Someone hit the reset button: cases I wish I had a second chance at!
Outline

- Not TC again! An unconscious frequent flier.
- Another drug abuser. But how do I explain sepsis, cough med OD, and cardiac ischemia?
- Don’t forget the “Golden Rule”. An unusual case of abdominal pain.
Objectives

• To present challenging cases involving critically ill patients where a medical error significantly impacted patient outcome.
• To discuss the specific pitfalls to avoid in managing common presentations of critically ill patients.
• To discuss strategies to mitigate medical errors.
Case #1: Frequent flier

- 43 year old male, well known to ED
  - Frequent DKA, polysubstance abuse (cocaine)

- Girlfriend called 911 as he was “doing poorly”, using ++ drugs
  - Unbeknownst to GF, pt called cab, took it to hospital

- At triage, answering in one word sentences only
  - POC glucose reads “abnormal flow”

- Taken to trauma room emergently
Case #1: Frequent flier

- Thoughts?
  - Sick, not sick?
- Differential?
  - Toxic ingestion, withdrawal
  - Sepsis
  - DKA
  - Post-ictal
  - Hypoglycemia
- Potential initial management?
  - ABCDs
  - IV, O₂, monitor
  - ABG, CXR, ECG
Case #1: Frequent Flier

- Pt extremely agitated, combative, tachypneic
  - Thrashing, pushing nurses away, unable to obtain vitals
  - IM sedation (midazolam given), nurses physically restrain pt, IV obtained
- Decision made to intubate patient to control situation
  - 12 lead ECG obtained while airway equipment being set up
- Vitals: HR 130, BP 150/80, RR 30, sats 96%
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--- AXIS ---

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Case #1: Frequent flier

- **Thoughts?**
  - Sick, not sick?
  - Investigations?
    - DKA work-up
    - Septic Work-up

- **Differential?**
  - Ischemia
  - Na channel blocker
  - Severe acidosis
  - Hyper/hypokalemia

- **Management?**
  - Intubation
  - Fluids
  - Antibiotics
  - Bicarb
  - Calcium
Case #1: Frequent Flier

- **Intubation:**
  - Pre-treatment: 2 amps bicarb
  - Propofol 120 mg, Succinylcholine 140 mg
  - Pt bag mask ventilated while waiting for drugs to work
  - Easily intubated with large (size 8), confirmed with ETCO2 and CXR
  - RT asked to match his ventilation if possible
5 mins Post Intubation Propofol/Succinylcholine, pulseless
Post Defibrillation x 2, 4 mins CPR, 2 amps bicarb, Epinephrine, Amiodarone
Case #1: Frequent flier

What went wrong?

- Hyperkalemia from DKA
- Succinylcholine increases serum K by 0.5mEq/L
- Worsening acidosis by decreasing minute ventilation
Hyperkalemia

- Classic EKG changes:
  - Peaked T waves - first sign.
  - Intraventricular conduction delays (IVCD).
  - Lost or decreased amplitude P waves.
  - ST segment changes mimicking injury.
  - QT prolongation.

- Treatment considerations:
  - Cardiac monitoring
  - Calcium
  - Bicarb
  - Ventolin
  - Insulin/glucose
  - Dialysis
Classic Hyperkalemia
Intubating a patient with metabolic acidosis

- **Examples:**
  - DKA
  - Salicylate or TCA toxicity
  - Sepsis

- **Why is it dangerous?**
  - Difficult to match *minute ventilation* (TV x RR)
  - Decreased MV leads to increased CO2 and worsening acidosis
    - Worsening hyperkalemia
    - Increased ASA TCA effects
Intubating the patient with metabolic acidosis

**What can you do?**
- Prepare for the intubation, most experienced person performing intubation
- Use a larger tube
- Administer Bicarb in advance (2 units)
- Ventilate during sedation/paralysis
- Consider Non-depolarizing paralytic (e.g. Rocuronium)
- Try to match the patient’s minute ventilation (hyperventilate)
Contraindications:

