

CONGESTIVE HEART FAILURE 2008

Heart failure affects nearly 5 million Americans. It is a major reason for hospital admission in patient older than 65. We now have results of large randomized controlled trials that can help us manage congestive heart failure to improve symptoms, reduce hospitalization and decrease mortality. Diastolic dysfunction occurs when the heart muscle becomes stiff and does not relax well. There is increased end diastolic pressure and the mainstay of treatment is blood pressure control and treatment of comorbid conditions. Systolic dysfunction occurs when the heart does not pump well. The ejection fraction is less than or = to 40%. This talk focuses on the treatment of systolic dysfunction.

1. Systolic heart failure has been defined according to the New York Heart Association functional classification. Which of the following meets the criteria for Class III heart failure?
 - A. Patients exhibit no symptoms
 - B. Patients exhibit symptoms only at exertion levels similar to those achieved readily by healthy individuals.
 - C. Patients exhibit symptoms on ordinary exertion.
 - D. Patients exhibit symptoms on minimal exertion.
 - E. Patients exhibit symptoms at rest.
2. Which of the following drugs improve symptoms and decrease mortality?
 - A. B blockers
 - B. Combo of hydralazine and nitrates
 - C. Ace inhibitors and Angiotensin Receptor Inhibitors
 - D. Spironolactone
 - E. Diuretics- excluding spironolactone
 - F. Digoxin
 - G. Calcium Channel Blockers

3. Match the following drugs with their function.

Drugs

1. B blockers
2. Combo of hydralazine and nitrates
3. Ace inhibitors and Angiotensin Receptor Inhibitors
4. Spironolactone
5. Diuretics- excluding spironolactone
6. Digoxin
7. Brain Natriuretic Peptide

Functions

- A. Decreases afterload by counteracting peripheral vascular vasoconstriction.
- B. Inhibits the sympathetic nervous system and adrenergic receptors (decreases heart rate and b/p)
- C. Decreases preload by stimulating diuresis and decreases afterload by causing vasodilatation
- D. Works to decrease afterload and causes peripheral vasodilatation. Also affects LVH, remodeling and renal blood flow.
- E. Decreases preload by stimulating natriuresis in the kidneys
- F. Affects the Na K Atpase pump in the myocardial cell by increasing contractility
- G. Blocks aldosterone- (aldosterone stimulates renal and sodium retention, potassium excretion and promotes ventricular and vascular hypertrophy)

4. Atrial fibrillation is the most common nonfatal arrhythmia experienced by the CHF patient, and the treatment of choice is sotalol. T or F

5. Anticoagulation is indicated for patients with CHF whose ejection fraction is less than 20%. T or F

6. You have a 50 yo wm with hyperlipidemia and diabetes who presents to your office with fatigue and malaise. He has some shortness of breath on exertion and you notice some crackles in his lungs in the bilateral bases and an S3. He denies any history of chest pain. You admit him to the hospital for new onset CHF You order an echo and give him some lasix. He improves. On his echo he has an ejection fraction of 35 %. What important w/u should you do next?
- A. You should order a CT scan of the chest to look for pulmonary embolus.
 - B. You should order an exercise treadmill to look for coronary artery disease.
 - C. You should order a CT scan to look for a dilated aortic root.
 - D. You should order a Doppler ultrasound to look for a DVT.

7. You have a 65 yo black male who has been admitted multiple times to the MED for CHF exacerbations. Which of the following are appropriate to help him stay out of the hospital?
- A. Have the patient weigh and check his blood pressure daily He is to report this information to a home health nurse or case manager
 - B. Have the patient educated on the importance of avoiding nsaids and following a low salt diet.
 - C. Have the patient educated about his medications, and the importance of compliance.
 - D. Have the patient educated about the importance of moderating his alcohol Intake
 - E. All of the above
 - F. A & C only

CONGESTIVE HEART FAILURE

Heart failure affects nearly 5 million Americans. It is a major reason for hospital admission in patient older than 65. We now have results of large randomized controlled trials that can help us manage congestive heart failure to improve symptoms, reduce hospitalization and decrease mortality. Diastolic dysfunction occurs when the heart muscle becomes stiff and does not relax well. There is increased end diastolic pressure and the mainstay of treatment is blood pressure control and treatment of comorbid conditions. Systolic dysfunction occurs when the heart does not pump well. The ejection fraction is less than or = to 40%. This talk mainly focuses on the treatment of systolic dysfunction.

1. Systolic heart failure has been defined according to the New York Heart Association functional classification. Which of the following meets the criteria for Class III heart failure?
 - A. Patients exhibit no symptoms
 - B. Patients exhibit symptoms only at exertion levels similar to those achieved readily by healthy individuals.
 - C. Patients exhibit symptoms on ordinary exertion.
 - D. Patients exhibit symptoms on minimal exertion.
 - E. Patients exhibit symptoms at rest.

The answer is D. Class I heart failure is B, Class II heart failure is C and Class IV heart failure is E. Patients can move between classes because their level is based on their symptomatology. There is another classification that experts have come up with. It lists 4 classes also, but they are A-D, as follows: A-Patients who are at high risk for the development of heart failure but have no structural risk. B-Patients who have a structural abnormality of the heart but have never had symptoms of heart failure. C- Patients with a structural abnormality of the heart but who have current or previous symptoms of heart failure. D- Patients with end-stage symptoms of heart failure but who are refractory to standard treatment. This A-D classification takes into account that congestive heart failure is a preventable disease and should be treated as such.

