CARDIOMYOPATHY

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CARDIOMYOPATHY

- Disease of the heart muscle in which the heart loses its ability to pump blood effectively
- The heart muscle becomes enlarged or abnormally thick or rigid.
- In rare cases, the muscle tissue in the heart is replaced with scar tissue.

CLASSIFICATION

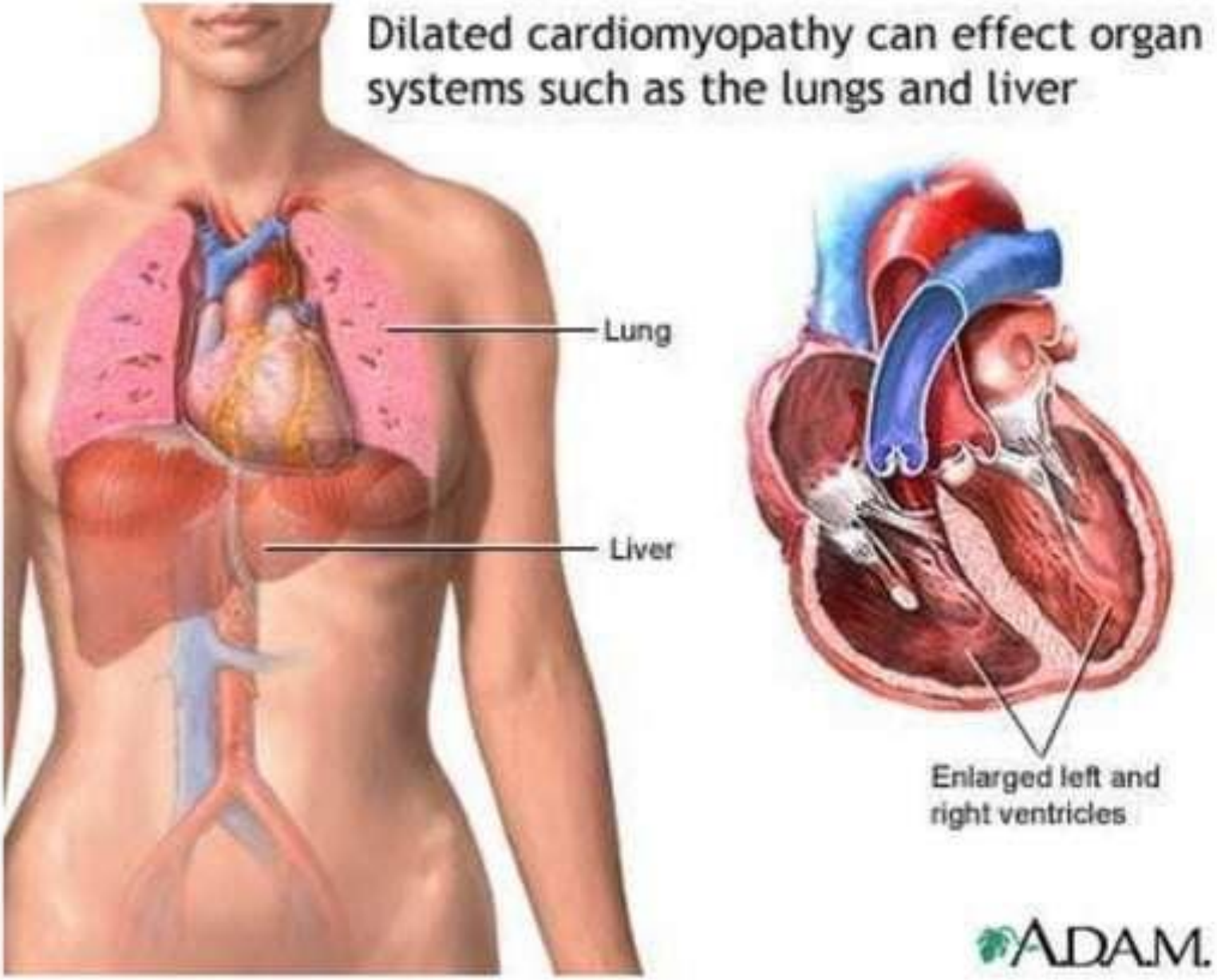
The 3 main types of cardiomyopathy are:

