Wow that was a cool call: Case Reviews

PRESENTED BY:
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Thank you for having me
Still a dinger
YOU CAN’T FIX STUPID

BUT YOU CAN PARALYZE AND INTUBATE IT!
Case 1 – “I don’t feel well”

- **22:09 Hrs dispatched for a 26D1 – Sick Person Possibly Not Alert**
- **Residential Home**
  - patient is at the home of his parents where he was celebrating his birthday. Patient and family report that he had several episodes of his internal defibrillator activating earlier in the day but he did not seek hospital treatment. Patient became progressively short of breath and then had altered mental status which prompted call to 911
Initial Vitals

- HR 127
- BP 149/102
- RR 30-36
- SpO₂ 58%
- EtCO₂ 23 mmHg
- GCS 4/5/6 but slow
- Patient is alert and interactive – appears to have some sort of developmental disorder
ID: 02091322508 2/9/2013 10:38:00 PM  Sinus tachycardia with borderline 1st degree A-V block
Patient ID: PR 0.208s  QRS 0.134s  Possible right atrial abnormality
Incident ID: QT/QTc: 0.336s/0.432s  Left bundle branch block
Age: 54  Sex: M  PQRST Axes: 70 14 100
LV1

Physio-Control, Inc. Comments:
22:40 – In Ambulance, After CPAP

- HR 115
- BP 124/94
- RR 30-36
- SpO₂ 73%
- EtCO₂ -- mmHg
- GCS 4/1/5
22:50 – Not Getting Better... RSI?

Field Standing Order Indications:
- GCS <8
- SpO$_2$ <90% on 100%
- Transport time >10 minutes

Contraindications?
Myotonic Dystrophy?

- Myotonic Dystrophy Type I and II
  - DM 1 – Congenital, juvenile, adult onset
  - DM 2 – Adult onset

- Autosomal Dominant Inheritance

- Skeletal muscle weakness, muscle pain (DM2), myotonia, cardiac conduction abnormalities (DM1), iridescent cataracts (DM1)
Myotonic Dystrophy

- Frontal balding
- "Hatchet" facies due to atrophy of temporalis muscle
- Cataracts
- Ptosis and drooping mouth due to weakness of facial muscles
- Wasting of sternocleidomastoid muscle
- Gynecomastia
Myotonic Dystrophy

- No disease modifying therapy available

- Life expectancy reduced for DM1
  - 31% - Cardiac
  - 43% - Respiratory
RSI in Myotonic Dystrophy?

• High risk
  ○ Increased aspiration
  ○ Often pre-existing conduction system abnormalities
  ○ Risk for precipitating myotonia
  ○ ? Risk of Malignant Hyperthermia
  ○ Risk of hyperkalemia with Depolarizing NMB’s

• Recommendations
  ○ Propofol over midazolam
  ○ Rocuronium over Succinylcholine
22:55 - After NPA/BVM

- HR 113
- BP 141/83
- RR 40 Assisted
- SpO₂ 88%
- EtCO₂ 36 mmHg
- GCS 4/2/6
23:05 - ED Arrival

- HR 117
- BP 156/97
- RR 35 Assisted
- SpO₂ 83%
- EtCO₂ 25 mmHg
- GCS 4/5/6
Key Points

- Never be afraid to call for an extra hand
- Treat patient, not numbers
  - But do not ignore what the numbers tell you
- Know limitations of CPAP/BiPAP
- The BVM is HIGHLY underappreciated
Case 2 - Dispatch

- 17D1 Fall: extreme fall - > 30 feet
- 3rd party call: male fell down elevator shaft – caller not at location
- Priority 1: BLS ambulance, ALS fly car and fire department
What Are Your Thoughts?

- Mechanism of injury?
- Anticipated injuries?
- Anticipated interventions?
- Any concerns?

Update – confirmed person trapped in elevator shaft
Upon Arrival

- Power out in building due to high winds
  - Minimal lighting
- Guided to basement by facility staff
You see this:
What Do You Do Now?

