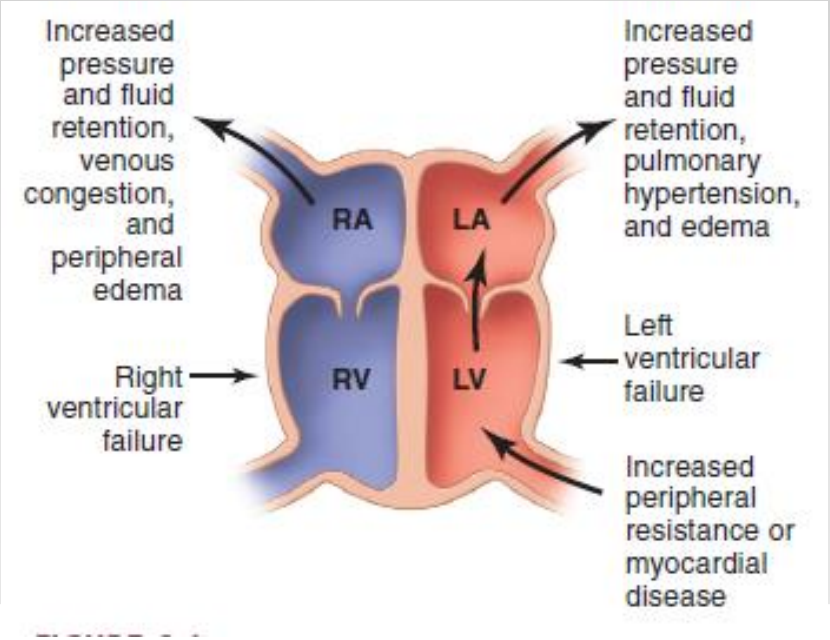
Congestive heart disease

Dr. Ahmed Alnaqeeb

- a complex clinical syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the ventricle to fill with or eject blood

- HF is essentially the inability of the heart to supply enough blood circulation to meet the body’s needs

- HF syndrome is characterized by signs and symptoms of intravascular and interstitial volume overload and/or manifestations of inadequate tissue perfusion



- HF may occur as a result of

(1) Impaired myocardial contractility (systolic dysfunction, commonly characterized as reduced left ventricular ejection fraction [LVEF]

(2) increased ventricular stiffness or impaired myocardial relaxation (diastolic dysfunction, which commonly is associated with a relatively normal LVEF

(3) a variety of other cardiac abnormalities, including obstructive or regurgitant valvular disease, intracardiac shunting, or disorders of heart rate or rhythm

(4) states in which the heart is unable to compensate for increased peripheral blood flow or metabolic requirements

BOX 6-1 Most Common Causes of Heart Failure

Coronary heart disease
Cardiomyopathy
Hypertension
Valvular heart disease
Myocarditis
Infective endocarditis
Congenital heart disease
Pulmonary hypertension
Pulmonary embolism
Endocrine disease

- Pathophysiology and complications
- Heart failure is caused by the inability of the heart to function efficiently as a pump, which results in either an inadequate emptying of the ventricles during systole or an incomplete filling of the ventricles during diastole.
- This in turn results in a decrease in cardiac output, with consequent delivery of an inadequate volume of blood to the tissues, or in a backup of blood, causing systemic congestion. HF may involve one or both ventricles.
- Most of the acquired disorders that lead to HF result in initial failure of the left ventricle. Left ventricular heart failure (LVHF) often is followed by failure of the right ventricle.

- In adults, left ventricular involvement is almost always present even if the clinical manifestations are primarily those of right ventricular dysfunction (fluid retention without dyspnea or rales).
- HF may result from an acute insult to cardiac function, such as with a large MI, or, more commonly, from a chronic process.
- The cardinal manifestations of HF are dyspnea and fatigue

BOX 6-2 Symptoms of Heart Failure

Dyspnea (perceived shortness of breath)
Fatigue and weakness
Orthopnea (dyspnea experienced with patient in recumbent position)
Paroxysmal nocturnal dyspnea (dyspnea awakening patient from sleep)
Acute pulmonary edema (cough or progressive dyspnea)
Exercise intolerance (inablility to climb a flight of stairs)
Fatigue (especially muscular)
Dependent edema (swelling of feet and ankles after standing or walking)
Report of weight gain or increased abdominal girth (fluid accumulation; ascites)
Right upper quadrant pain (liver congestion)
Anorexia, nausea, vomiting, constipation (bowel edema)
Hyperventilation followed by apnea during sleep (Cheyne-Stokes respiration)

