Geriatrics in Prehospital Care

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Why?
- There are lots of geriatric patients...
- ...And great EM providers to take care of them
  - 35 – 40% of EMS calls are older patients
  - 15% of all ED visits are elderly

Why?
- In 2016, 15% of US population was over 65 and will increase to 24% by 2060*
- Baby boomers are pushing these numbers up

Why?
- Elderly population requires special attention
  - They often have multiple medical problems
  - Diseases may present subtly or atypical
  - Medications can have varied or unusual effects

Objectives
- Physiologic changes
- Medication considerations
- Common chief complaints
  - SOB
  - Trauma
  - Fever
  - Abdominal Pain

Physiology
- Cardiovascular
  - Arteries become less elastic and more stiff
    - ↑ BP, ↑ atherosclerosis = MI, CVA, PAD
  - Left ventricle becomes thickened and stiff
    - Lower ejection fraction, increased arrhythmias
  - Heart responds less to adrenergic stimulation
    - Lower reserves in times of stress
Physiology

- Neurologic
  - Psychomotor slowing
    - Slower reflexes = increased falls, accidents
  - Memory deficits that interfere with functioning are not normal
    - Represent acute or chronic disease states
  - Brain atrophy
    - Space around brain tissue for blood to accumulate

Brain Atrophy

- Normal v. old brain

Physiology

- Musculoskeletal
  - Bones become more brittle
  - Sedentary lifestyle weakens bones
    - More prone to fracture
    - Less vascular supply = poor healing
  - By age 80 average person loses 30% bone mass

Medication Considerations

- Polypharmacy & adverse effects
  - 11% of all ED visits for elderly
- Multiple prescribers
- Patients can’t remember meds
- Try to obtain pill bottles or med list whenever possible

Medications

- Cardiac
- Anticoagulants
- Analgesics
Medications - Cardiac

- Beta blockers
- Diuretics
- Digoxin

Beta Blockers

- Mechanism:
  - Act on BETA adrenergic receptors throughout the body
  - Decrease heart rate
  - Decrease vascular constriction
  - Decrease ability of heart to contract
    - Therefore lowering oxygen demand

Beta Blockers

- Uses:
  - Hypertension
  - CAD
    - Decreases myocardial oxygen demand
  - Control some tachycardias

Beta Blockers

- Considerations
  - Can cause hypotension/syncope
  - Blunts tachycardic response to stress
  - Can worsen COPD/Asthma

Diuretics

- Mechanism
  - Multiple types
    - Prevent water & salt reabsorption in kidneys
    - Loop diuretics most powerful – furosemide
    - Thiazide diuretics have less effect on electrolytes - HCTZ

Diuretics

- Uses:
  - Hypertension
  - Peripheral edema
  - Congestive heart failure
Diuretics
- Considerations
  - Dehydration & Electrolyte abnormalities
  - Worsen renal failure
  - Interact with other meds

Digoxin
- Mechanism
  - Strengthens contractions and slows electrical conduction through A-V node

Digoxin
- Uses:
  - Congestive heart failure
  - Atrial fibrillation

Digoxin
- Considerations
  - Narrow therapeutic window
  - Can become toxic in renal failure
  - Can cause fatigue, confusion, gi upset
  - Can cause multiple conduction abnormalities
    - Complete heart block
    - Hypocalcemia – Stone Heart

Anticoagulants
- Antiplatelets – ASA, Plavix
- Warfarin – Coumadin
- New Oral anticoagulants:
  - Pradaxa®, Xarelto®, Eliquis®, Savaysa®
  - Replacing warfarin for A. fib and PE

Anticipates
- Mechanism
  - Prevent platelets adhesion and clot formation
Antiplatelets

- **Uses:**
  - MI and Stroke prevention
  - Peripheral artery disease
  - Acute MI and stroke treatment
    - Ischemic v. hemorrhagic

- **Considerations:**
  - Increase bleeding risk
  - ASA – toxicity, ulcer disease

Warfarin

- **Mechanism:**
  - Inhibits production of Vitamin K dependent coagulation factors (II, VII, IX, X)

- **Uses:** Most common anticoagulant in the world
  - Atrial Fibrillation
  - Mechanical Valves
  - DVT/PE
  - Dilated Cardiomyopathy

- **Considerations:**
  - These people bleed!
  - Multiple drug and food interactions
    - Most antibiotics / anticonvulsants
  - Variable effects requiring close monitoring
New Oral anticoagulants

- Pradaxa (dabigatran), Xarelto (rivaroxaban), Eliquis (apixaban)
- Act at various factors in clotting cascade
- Reversed with FFP or Plasma Complex Concentrates
  - K-Centra® (PCC) - $5,000/dose
  - Praxbind® - Exception, specific reversal agent for Pradaxa® - $3,500/dose