- ✓ Dilated cardiomyopathy
- ✓ Hypertrophic cardiomyopathy
- ✓ Restrictive cardiomyopathy

Dilated Cardiomyopathy

- ✓ A condition in which the hearts ability to pump blood is decreased because the hearts main pumping chamber; the left ventricle, is enlarged or weakened.
- ✓ Most common form of cardiomyopathy
- ✓ Generally occurs in adults aged 20 to 60 years
- ✓ More common in men

Dilated cardiomyopathy can effect organ systems such as the lungs and liver



Pathophysiology of Dilated Cardiomyopathy

Diffuse inflammation and rapid degeneration of myocardium

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Ventricular dilation

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Impairment of systolic function (impaired emptying of LV)

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Left atrial enlargement and stasis of blood in the left ventricle

↓

Cardiomegaly

Causes:

- Cardiotoxic agents like alcohol or coccaine
- Genetic
- Hypertension
- Ischemia(CAD)
- Muscular dystrophy (Weakening and wasting of muscles)
- Myocarditis
- Valvular disease

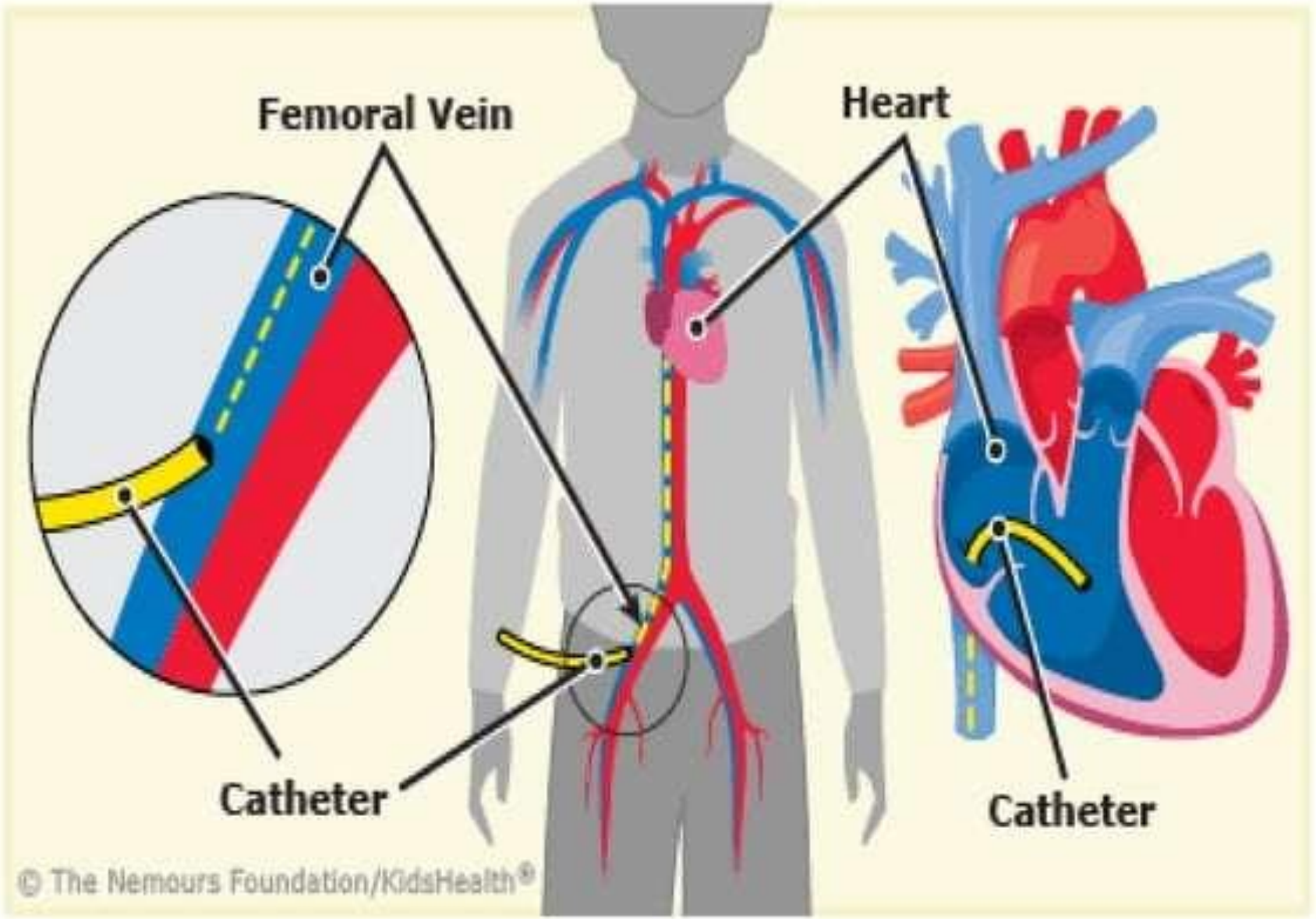
Features

- Decreased exercise capacity
- Fatigue
- Dyspnea
- Paroxysmal nocturnal dyspnea
- Orthopnea as the disease progresses
- Dry cough, palpitations
- Abdominal bloating
- Nausea, vomiting
- Anorexia

- Abnormal S3 and S4 sound
- Tachycardia or bradycardia
- Edema
- Pulmonary crackles
- Weak peripheral pulses
- Jugular venous distention

Diagnostic tests

- History
- Echocardiography
- Chest x-ray: shows the signs of cardiomegaly
- ECG: reveals tachycardia, bradycardia and dysrythmias.
- Cardiac catheterization: it is performed to confirm CAD


Femoral Vein
Heart
Catheter
Catheter
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Medical management

- Nitrates: eg- isosorbitrate
- Loop diuretics: eg-furosemide
- ACE inhibitors: eg- captopril
- Beta adrenergic blockers: eg- atenolol
- Aldosterone agonists: eg- spironolactone
- Cardiac glycoside : eg-digoxin
- Anticoagulation therapy

