Tachyarrhythmias – case management

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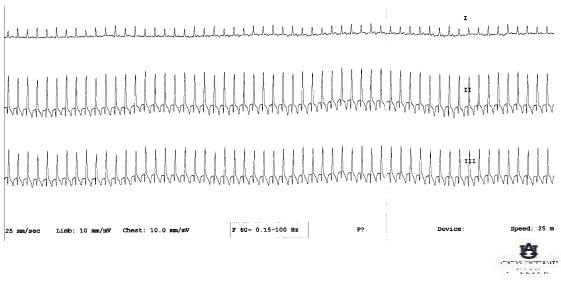
Case 1

- 6 yo MC Boxer
- CC: recent onset weakness and collapsing episodes
- Hx:
  - appetite has been intermittently poor for 1 week
  - 2 collapsing episodes noted in last 2 days (signs consistent with syncope)
- PE:
  - anxious, HR 300 bpm, RR 75 bpm, pulses poor



Questions to answer

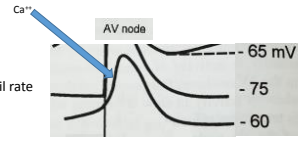
- What is the rhythm diagnosis?
  - at least know if supraventricular vs ventricular origin
- Why is the dog tachypneic?
  - do we do any diagnostics?
  - do we give any drugs?

Rate control

- Diltiazem
- Beta-blockers
- Digoxin
- Vagal maneuvers

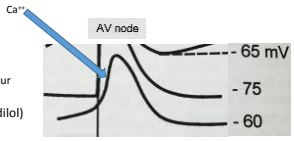
Rate control

- Diltiazem
  - Ca^{++} channel blocker
  - mild negative inotropic effects
  - can be IV or PO (usually give IV until rate begins to improve, then start PO)
  - 0.2 mg/kg IV – see what happens
    - repeat in 5 min if no better
    - then begin 0.5 mg/kg IV doses
    - repeat in 5 min if no better
    - should see some effect with 3-4 doses



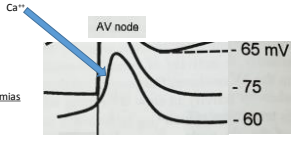
Rate control

- Beta-blockers
  - prevents proper movement of Ca^{++}
  - major negative inotrope
    - would make CHF worse or cause it to occur
    - only if sure not in L-CHF
  - commonly used as PO (atenolol, carvedilol)
  - propranolol (non-selective B1 and B2)
    - 0.2 – 1 mg/kg IV q8h
      - give 0.2 mg/kg IV every 5-10 min until rate controlled – cumulative dose is the q8h dose
    - B2 antagonism may cause bronchoconstriction
      - unlikely clinically relevant



Rate control

- Digoxin
  - parasympathetomimetic
    - slows Ca^{++} movement
    - SIDE EFFECTS
      - pro-arrhythmic for ventricular arrhythmias
      - AV block possible
      - kidney failure
    - 0.0055 mg/kg IV q1h until effect
      - then start PO dose



Rate control

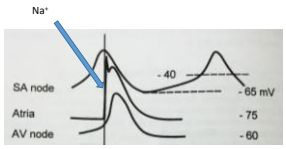
- Vagal maneuver
  - best is ocular pressure
    - firm pressure over both eyes for 30 seconds
    - most dogs are mildly uncomfortable
    - effect may be seen after you release ocular pressure
      - may be sudden

Rhythm control

- Procainamide
- Amiodarone
- Sotalol

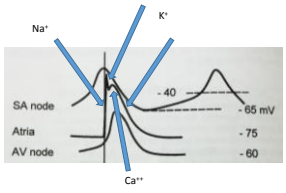
Rhythm control

- Procainamide
  - Na+ channel blocker (class 1a)
  - works for SVTach and VTach
  - IV or PO
    - nausea if given too fast IV
  - 15 mg/kg IV over 10 minutes
    - arrhythmia may resolve during injection – finish injection
    - then 7.5 mg/kg IV over 5 minutes if no response