- What /where is your scene
- Is it safe?
  - For you? For victim?
- Fire fighters working on unlocking the elevator doors
- “Remote Medical Assessment”
- “Medicine Across the Barricade”
Can you hear me? What is your name?
- “Yes, I’m John Doe and I am stuck in the elevator shaft”
- What does that tell us?
  - Conscious, a/o to person and place

Where is the elevator?
Are you hurt? Are you bleeding?
- “Yes, I am laying in a !@#$ ton of my blood”

Where are you bleeding?
- “My head”

Sir, take your hand, find the bleeding, and push on the bleeding as hard as you can and keep holding
- “I can’t, I can’t move my arms or my legs”
Assessment so far...

- Single patient
  - Male, alert, oriented, speaking in complete sentences
  - Bleeding from head
  - Unable to move: paralysis vs entrapment
- FD is unable to unlock door and is preparing to force door if necessary
- Do I have the resources that I need?
  - Request E906
Doors Opened: Remote Assessment

- See patient at bottom of elevator shaft
  - Prone position with head between two pipes, with his arms at his sides
  - Broken fragments of flashlight around him
Initial Hands-On Assessment

- Very limited due to nature of the scene and the patients’ positioning
- **Airway/Breathing**: still intact talking
- **Circulation**: Palpable radial pulses and no obvious life threatening bleeding
- Neck and back palpated: no obvious deformity
- Pelvis stable
Now What?

- Immobilization?
- Extrication?
- Neuro/sensory exam?
  - Can you shrug your shoulders?
  - What are you able to feel?
  - Are you having trouble breathing?
Extrication/Immobilization

- Goal to get him immobilized and out of the shaft without making anything worse
  - Moved by 3 person vertical lift with 4th maintaining cervical spine immobilization and monitoring airway status
    - Now note made of open skull fracture
  - Once head is clear of the pipes, rolled onto back board and cervical collar is applied
Extrication/Immobilization

- Back board is dead-lifted over head and passed to waiting FD and EMS personnel
- Patient is placed into waiting Stokes Basket at which point monitor is applied and vitals are taken
- Patient now carried out of basement and to the ambulance
Transport

- Pt loaded into ambulance in Stoke’s Basket
- IV access obtained
- Pt reassessed and femur fracture identified
  - Traction applied
- Antiemetic and pain management

- What about the airway?
Arrival to ED

- Pre-arrival notification by on-scene physician
- Level 2 Trauma Activated
- Vitals upon arrival:
  - BP 95/55  P 72  RR 16  SPO2 94% on 3L NC
- Neuro exam:
  - Insensate from nipple line down
  - Unable to move legs, arms
  - Able to shrug shoulders
ED Imaging
ED Findings

- C4/C5 subluxation with bilateral jumped facets
- Right parietal comminuted depressed skull fracture
- Left femur fracture
- Left pelvic hematoma
- Filling defects in bilateral vertebral arteries
Hospital Course

- Emergently intubated shortly after arrival to BTICU (11/01)
  - Began having respiratory difficulties and mental status changes
  - Fiber optic intubation by anesthesiology
- Cervical spine fusion 11/2 after a trial of cervical traction
- PEG/Trach on 11/14
- Pacemaker for SSS and autonomic dysreflexia on 11/15
Hospital Course

- Has required significant vasopressor support throughout ICU course
- Developed anemia without clear etiology
  - Difficult transfusion candidate due to antibodies
- Acute renal failure
- Has some movement against gravity of Left upper extremity/bicep
- Mental status is at baseline
Spinal Cord Injuries
Spinal Cord Injuries

- Incidence of Traumatic Spinal Cord Injury (TSCI) in the US is 40 per million persons per year
  - 47% due MVC
  - 23% due to falls
- Most spinal cord injuries are associated with injury to vertebral column
  - Fracture*
  - Dislocation*
  - Tearing of ligament
  - Disruption or herniation of intervertebral disc
Complete Cord Injury