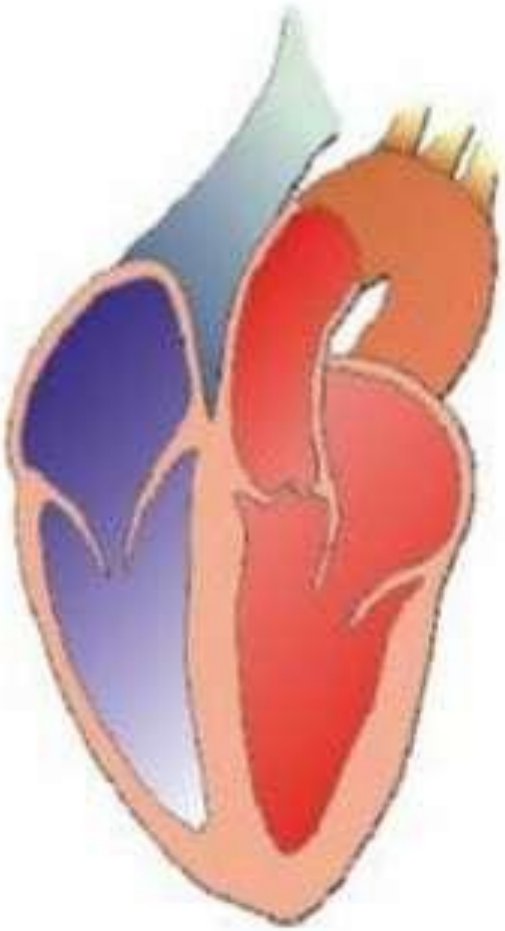
Surgical management

- Cardiac transplantation

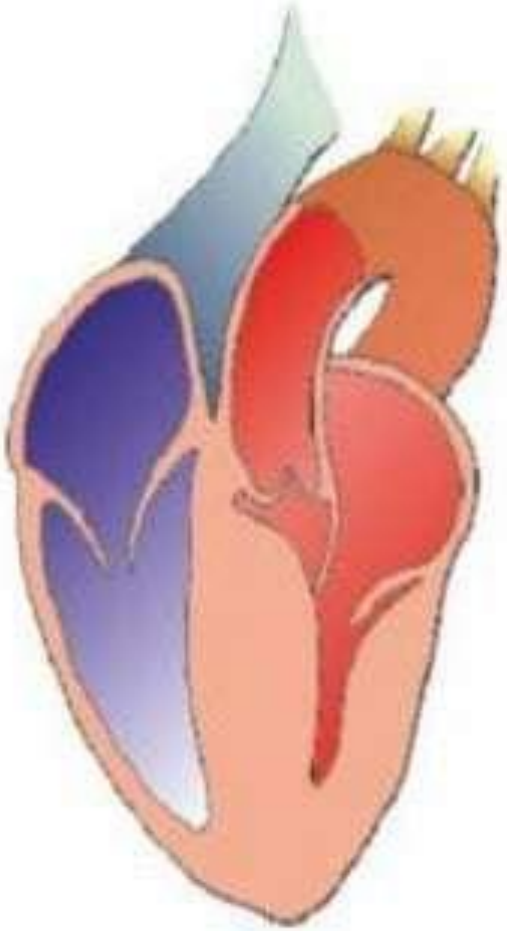
Hypertrophic Cardiomyopathy

- Assymetric left ventricular hypertrophy without ventricular dilation.