- **Immediate**
  - Hyperkalemia (renal patients)
  - Hx/fam hx malignant hyperthermia
  - Neuromuscular disease (ALS, MS, MD)
  - Rhabdomyolysis

- **Delayed (>3 days)**
  - Burns >10% BSA
  - Crush injury
  - Denervation (stroke, spinal cord injury)
Post CaCl, Mg, 10U Humulin R (IV), 5 amps Bicarb
Case #1: Frequent flier

- Fluid boluses started
- IV insulin started (DKA protocol)
- Pt admitted to ICU
The Next Morning
Take home points:

- Always think about hyperkalemia in wide complex tachycardia
- Respect the ventilation of patients in metabolic acidosis
- Every time your reach for succinylcholine go through the list of contraindications
83 yr old female, admitted overnight with weakness, diarrhea, ramipril started 1 wk ago for HTN
Post Treatment

10-Sep-2009 15:36:28

Rate 53 Possible arrhythmia: review

PR 187 (A-rate = 833, V-rate = 53)

ORSO 112 Atrial premature complex

QT 505 Borderline intraventricular conduction delay

QTe 474 Consider left atrial enlargement

--Axis-- Consider Anteroseptal infarct

F 15 QT interval long for rate

QRS -14 V1-V2 > 2.5 mV

Unconfirmed diagnosis.

VIKING HEALTH CENTRE
Department: OP
Room: ER
Operator: BL

Requested by: GROBLER
Case #2: Chills and ECG changes

- 33 yr old male, via EMS, 3d hx cough, today CP/SOB, weakness and dizziness
  - Getting in bathtub to warm up
  - Found by EMS tripoding, diaphoretic, HR 160
- EMS “He is taking way too much cough medicine!”
  - On hx using Buckleys as directed
  - Using herbal teas
  - Denies drug use, no PHx/meds
- Looks pale, thin, unshaven
- Initial vitals:
  - HR 130 BP 110/70, sats 99%RA, afebrile
Case #2: Chills and ECG changes

- **Thoughts?**
  - Sick, not sick?

- **Differential?**
  - Toxic ingestion, withdrawal
  - Sepsis
  - Ischemia
  - Vascular emergency
  - PE

- **Management?**
  - Location
  - ABCDs
  - IV, O2, monitor
  - ABG, CXR, ECG, labs
Case #2: Chills and ECG changes

- Pt given ASA 160mg, IV lorazepam 2mg, fluid bolus, second IV started
  - Blood pressure dropped, pt became extremely drowsy, arms and legs mottled
- Bedside US
  - RV barely moving
- Call to ICU to have tPA tubed down
  - Intensivist consulted: “Get a CT chest!”
Case #2: Chills and ECG changes

- Pt taken to CT but can’t lay down- anxious/dyspneic sats 65%
  - Brought back to ED
  - tPA infusion started (100mg over 2 hrs)
- Awake intubation performed
  - Midazolam 0.5mg, topical lidocaine
- Within minutes brady/asystolic arrest
  - CPR/Epi, pulse back,
  - Nurse asked to “push” tPA
  - brady/asystolic arrest again 3 times
  - Norepi infusion
  - Vitals stabilized after 15 mins
  - CT chest massive saddle embolus
Case #2: Chills and ECG changes

- Extubated that night
- Next morning
  - Laying in bed, legs crossed watching TV, no recollection of ever meeting me
- Discharged home next day
Pulmonary Embolus

- Classic EKG features of PE:
  - Tachycardia
  - Rightward axis
  - Incomplete RBBB (from RV overload/strain)
  - $S_I, Q_{III}, T_{III}$
  - Simultaneous T wave inversions in the inferior and anteroseptal leads.