- Dermatomes above injury are spared
- Reduced sensation and muscle power in the dermatome immediately below the injury
  - Complete paralysis and sensory loss below that level
  - Physical exam findings can help determine level of injury
<table>
<thead>
<tr>
<th>Cord Syndromes</th>
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<tr>
<td><strong>Incomplete Cord</strong></td>
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<td>- Various degrees of motor and sensory loss caudal to the injury</td>
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<td>- Usually sensation is preserved to a greater extent that motor</td>
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<td><strong>Central Cord:</strong></td>
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<td>- Disproportionately greater motor loss in upper extremities compared to lower</td>
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<td>- Variable sensory impairment</td>
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<td>- Bladder dysfunction</td>
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Key Physical Exam Findings

• Spinal cord segments don’t correlate to vertebral column
  ○ C1-C8 between C1 through C7 vertebral levels
  ○ T1-T12 between T1-T8 vertebral bodies
  ○ L1-L5 between T9-T11 vertebral bodies
  ○ S1-S5 between T12-L1 vertebral bodies

• Thorax
  ○ C3-5 = Phrenic nerve – innervates the diaphragm
    ◦ Complete injuries above C3 lead to severe respiratory compromise and usually fatal
Key Physical Exam Findings

- **Upper extremity nerve roots**
  - C5 = Shoulder abduction (axillary nerve)
  - C5-6 = Elbow extension (musculocutaneous nerve)
  - C6-7 = Wrist extension (radial nerve)
  - C7-8 = Wrist flexion (radial nerve)
  - C8 = Finger flexion
  - C8 = Finger extension
  - T1 – Finger abduction
Key Physical Exam Findings

- **Lower extremity nerve roots**
  - L2-3 = Hip flexion (femoral nerve)
  - L3-4 = Knee extension (femoral nerve)
  - L4-5 = Ankle dorsiflexion (peroneal nerve)
  - L4-5 = Hip extension (gluteal nerve)
  - L5-S1 = Knee flexion (sciatic nerve)
  - S1-2 = Ankle plantar flexion (tibial nerve)
Autonomic Dysfunction

• “Spinal shock”
  - Physiological loss of all spinal cord function caudal to level of injury
    - Flaccid paralysis, anesthesia, bowel/bladder incontinence, loss of reflexes
    - Males may demonstrate priapism
    - Bradycardia and hypotension
      - Decreased vascular resistance
      - Bradycardia may require atropine and/or external pacing
        - Usually a result of high cervical lesions (C1-C5)
Treatment: Cardiovascular

- **Neurogenic shock**
  - Consensus guidelines recommend MAP goal of 85-90mmHg
  - IV fluids
    - Excess fluid resuscitation can lead to cord edema leading to further neurological complications
  - Vasopressors
    - Norepinephrine, phenylephrine
Case 3 – Car Accident

- **Dispatch**
  - 1715
  - Minor facial injury at a motor vehicle accident

- **Scene**
  - 1730
  - Heavy snow
  - Cold wind
  - Two vehicles
  - One reported patient still in a car
Other vehicle
Patient

- In driver seat
- CAO x 3
- Unable to get out
- Leg is broken and it hurts
Priority

- What is first priority?
- Unable to extricate – what changes
Extended Extrication

- **20 Minutes – 1750**
  - Still unable to move patient out of car
  - Any changes to plan
Ready Heat
30 minutes
  - 1800
    - door removed, dash rolled, roof cut
Discover several other injuries

Unable to move patient due to extreme pain
  - Nasal Fentanyl administered
Extrication

- 40 minutes after arrival at patient
  - 55 minutes after event
  - Bilateral Tib/Fib fractures
  - Right femur fracture
  - Possible rib injury
Review

- Several different situations:
  - Number one focus is on the patient
    - Immediate Life Threats
      - Often managed by excellent BLS Techniques
    - Don’t Treat numbers – but don’t ignore them either
    - Think outside the box
- Review your skills
  - Never stop learning
  - Practice often
- Collaborate