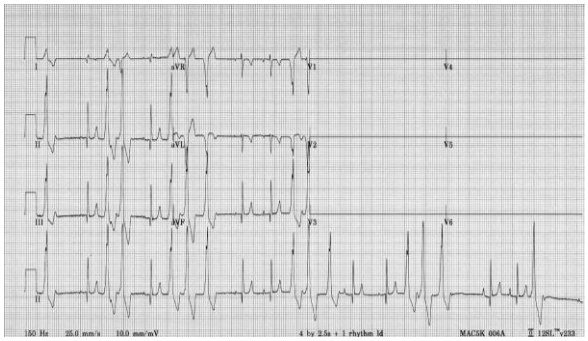
Rhythm control

- Amiodarone
  - K+ channel blocker (Class III)
    - broad spectrum – works very well in SVTach or Vtach
    - converts Afib to sinus
    - hepatotoxicity main side effect
      - typically after chronic use and reversible
    - IV or PO (transition to PO Sotalol)
      - IV with benzyl alcohol = anaphylactoid rxn
      - IV as acqueous sol'n (Nexterone) = no problems
        - 5 mg/kg IV q12h



Case 2

- 6 yo MC Boxer
- CC: one episode of collapse
- Hx:
  - 2 days of inappetance;
  - 1 episode of collapse with exercise – down on ground for 5 seconds
- PE:
  - anxious, HR 200 bpm, RR 32 bpm, rhythm irregular

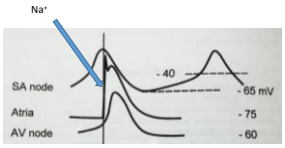


Questions to answer

- What is the rhythm diagnosis?
  - at least know if supraventricular vs ventricular origin
- How concerned should I be?
  - i.e. treat now or not?

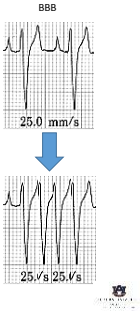
Lidocaine

- Na+ channel blocker (class 1b)
- works only for VTach
- inhibits depolarization selectively in diseased tissue
- IV or PO (called mexiletine)
- 2 mg/kg IV
  - repeat in 5 min if no response



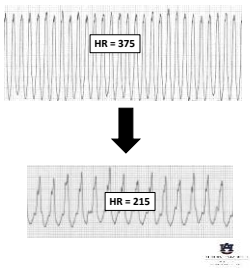
Procainamide

- Works well for Vtach
- I use it early, just in case I am wrong about Vtach
  - remember this works well for SVTach



What response do we want?

- Complete cessation of all VPCs
  - doesn't often happen
- Vtach heart rate slows
- Vtach breaks, leaving VPCs



What now?

- We broke the Vtach……
- If Lidocaine worked, then start a CRI
  - 50 mcg/kg/min IV
    - can increase to 75-100 mcg/kg/min (nausea and neuro signs start)
- If Procainamide worked, then continue 7.5 mg/kg q8h

- Start oral therapy
  - Sotalol or Mexiletine

Oral therapy

- Should take ~2-3 doses of oral meds to have an effect
  - while these drugs are being started, parenteral therapy key
  - once 2-3 doses on board, start to wean and D/C parenteral drugs
- I start with Sotalol
  - BID dosing, rare side effect of lethargy (transient)
- Only use Mexiletine IF LIDOCAINE WORKED
  - same class of drug (1b)
  - TID dosing
  - nausea/inappetance common side effect
- Continue with oral Amiodarone if Nexterone worked

Recheck

- Recheck Holter monitor in 2-4 weeks
  - 3 minute ECG if not available
  - Looking to prevent life-threatening rhythm
    - not trying to make normal sinus
  - Sustained Vtach, 50 – 100,000 VPCs in 24h, multiform, R-on-T

Take home points

- Have a plan
  - 3 tiered options
- Reduced stress/sympathetic tone helps everyone
  - butorphanol 0.3 m/kg IV is never wrong
- Panting may be anxiety-driven, but may also be due to CHF

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Questions