2. Which of the following drugs improve symptoms and decrease mortality?
 - A. B blocker **T- Do not give to patients who are in acute heart failure. Manage them with diuretics and Ace/ARB first**
 - B. Combo of hydralazine and nitrates **T- Not as much data and not first line, but recent study in blacks was stopped early secondary to increased mortality in the placebo group**
 - C. Ace inhibitors and Angiotensin Receptor Inhibitors **T- better data with Ace inhibitors than ARB- losartan has some good data**
 - D. Spironolactone **T- in patients with Class III and Class IV heart failure**

E. Diuretics- excluding spironolactone **F-improve symptoms but does not prolong life.**

F. Digoxin **F- improves symptoms and keeps patients out of the hospital but does not reduce mortality. Monitor levels when initiating therapy to make sure the patient does not become toxic - it is effective at levels of <0.09. Also, watch that potassium does not get too low or too high. It is best to keep the K>4.0 and <5.0**

G. Calcium Channel Blocker **F- not indicated- no mortality benefit so far. Amlodipine and felodipine have not increased mortality in clinical trials.**

3. Match the following drugs with their function.

Drugs

- | | |
|---|----------|
| 1. B blockers | B |
| 2. Combo of hydralazine and nitrates | A |
| 3. Ace inhibitors and Angiotensin Receptor Inhibitors | D |
| 4. Spironolactone | G |
| 5. Diuretics- excluding spironolactone | E |
| 6. Digoxin | F |
| 7. Brain Natriuretic Peptide | C |

Functions

- H. Decreases afterload by counteracting peripheral vascular vasoconstriction.
- I. Inhibits the sympathetic nervous system and adrenergic receptors (decreases heart rate and b/p)
- J. Decreases preload by stimulating diuresis and decreases afterload by causing vasodilatation
- K. Works to decrease afterload and causes peripheral vasodilatation. Also affects LVH, remodeling and renal blood flow
- L. Decreases preload by stimulating natriuresis in the kidneys
- M. Affects the Na K Atpase pump in the myocardial cell by increasing contractility
- N. Blocks aldosterone- (aldosterone stimulates renal and sodium retention, potassium excretion and promotes ventricular and vascular hypertrophy)

4. Atrial fibrillation is the most common nonfatal arrhythmia experienced by the CHF patient, and the treatment of choice is sotalol. T or F **F- Atrial fibrillation is the most common nonfatal arrhythmia, but the treatment of choice is amiodorone. Be careful when you add amiodorone to digoxin therapy. You can cause toxic levels of digoxin. Also, you must watch the HR when you add amiodorone in combination with a beta blocker for bradycardia.**

5. Anticoagulation is indicated for patients with CHF whose ejection fraction is less than 20%. T or F **Trick question – this is controversial. Many believe we should anticoagulate pts with EF < 30%. Must also take into account risk of bleeding. Of course definitely anticoag HF pts with afib, previous clot, LV thrombus, or severe wall motion abnormalities after MI.**

6. A 50 y/o WM with hyperlipidemia and diabetes presents to your office with fatigue and malaise. He has some shortness of breath on exertion and you notice some crackles in his lungs in the bilateral bases and an S3. He denies any history of chest pain. You admit him to the hospital for new onset CHF, order an echo and give him some lasix. He improves. On his echo he has an ejection fraction of 35 %. What important w/u should you do next?

- A. You should order a CT scan of the chest to look for pulmonary embolus.
- B. You should order an exercise treadmill to look for coronary artery disease.
- C. You should order a CT scan to look for a dilated aortic root.
- D. You should order a Doppler ultrasound to look for a DVT.

This is a trick question none of the answers is 100% correct. If the patient responds to the Lasix, his cardiac isoenzymes are normal, and his shortness of breath resolves, so he can exercise then B is the correct answer. However, if he doesn't respond to your diuretic and presumed treatment with an ACE inhibitor you may need to do some further w/u. The point of the question is that people with CHF need their coronary arteries evaluated. If they have coronary artery disease then stenting them or doing bypass surgery can improve ischemic symptoms, improve cardiac performance and reduce the risk of sudden death.

7. You have a 65 yo black male who has been admitted multiple times to the MED for CHF exacerbations. Which of the following are appropriate to help him stay out of the hospital?

- A. Have the patient weigh and check his blood pressure daily. He is to report this information to a home health nurse or case manager
- B. Have the patient educated on the importance of avoiding nsaids and following a low salt diet.
- C. Have the patient educated about his medications, and the importance of compliance.
- D. Have the patient educated about the importance of moderating his alcohol intake.
- E. All of the above
- F. A and C only.

The answer is E. It is important for patients who require frequent hospitalizations to have a multidisciplinary approach. Many insurance companies have a case manager assigned to help with patients who have multiple admissions for CHF. The visiting nurse can help the patient with a diuretic protocol that gives the patient higher doses of diuretics based on their weight. A pharm D can go over the patient's meds and assess his ability to be compliant. If the patient's blood pressure is running high, a quicker follow-up with the doctor or RN clinic can be arranged. NSAIDS can cause fluid overload as can alcohol.