of brain
 - Motor dysfunction
 - Autonomic disturbance
 - Automatism/paroxysms of abnormal behavior
 - Simple
 - No loss of consciousness/sensorium
 - Examples
 - Facial contractions, ear twitching, tremors, head turning, limb flexion

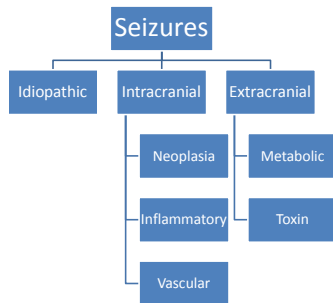


Types of seizures

- Partial/Focal
 - Complex
 - Consciousness/sensorium is effected
 - Psychomotor seizures
 - Limbic system involvement
 - Examples
 - Fly biting, chewing, licking (air or flank), wandering, avoidance, or aggression
- Focal seizures with secondary generalization
 - 80-90% of primary or idiopathic epilepsy



Underlying causes



Signalment

- Idiopathic
 - Young, large breeds
- Intracranial Neoplasia
 - Brachycephalics
 - Senior dogs
- Inflammatory
 - Middle-aged, small breed



Tom



- ~8 yo FS Pit mix
- CC: Collapse
- Hx: Rescued several years ago
 - occasional coughing for years
 - weakness on walks starting 6 months ago
 - 2 episodes of collapse with excitement this week



Tom



- PE: Temp 100.2, HR 160 bpm, RR 45 bpm
 - Increased bronchovesicular sounds bilaterally
 - Crackles heard focally both left and right
 - Cough elicited with tracheal palpation
 - BCS 4/9
 - 2/6 right sided systolic murmur
 - Abdominal palpation WNL
 - Rectal exam WNL

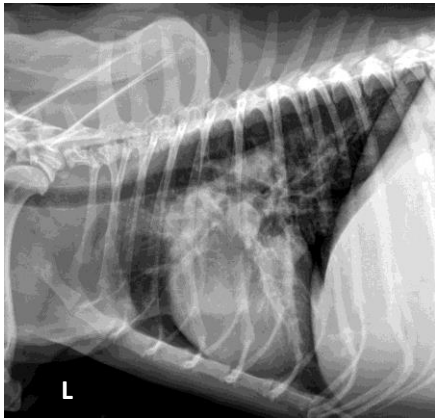


Tom Neuro Exam



- Mentation: normal
- Posture: normal
- Gait: normal
- Cranial nerves: normal
- Postural reactions: normal
- Normal reflexes
- Nonpainful





Tom



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Benny



- 6 yo MC Red Heeler
- CC: collapse during walks
- Hx: began stumbling when walking last week
 - historically goes on walks daily
 - one day fine, then then next was stumbling
 - 2 days ago, the stumbling turned to collapse when walking
 - today, collapse is random and frequent



Benny



- PE: Temp 102.0 Pulse 60bpm Resp 30 bpm
 - Cardiac rhythm irregular
 - Grade 2/6 left apical systolic murmur
 - Normal bronchovesicular sounds bilaterally
 - BCS 5/9
 - Strong femoral pulses
 - Abdominal palpation WNL
 - Rectal exam WNL



Benny Neuro Exam



- Mentation: normal
- Posture: normal
- Gait: normal
- Cranial nerves: normal
- Postural reactions: normal
- Normal reflexes
- Nonpainful



Benny



Benny



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C J



- 10 yo FS Smooth-haired collie
- CC: collapse and urination with exercise
- Hx: collapse/urination over last 2 weeks
 - Mildly reduced appetite over last 2 months
 - Progressive lethargy over last 2 months
 - Weakness in hind limbs last 1 month
 - collapse began 3 weeks ago with extreme activity
 - now paired with urination and at mild-mod activity



C J



- PE: Temp 99.8 Pulse 75 bpm Resp 33 bpm
 - Normal bronchovesicular sounds bilaterally
 - No heart murmur
 - Dorsal hair thinning/loss bilaterally
 - BCS 9/9
 - Abdominal palpation = mild pain elicited cranially
 - Rectal exam WNL



C J Neuro Exam

- Mentation: normal
- Posture: normal
- Gait: normal
- Cranial nerves: normal
- Postural reactions: normal
- Normal reflexes
- Nonpainful





C J





C J

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Ralph



- PE: Temp 100.9 Pulse 120 bpm Resp 15 bpm
 - Normal bronchovesicular sounds bilaterally
 - Regular cardiac rhythm
 - No cardiac murmur
 - Strong, synchronous femoral pulses
 - Abdominal palpation WNL
 - Rectal exam WNL



Ralph Neuro Exam



- Mentation: normal
- Posture: normal
- Gait: normal
- Cranial nerves: normal
- Postural reactions: normal
- Normal reflexes
- Nonpainful



Ralph



Ralph



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Questions?

- Thanks to Dr. Sonya Gordon for providing some videos