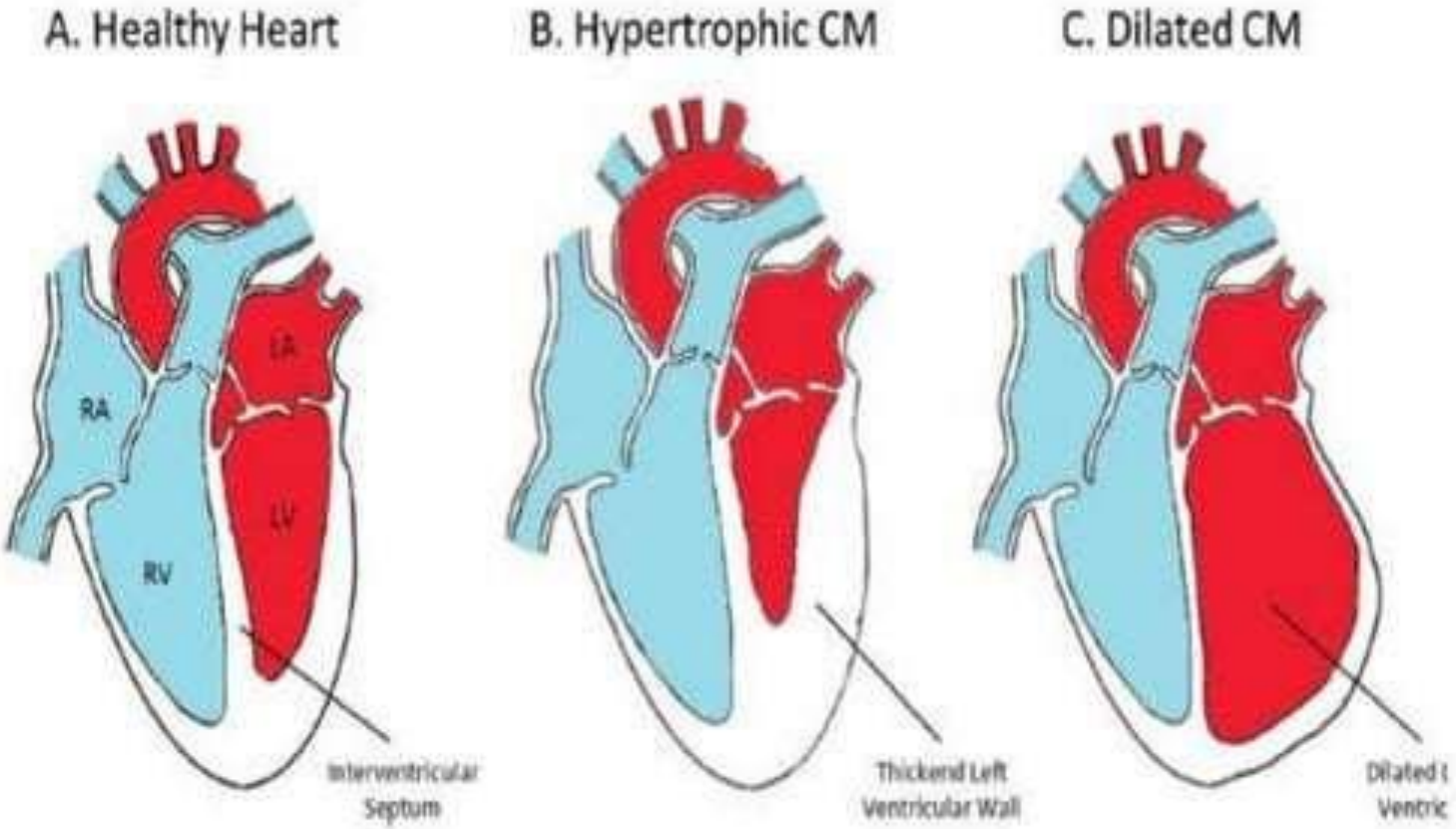
- When the septum between two ventricles become enlarged and obstructs the blood flow from left ventricle, it is known as hypertrophic obstructive cardiomyopathy.



