

NURS 821

Vascular and Cardiac Disorders

Chronic Heart Failure Lecture 6, Part 8

Heart Failure

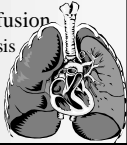
- **Definition:** Heart's diminishing ability to pump blood through body
- **Etiology:** CAD, MI, angina, DM, HTN
- **Contributing factors:** genetics, cardiomyopathy, high cholesterol, smoking, chronic or excessive ETOH

Heart Failure Statistics

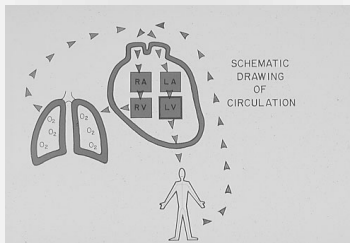
- >400,000 diagnosed annually
- 250,000 annual deaths
- 750,000 hospital admissions
- Annual cost=3.1 billion dollars
- Occurs 1% > Age 50, 5 % > 75, 10% > 80
- (English & Mastream, 1995; Kayser, 1994; Venner & Seelbinder, 1996)

Causes of Heart Failure

- **Impaired Heart Function**
 - Myocardial Disease
 - Infarction
 - Cardiomyopathies
 - myocarditis
 - Valvular Disorders
 - Stenotic disorders
 - Regurgitant disorders
 - Congenital defects
- **Excess Workload Demands**
 - Increased pressure
 - Hypertension
 - Coarctation of the aorta
 - Increased volume
 - Increased perfusion
 - Thyrotoxicosis
 - anemias



Normal Circulation



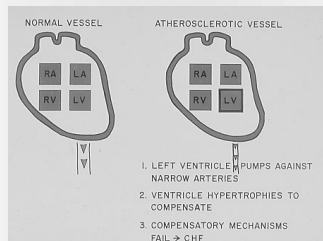
Chronic Heart Failure Compensatory Mechanisms

- Diminished circulatory volume and perfusion leads to:
 - SNS-vasoconstriction and increased contractility
 - ADH-fluid retention
 - RAA-vasoconstriction and fluid retention
 - Ventricular remodeling-hypertrophy and dilation
 - Anaerobic metabolism
- **Long-term mechanisms are counterproductive!**

Heart Failure Classification

- Systolic dysfunction-damaged myocardial muscle fibers cause decreased contractility
 - LV dysfunction-most common
 - Etiology-MI, CAD, HTN, ETOH abuse, idiopathic dilated cardiomyopathy
- Diastolic dysfunction-ventricle becomes resistant to filling causing increased pressure to fill ventricle

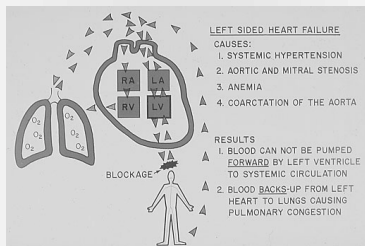
Left Ventricular Hypertrophy



Systolic Dysfunction

- **Sequelae**-Heart can't pump forcefully during systole to push sufficient blood into circulation
- **Result:**
 - Increased residual blood volume in LV
 - Blood back-up into LA and pulmonary circulation
- **Clinical Manifestations**-pulmonary congestion; low cardiac output-muscle weakness

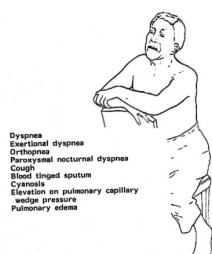
Left Ventricular Failure



Left Ventricular Failure Clinical Manifestations

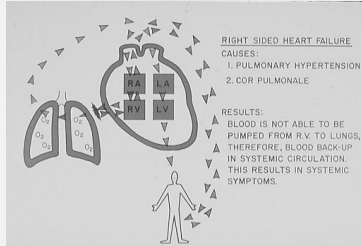
- Pulmonary Congestion
 - Dyspnea
 - Exertional dyspnea
 - Paroxysmal nocturnal dyspnea
 - Cough
 - Blood tinged sputum
 - Cyanosis
 - Pulmonary edema

MANIFESTATIONS OF ACUTE LEFT-SIDED HEART FAILURE



- Dyspnea
- Exertional dyspnea
- Orthopnea
- Paroxysmal nocturnal dyspnea
- Cough
- Blood tinged sputum
- Cyanosis
- Elevation on pulmonary capillary wedge pressure
- Pulmonary edema

Right Heart Failure



Right Heart Failure Clinical Manifestations

- Systemic Congestion
 - Fatigue
 - Peripheral Edema
 - Jugular Vein Distention
 - Ascites
 - Anorexia
 - Constipation

MANIFESTATIONS OF RIGHT-SIDED HEART FAILURE



- Fatigue
- Dependent edema
- Distention of the jugular veins
- Liver enlargement
- Ascites
- Anorexia and complaints of gastrointestinal distress
- Cyanosis
- Elevation in peripheral venous pressure

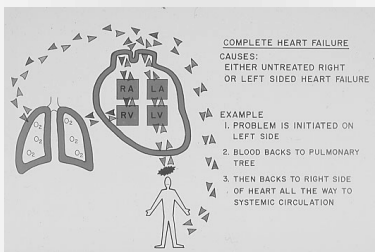
Peripheral Edema



Pitting Edema



Biventricular Failure



Case

- 3/18/00 3 yo Caucasian boy brought to ER by mom with red rash over trunk, high fever
- DX Scarlet fever and DC
- 3/20/00 Readmitted to ER with worsening rash, injected non-exudative conjunctiva, swollen hands and feet, dysuria, irritability, lymphadenopathy, strawberry tongue
- DX-Kawasaki. Admitted for IgG TX. Liver enzymes elevated, cardiomegally.

Case

- DC P 5 days
- Readmitted 3/25 worsening symptoms. Enzymes elevated. IgG course given again. Desquamation hands and feet. Marked jaundice, irritability
- Rash and conjunctivitis persisted for 1 month
- Other cases DX at school