- Treatment considerations:
  - Oxygen!!! Promotes vascular dilatation.
  - May need gentle fluids/pressors IF severe shock (could be harmful too, start low e.g. 250cc NS then RA).
  - May definitively need thrombolysis or thrombectomy if in shock.
Case #2: Chills and ECG changes

- Thrombolysis in PE definitions/recommendations:
  - Massive
    - Acute PE with evidence of hypotension (SBP<90mmHg, or documented drop in SBP >40mmHg) or profound bradycardia with shock, or pulselessness
      - Thrombolysis is recommended if there is an acceptable risk of bleeding
  - Submassive
    - Acute PE without evidence of hypotension or shock but evidence of RV strain or abnormal biochemical markers
      - Thrombolysis should be considered case-by-case, weighing risks of bleeding vs. potential benefits of thrombolysis
Take home points

- Beware of diagnostic momentum (EMS, nursing placing thoughts in mind)
- Try not to pass judgment on patients based on looks
- PE can present with deep T wave inversions in the anterior leads
- Massive PE (PE with vital sign changes) needs thrombolysis
  - Jury out still on all others
Case #3: Unusual Abdominal Pain

- 17 year old female presents with mother complaining of 2 hours crampy generalized abdo pain.
  - Pain intermittent, coming in waves lasting about 30 seconds, a couple minutes apart.
- Patient very thin with obvious “pot belly” not in keeping with rest of body habitus.
  - Mother states pt’s abdo has increased in girth over 2-3 weeks.
Case #3: Unusual abdominal pain

- MD makes greatest mistake ever: “Are you pregnant?”
  - Mother and patient look at MD with disgust, patient is a “virgin”, LMP was a couple weeks ago!
Case #3: Unusual abdominal pain

- **History continues:**
  - 2 hrs pain, diffuse non-radiating
  - No fever, vomiting, diarrhea, vaginal discharge
  - PHx unremarkable

- **Physical:**
  - large mass in abdo, mobile
  - Heart sounds, breath sounds normal
  - Vitals: HR 100, BP 110/70, RR 18, Sats 100% RA
Case #3: Unusual Abdominal Pain

- Thoughts?
  - Sick, not sick?

- Differential?
  - GI
  - Gyne
  - Cardiac
  - Neoplastic
  - Pregnancy

- Management?
  - IV
  - Pain control
  - Labs, urine
  - Bedside US
Case #3: Unusual abdominal pain

- Bedside US: heterogenous mass, ? Bone ? spine no movement
  - Colleague also asked to look, unsure what it is
Case #3: Unusual abdominal pain

- Bloodwork ordered (routine, Abdo panel), urine BhCG
  - Nurses asked to set up for pelvic
- Called gyne:
  - Me: “I thought she was pregnant but mother says belly rapidly expanded. US shows multiple densities”
  - Gyne: “Probably a fast growing tumour, I’ll come see her later”
- 45 mins later still no urine (“couldn’t urinate”), no female nurse to chaperone pelvic!
  - Nurse taken from another area, pelvic performed: bulging membranes from cervix
Case #3: Abdominal Pain

- Thoughts?
  - Pregnant!
Case #3: Unusual abdominal pain
Case #3: Unusual abdominal pain

- Pt gently confronted, swears has not felt anything moving in her belly
- Gyne called to discuss “likely dead term baby”, ask for pt to be sent to obs for induction
- While leaving room pt starts to push!
  - Full term, blue motionless baby delivered (in complete amniotic sac)
Case #3: Unusual abdominal pain

- Thoughts?
  - Do you start resuscitation?
Case #3: Unusual abdominal pain

- Baby moves arm
  - Sac torn open, Dry/Warm/Position/Stimulate
  - Call for second MD

- Call for neonatal resuscitation equipment and to page neonatal resuscitation team
  - Nurses can’t find any equipment
  - Operator has no idea what that “neonatal resus team is”
  - Luckily baby starts breathing, cries, pinks up
Case #3: Unusual abdominal pain

- Mother and baby taken to maternity ward
  - Mother has minor tears repaired
  - Baby examined by neonatal nurses, no concerns
- ED Ward Clerk is friends with mother on Facebook
  - Happy family back together!
Case #3: Unusual abdominal pain

- Take home points:
  - Do you believe every woman of child bearing age could be pregnant?
  - Do you have neonatal resuscitation equipment in your department (and know how to use it)?
  - Do you have a mechanism to call for help if required (code pink)?
Questions???