

CONGESTIVE CARDIAC FAILURE

Definition: Congestive cardiac failure is a clinical syndrome that is described as the inability of the heart to pump an adequate amount of oxygenated blood to meet the body's demands (adequate cardiac output).

OR

It is a condition in which a problem with the structure or function of the heart impairs its ability to supply sufficient blood flow to meet the body's needs.

CLASSIFICATION:

A). LEFT SIDED HEART FAILURE: There is a reduction in the left ventricular output and an increase in the left atrial pressure or pulmonary venous pressure. An acute increase in left atrial pressure may cause pulmonary congestion or pulmonary edema.

B). Right sided heart failure: There is a reduction in right ventricular output for any given right atrial pressure.

C). Biventricular heart failure: Failure of the left and right heart may develop due to process (eg. dilated cardiomyopathy or ischemic heart disease).

D). Forward and Backward heart failure: Inadequate cardiac output leads to forward failure, patients with normal or near normal cardiac output with marked salt and water retention causing pulmonary and systemic venous congestion leads to backward failure.

E). Diastolic and systolic dysfunction: Heart failure may develop as result of impaired myocardial contraction (systolic dysfunction), due to poor ventricular filling and high filling pressures caused by abnormal ventricular relaxation (diastolic dysfunction).

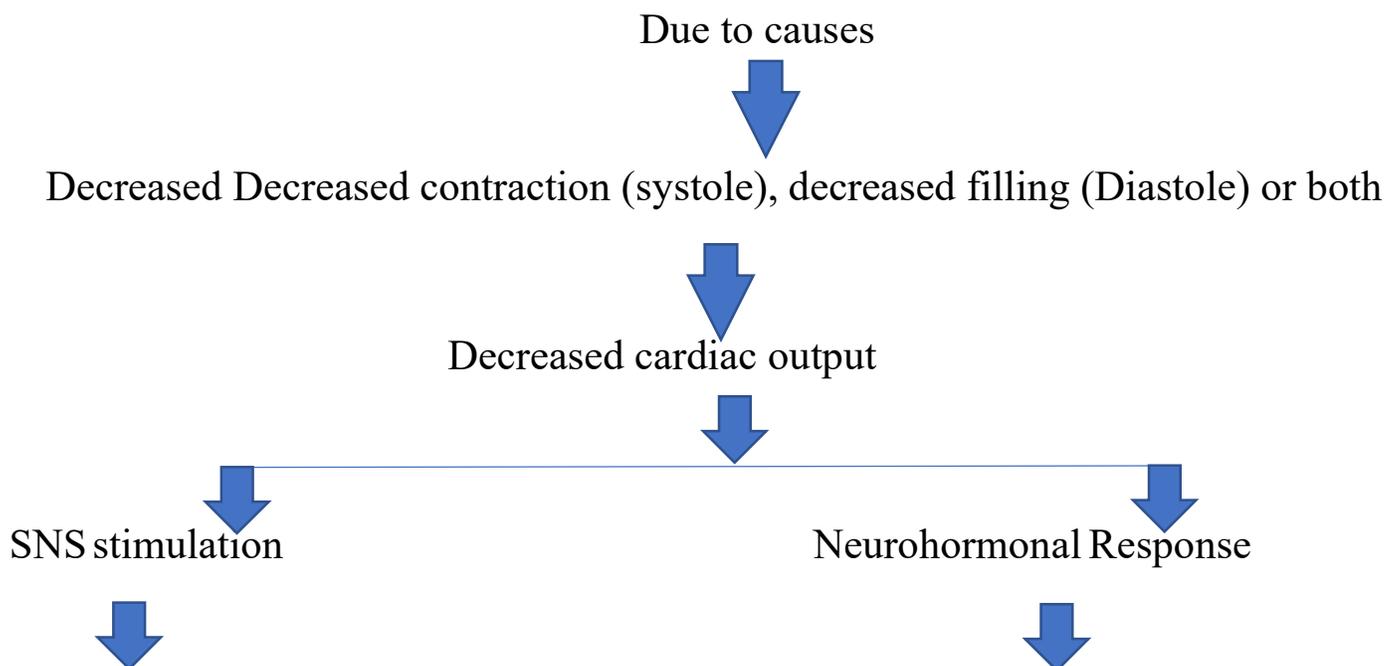
F). Acute and chronic heart failure

CAUSES:

- Coronary heart failure

- Rheumatic heart failure
- Cor pulmonale
- Anemia
- Valvular disorders
- Dysrhythmias
- Thyrotoxicosis
- Myocarditis
- Hypertension
- Congenital heart disease
- Cardiomyopathy
- Acute myocardial infarction
- Pulmonary emboli
- Hypertensive crisis
- Ventricular septal defect

Patho-physiology:



↓
Release of epinephrine and norepinephrine
↓
Increases HR and myocardial Contractility
and peripheral Vasoconstriction
↓
Increases the myocardium's
need for oxygen and the workload of failing heart

↓
Dilation and **hypertrophy**
↓
Peripheral vasoconstriction, which
Increases blood pressure

↓
Increases the workload to heart
↓
Dilation and hypertrophy

↓
Release of renin by the kidney
↓
Converts angiotensinogen to
angiotensin-I
angiotensin-I is converted into
angiotensin II by ACE

↓
Adrenal cortex releases aldosterone which
results in sodium and water retention

Clinical manifestations:

Right sided heart failure:

- ❖ Murmur
- ❖ Jugular vein distension
- ❖ Edema
- ❖ Weight gain
- ❖ Increased heart rate
- ❖ Ascites
- ❖ Anasarca (massive generalized body edema)
- ❖ Hepatomegaly
- ❖ Fatigue
- ❖ Anxiety
- ❖ Anorexia and GI bloating
- ❖ Nausea

Left sided heart failure:

- ❖ Pulsus alternans (altering pulse: strong/ weak)
- ❖ Increased heart rate
- ❖ Pulmonary edema
- ❖ S₃ & S₄ heart sounds
- ❖ Pleural effusion
- ❖ Changes in mental status, restlessness, confusion
- ❖ Weakness, fatigue
- ❖ Anxiety
- ❖ Dyspnea
- ❖ Orthopnea
- ❖ Dry, hacking cough
- ❖ Nocturia

Diagnostic evaluation:

- History collection and physical examination
- Routine laboratory testing
- Electrocardiogram
- Chest X-ray
- Echocardiography
- Exercise testing or treadmill test

Complications:

- Renal failure
- Hyperkalemia
- Hyponatremia
- Thromboembolism deep vein thrombosis and pulmonary embolism
- Atrial and ventricular arrhythmias

Management:

Medical management:

- Vasodilators: nitroglycerin 20g/min
- Inotropes: dobutamine 1-2g/kg per min
- Vasoconstrictors for hypotension: dopamine 5g/kg per min
- Diuretics: furosemide 20-40mg qd or bid
- Beta blockers: carvedilol 3.125mg bid
- Angiotensin -converting enzyme inhibitors: captopril 6.25mg tid

Surgical management:

- Implantable cardiac defibrillators and resynchronization therapy
- Revascularization
- Heart transplantation
- Ventricular assist devices

Nursing management

Health education

