CHF in the Elderly

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OBJECTIVES

• Understand presenting symptoms in elderly with CHF that may differ from younger pop.
• Recognize physical exam findings in CHF
• Know definition of HFREF vs. HFPEF and differences in treatment
• Recognize drugs to be used with caution and avoided in CHF patients based on BEERS criteria
DEMOGRAPHICS

• 2 million people in US with CHF
• Prevalence increases with age
• Approximately 800,000 of CHF patients are age 80 or older
• By 2030, number of CHF patients age 65 or older will be 3.6 million
• Estimates above may actually UNDERESTIMATE prevalence during to factors such as under-reporting and misdiagnosis
ETIOLOGIES

• HTN-most prevalent risk factor for development of CHF
• CAD
• Valvular disease
• Arrhythmias
• Prevalence of above “risk factors” increase with age
SYMPTOMS/PRESENTATION

• Dyspnea
• Edema - May be exacerbated by medications (Ca channel blockers, TZDs, NSAIDs)
• Fatigue - Common in elderly
• Lethargy - Common in elderly
• Symptoms do not predict whether ejection fraction is normal or reduced
HFREF vs. HFPEF

- New guidelines encourage use of terms Heart Failure with Reduced vs. Preserved Ejection Fraction
- Differentiated by LVEF of < 45%
- Moving away from Systolic vs. Diastolic HF
- Approximately 50/50 ratio for elderly
- Aging associated with higher incidence of diastolic dysfunction
- Lower prevalence of HFPEF in younger patients due to lower prevalence of pure diastolic dysfunction
HFPEF-CONDITIONS TO “TUCK AWAY” FOR CONSIDERATION

• Amyloidosis
  – Disease of elderly
  – Concentric LVH
  – “Speckled” appearance of LV on 2D
  – Marked diastolic dysfunction
• Will place image of amyloidosis here
• Constrictive pericarditis
  – Usually seen in patients that have undergone open heart surgery
  – Although associated with Tuberculosis as a “classic” board exam question, rarely seen in developed countries
  – Consider in patients that have markedly elevated JVP and recurrent CHF despite compliance and optimal medical therapy
  – Marked abnormalities of diastolic function
• Will place image of constrictive pericarditis here
Mortality

• One year mortality estimated at 20% for elderly patients with CHF
• No significant difference between HFREF and HFPEF
PHYSICAL EXAM

• Cardiac exam
  – S3 present in patients with HFREF but not with HFPEF
  – S4 may be present in both
  – Cardiac murmurs
  – Rhythm evaluation
  – JVP is THE MOST IMPORTANT DETERMINANT OF VOLUME STATUS

• Pulmonary exam
  – Crackles

• Extremity exam
  – Edema
WORK-UP

• Transthoracic Echocardiogram-most important; results of this will determine and direct treatment strategy
• CXR
• Laboratory studies-personally, still not a big advocate of BNP (although being increasingly advocated in CHF guidelines)
• Catheterization or stress test
• Transesophageal echocardiography-if concern for more severe valvular disease than suggested by TTE
• EKG/Holter-if concern of paroxysmal arrhythmias (esp atrial fib/flutter, bradycardia)
TREATMENT

- HFREF
- Systolic Heart Failure
- Almost always have concomitant diastolic dysfunction
- Follow GDMT

- HFPEF
- Diastolic Heart Failure
- Little direction for treatment given lack of GDMT
HFREF

- **Beta Blockers**
  - Carvedilol, Metoprolol succinate, Bisoprolol
  - Nebivolol (Bystolic) not yet incorporated in guidelines

- **ACEI/ARBs**
  - May use any ONE drug from either class
  - DO NOT combine ACEI/ARB
  - ATLAS trial: Higher dose of ACEI did not reduce mortality but did reduce morbidity

- **Aldosterone Antagonists**
  - Monitor K and Cr; cautious use with ACEI or ARB
  - Reserve for patients with LVEF < 40%

- **Hydralazine/Nitrates**
  - Tested in AAHEFT
• Biventricular ICD (Cardiac Resynchronization)
• Diuretics
  – Use lowest possible dose to maintain euvolemia
• DIGOXIN
  – Improves some measures of morbidity (dyspnea, hospitalization) but may increase mortality, especially at higher doses
  – “Therapeutic Range”-0.8-2.0; however, DIG Trial demonstrated that “optimal” level is below 1.0
  – Personally, only use Digoxin for VR control and not for symptom improvement
• HFPEF image here
HFPEF

• Mainstays of treatment
  – Control BP
  – Maintain euvolemia

• Recommended medications to treat HTN
  – ARBs (esp Candesartan) to reduce morbidity/hospitalization
  – ACEI
  – Beta Blockers
Medication Intolerance

- Orthostatic Hypotension
  - Estimated at up to 75% in some CHF trials
  - Use lowest dose possible and “down titrate” if needed
  - CAVEATS:
    - Can use Metoprolol succinate instead of Carvedilol
    - Can given meds such as Beta Blockers, ACEI and ARBs at bedtime to help decrease orthostasis
    - Exercise and muscle-training may help to reduce symptoms
Medication Intolerance-Continued

• Bradycardia
  – Monitor closely with Beta Blockers given increased incidence of SSS

• Renal Insufficiency and Electrolyte Abnormalities
  – Monitor Cr, Na, K, and Mag levels closely with ACEI, ARB, Aldost antagonists, Diuretics
  – May need to have a slightly higher Creatinine to maintain euvoolemia
BEERS CRITERIA

• AVOID: Digoxin dose > 0.125 mg per day
  – Higher dose associated with no clinical benefit but may increase mortality
  – Level of evidence: Moderate
  – Strength of recommendation: High
• AVOID: Spironolactone > 25 mg per day
  – Higher risk of hyperkalemia in those taking ACEI, ARB, NSAID and K
  – Level of evidence: Moderate
  – Strength of recommendation: Strong
BEERS CRITERIA-DRUGS TO AVOID IN CHF

- NSAIDs and COX-2 inhibitors
- Nondihydropyridine CCBs (avoid only for systolic heart failure)
  - Diltiazem
  - Verapamil
- Pioglitazone, rosiglitazone-Frequently exacerbates edema
- Cilostazol (Pletal)
- Dronedarone (Multaq)
REFERENCES


• Heidenreich PA, et al. Forecasting the Impact of Heart Failure in the United States : A Policy Statement From the American Heart Association. *Circ Heart Fail* published online April 24, 2013;