

## **24. Heart Failure-Chronic Therapy**

- Consider starting low doses of all three for synergy: ACEI, Beta blocker, Aldosterone blockers
- These neuromodulators have synergy, avoid starting each separately.

### **ACE Inhibitors/ARB**

- Most effective at (or near) maximal doses, but even lower doses have significant benefit
- ARB-angiotensin II blockers (eg. Valsartan/DIOVAN) equally effect as ACEI

### **β-Blocking agents** (Start Low and Slow)

- Carvedilol/COREG-CR at 10 mg qd, max 80 mg qd  
Carvedilol (beta and alpha-blocker) overall mean EF increased after 3 months by 8%.
- Metoprolol-XL/TOPROL at 12.5 to 25 mg qd, target 200 mg day, better tolerate, less hypotension

### **Aldosterone Receptor Blocker** (Watch K+)

- Spironolactone 25 mg qd, Reduces vascular fibrosis, decreases norepinephrine that leads to arrhythmias. 10% gynecomastia or breast pain in males "RALES Study" NEJM. 341(10):709-17, 1999 Sep 2
- Eplerenone /INSARA, 25 mg "SARA-Selective Aldosterone Receptor Blocker" (Ephesus Trial) 1% Gynecomastia (same as placebo but more hyperkalemia).

### **Diuretics** (Use Minimum Doses)

- Usually Furosemide/Lasix®
- Torsemide/DEMADEX® rather than Furosemide more consistent oral absorption if severe CHF
- Thiazide-type diuretic (distal tubule function) Metolazone/ZAROXOLYN® 2.5-5.0 mg qd-qd 30 minutes before Loop Diuretic
- Potassium (and magnesium) supplementation is often important

### **Digitalis** (Optional-no mortality benefit)

- Dig + ACE Inhibitors more effective (improved symptoms, EF, delayed progression) Class II, III

### **Inotropic Pressor** Short term gains, with long term deterioration

### **Anti-Coagulation**

- Many experts recommend anti-coagulation for EF <15-20%
- No compelling data to support empiric anticoagulation in CHF in normal sinus rhythm

### **Vasodilators**

- Amlodopine/NORVASC, Calcium blocker, does not worsen mortality in CHF
- Bosentan/TRACLEER, Early on in treatment increased hospitalization
- PDE-5 Sildenafil/VIAGRA-REVATIO, 20 mg tid, Vardenafil/LEVETRAL 20 mg qd, Tadalafil/CIALIS 20 mg qd
- Hydralazine-Isosorbid Dinitrate/BiDil, For Black Patients?

### **Theophylline** (Consider)

- Interferes with adenosine receptors to improve central breathing, May also induce mild diuresis

### **Biventricular Pacing**

- *InSync*<sup>TM</sup> pacing both ventricles from RV apex and LV via the coronary sinus venous system
- Indication NYHA Class III, QRS Duration > 150 msec

### **AICD**

- Defibrillator for those with EF < 35%? (SCD-HeFT, 2004)

### **Therapy of Diastolic Failure**

1. Treat underlying hypertension. ACE inhibitors, especially in diabetics.
2. Slow Heart Rate: β-Blockers are highly preferred by most cardiologists (higher doses as tolerated)
3. Low dose diuretics for symptomatic improvement.
4. Aldosterone blocker?

### **Poor Prognostic Factors** 1) Hypotension, 2) Tachypnea, 3) Hyponatremia, 4) Diastolic restrictive filling