BOX 6-3 Signs of Heart Failure

Rapid, shallow breathing
Cheyne-Stokes respiration (hyperventilation alternating with apnea)
Inspiratory rales (crackles)
Heart murmur
Gallop rhythm
Increased venous pressure
Enlargement of cardiac silhouette on chest radiograph
Pulsus alternans
Distended neck veins
Large, tender liver
Jaundice
Peripheral edema
Ascites
Cyanosis
Weight gain
Clubbing of fingers

BOX 6-4 NYHA Classification of Heart Failure

- *Class I:* No limitation of physical activity. No dyspnea, fatigue, or palpitations with ordinary physical activity.
- *Class II:* Slight limitation of physical activity. Patients experience fatigue, palpitations, and dyspnea with ordinary physical activity but are comfortable at rest.
- *Class III:* Marked limitation of activity. Less than ordinary physical activity results in symptoms, but patients are comfortable at rest.
- *Class IV:* Symptoms are present with the patient at rest, and any physical exertion exacerbates the symptoms.

BOX 6-5 Medical Management of Patients with Heart Failure (HF) by AHA/ACC Stage

Stage A: Patients at High Risk for HF, but without Structural Heart Disease or Symptoms of HF

Treatment of hypertension, encourage smoking cessation, treatment of lipid disorders, encouragement of regular exercise, discourage alcohol intake, illicit drug use, and control of metabolic syndrome

ACE inhibitors or ARBs as appropriate for treatment of vascular disease or diabetes

Stage B: Patients with Structural Heart Disease, but without Signs or Symptoms of HF

All measures for stage A, *plus*

ACE inhibitors (or ARBs) as appropriate

Beta blockers as appropriate

Stage C: Patients with Structural Heart Disease with Previous or Current Symptoms of HF

All measures for stages A and B, dietary salt restriction, *plus*

Drugs for routine use: diuretics, ACE inhibitors, beta blockers

Drugs in selected patients: aldosterone antagonists, ARBs, digitalis, hydralazine-nitrates

Devices in selected patients: biventricular pacing device, implantable defibrillator

Stage D: Patients with Refractory HF Requiring Special Interventions

Appropriate measures from stages A, B, and C

Heart transplant recipients: chronic inotropes, permanent mechanical support, experimental drugs or surgery

Compassionate end-of-life care/hospice care

Dental management

- Careful evaluation is needed to determine the nature, severity, control, and stability of the heart disease.
- consultation with the patient's physician to establish the level of control (as reflected in ejection fraction or other functional measures) is recommended as part of the management program.
- Antibiotics:: Patients with HF may be more susceptible to infection (leukopenia), but usually this is not a problem. There is no need for antibiotic prophylaxis unless the patient has a prosthetic heart valve or another cardiac condition (refer to AHA guidelines).

Dental management

- Anesthesia: It is very important to achieve and maintain excellent anesthesia in order to reduce stress and prevent cardiac crisis. Use of epinephrine (1 : 100,000) at a dose of no more than 2 carpules in local anesthetics generally causes no problems, but patients should be monitored closely.
- Clinicians should provide good postoperative pain control.
- General anesthesia should be avoided.

Dental management

- Anxiety: Patients with untreated or poorly controlled HF may appear very anxious and stressed and are at risk for cardiac crisis. Use of special anxiety/stress reduction techniques
- Bleeding: Excessive bleeding may occur in the patient with untreated or poorly controlled HF, because the medical treatment regimen typically includes anticoagulants (e.g., warfarin, clopidogrel), which are associated with greater risk for postsurgical bleeding and development of hypotension.

Dental management

- Blood pressure: Monitor blood pressure (BP) throughout procedure because it may significantly increase or decrease in patients with poorly controlled disease. Also monitor blood loss. IF BP drops below 100/60 mm Hg and patient is unresponsive to fluid replacement and vasopressive measures, seek immediate medical attention.
- Chair position: Positioning usually is not a problem if the patient is under good medical management; however, a patient who is becoming hypotensive and syncopal from cardiac stress and pulmonary congestion may not tolerate the supine position.

Dental management

- Devices: Dental patients with a diagnosis of HF may have pacemakers, implanted defibrillators, or prosthetic valves, in which case published guidelines should be followed.
- Drugs: Patients with HF typically are on many medications. The dentist should be aware of potential side effects and interactions. The use of epinephrine or other pressor amines (either in gingival retraction cord or as agents to control bleeding) must be avoided. Digitalis toxicity may present a problem, so caution should be exercised in treating those patients.

Dental management

- Emergencies: A cardiac crisis, once precipitated, may progress to cardiac arrest. This condition therefore constitutes a medical emergency, the patient who is ambulatory and stable should be advised to seek urgent medical care.

- Ongoing vital signs must be monitored, and cardiopulmonary resuscitation initiated; if necessary, arrange for transport of patient to emergency medical facilities.