Analgesics

- NSAIDS
- Caution in renal insufficiency
- Ulcer disease
- Acetaminophen
- Probably safest analgesic
- Caution in liver patients

Narcotics

- Mechanism
  - Act on opioid receptors in the brain
  - Cause pain relief, euphoria, respiratory depression

Uses:
- Acute pain relief
- Adjunct in ACS
- Sedation

Considerations
- Respiratory depression
- Hypotension
  - Fentanyl causes less hypotension
- Chronically causes tolerance, constipation
Common Complaints
- Shortness of Breath
- Trauma
- Infection

SOB
- Shortness of Breath
  - Lungs of elderly unable to transfer O2 as easily as younger adults
  - Sense hypoxia and hypercarbia differently
  - Kyphosis makes it difficult to expand lungs
  - Multiple chronic illnesses affect breathing

Evaluation
- History of COPD, CHF, CAD, PE, dialysis
- Exam: Vitals
  - Lung exam
  - Cardiac
  - Extremities
- Testing: EKG, O2 sat

Differential: Huge
- Commonly COPD v. CHF
- Pneumonia
- Pulmonary edema
- PE
- MI
- arrhythmias
- Acidosis

Treatment:
- O2 – shoot for sat >95%, >92% w/ COPD
- Albuterol – w/ wheezing or COPD Hx
- Nitro – CHF history, Htn
  - Caution if hypotensive
- NIPPV (CPAP, BiPAP) – Great to temporize, avoid intubation*
  - Decreased intubation 25% to 9%
  - Improved mortality from 23% to 5.4%

Treatment cont.
- Fluid – If febrile or no CHF Hx
- Lasix – never* (no CXR, labs, old records)
  - Study of prehospital Lasix and its appropriateness in Michigan
  - 144 pt received lasix in respiratory distress
  - 58% had CHF diagnosis
  - 42% no CHF diagnosis
  - 17% sepsis, pneumonia, dehydration

*Study of prehospital continuous positive airway pressure in the management of acute pulmonary edema. - Nuine J, MW - Prehosp Emerg Care - 01-OCT-2006, 10(4): 430-9

*Effectiveness of prehospital continuous positive airway pressure in the management of acute pulmonary edema. - Nuine J, MW - Prehosp Emerg Care - 01-OCT-2006, 10(4): 430-9

Trauma

- Leading cause of nonfatal illness in the elderly
- Mortality for trauma patients >85 is 9x that of 25-69
- Majority will not recover to preinjury level of function

- Decreased muscle mass + osteoporosis
  - Fractures with minimal force
- Decreased cardiac function limits ability to respond to body stress
- Decreased lung function inhibits oxygenation and healing

- Fall is most common mechanism
  - Changes in vision, musculoskeletal system, dementia, medication effects ↑ risk
- Must consider abuse
- Consider primary medical causes as well
  - MI, syncope, seizure

- Management considerations
  - Tachycardia blunted by medications
  - Baseline hypertension masks hypotension
  - Serious injuries may not be obvious
    - Subdural hemorrhage
    - C-spine fractures
    - Rib Fractures
    - Etc.

Subdural

- Treatment
  - IV access and fluids
  - Investigate cause
  - Transport in position of comfort
  - More important than strapping to a long board
**Trauma**
- Treatment Cont.
  - Splint and if possible cushion
  - Burns
    - Require careful fluid resuscitation
  - Transport to appropriate facility
  - Suspect major injury
  - Error on side of taking to trauma center

**Infection**
- Elderly are at risk
  - Decreased immune response
  - Thin frail skin
  - Aspiration
  - Bladder dysfunction

**Infection**
- Diagnosis Difficult
  - Often vague symptoms
    - Weak, short of breath, just don't feel good
    - May not mount a fever

**Infection**
- Pneumonia is 5th leading cause of death in elderly
  - If suspected
    - Treat with O2, IV fluid
  - UTI
    - Will often present with mental status changes or vague complaints
    - Treat with IV fluids

**Abdominal Pain**
- High Morbidity and Mortality in the elderly
  - 60% hospitalized
  - 20% will require surgery
  - 5% will die
  - At risk for catastrophic illness
  - AAA
  - Bowel Perforation
  - Mesenteric ischemia
  - Obstruction

**Abdominal Pain**
- Difficult to Diagnose
  - Pain perception changed
  - Unable to provide adequate history


Abdominal Pain

- **Treatment**
  - IV access and IVF
  - EKG
  - Pain medication
    - If long transport or patient in distress
    - Can cause hypotension and mental status change
    - Fentanyl may be best if relative hypotension

Take Home Points

- Elderly are at risk for bad things
- You are the link between what actually happened and the hospital
  - Medications
  - Detailed history
  - Seen assessment
- May present atypically
  - Most >85 with AMI won't have CP
  - Initiating treatment early can make a difference

Thank You

- Questions???