Normal heart



Heart with
left ventricular hypertrophy


A. Healthy Heart
B. Hypertrophic CM
C. Dilated CM
RA
LA
RV
LV
Interventricular Septum
Thickend Left Ventricular Wall
Dilated
Ventric

Causes

- Inherited because of a gene mutation
- Aortic stenosis
- Genetic
- Hypertension
- More common in men between ages 30 to 40

Pathophysiology of Hypertrophic Cardiomyopathy

Thickened intra-ventricular septum and ventricular wall

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Ventricular hypertrophy

↓

Diastolic dysfunction

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Impaired ventricular filling and obstruction to decreased outflow

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Decreased cardiac output

Features

- Exertional dyspnea (Shortness of breath during exercise)
- Decreased cardiac output
- Fatigue
- Angina
- Syncope
- Hypertension

Diagnostic tests

- History and physical examination

- Transthoracic echocardiogram. In this test, a device (transducer) is pressed firmly against your skin. The transducer aims an ultrasound beam through your chest to your heart, producing moving images of the working of the heart.


convex
3 Probes
+
transrectal
+
linear
TRANSDUCER
PROBE

- **Electrocardiogram (ECG):** Wires (electrodes) attached to adhesive pads on your skin measure electrical impulses from your heart. An ECG can detect enlarged chambers of your heart and abnormal heart rhythms.

- **Cardiac MRI:** A cardiac MRI uses magnetic fields and radio waves to create images of your heart.

Medical management

- Beta adrenergic blockers: eg- atenolol
- Calcium channel blocker: eg- verapamil
- Antidysrhythmic drugs : eg- amiodarone

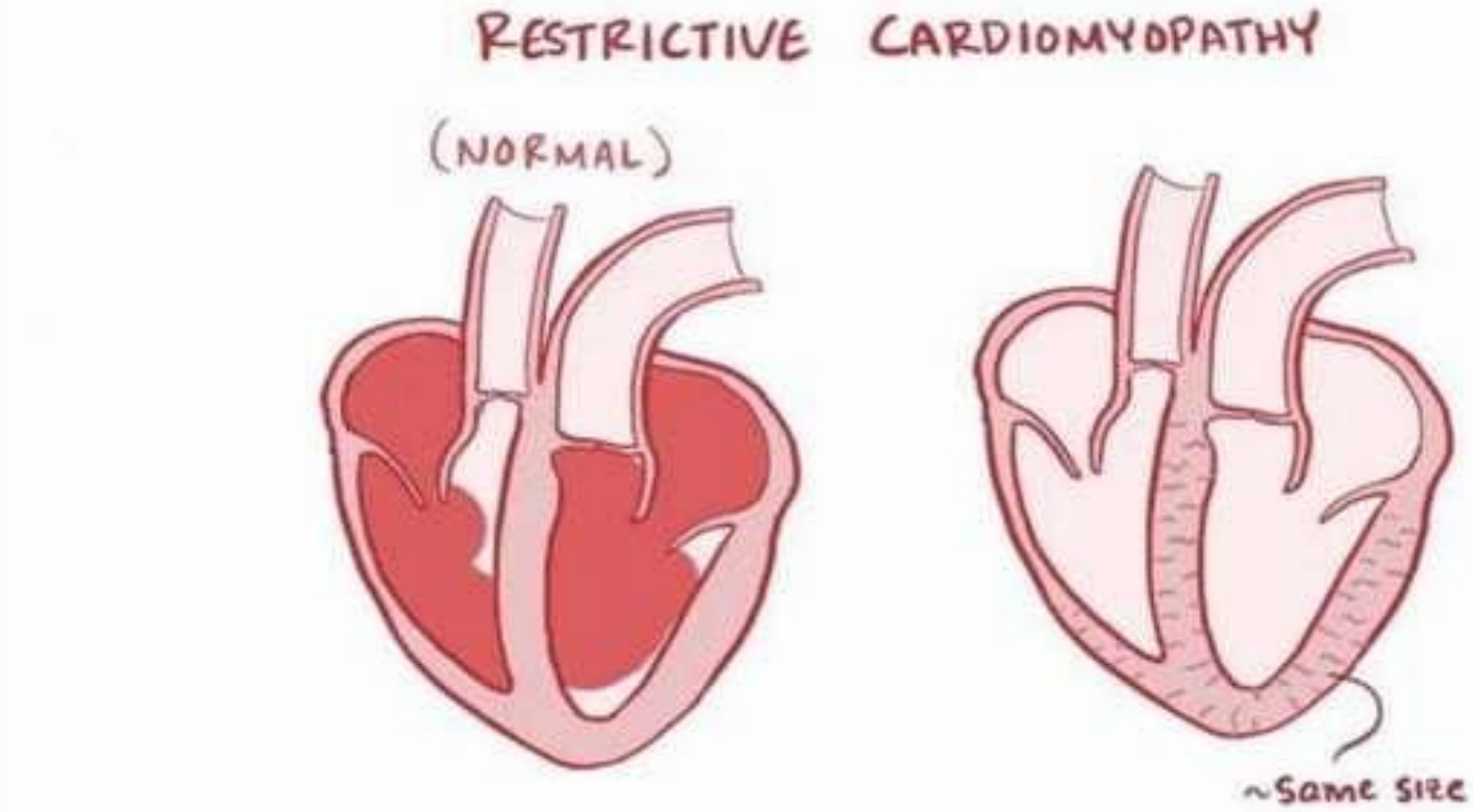
Surgical management

- **Septal myectomy**: It is an open heart surgical procedure in which the surgeon removes the part of thickened , over grown septum between the ventricles.

- **Septal ablation**: In this procedure a small portion of the thickened heart muscle is destroyed by injecting alcohol through a long, thin tube into the artery supplying blood to that area.

Restrictive cardiomyopathy

- Disease of the heart muscle that impairs diastolic filling and stretch and the systolic function remains unaffected.



Etiology

- Unknown etiology

- Myocardial fibrosis,endocardial fibrosis, sarcoidosis and radiation to the thorax

Pathophysiology

Etiologic factors

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Stiffness of the ventricular wall with loss of ventricular compliance

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Ventricles become resistant to filling

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Decrease cardiac output

Features

- Fatigue
- Exercise intolerance
- Dyspnea
- Orthopnea(shortness of breath (dyspnea) which occurs when lying flat)
- Syncope
- Palpitations
- Peripheral edema
- Jugular venous distention

Diagnostic tests

- Chest x-ray: shows cardiomegaly
- ECG: shows tachycardia
- Echocardiography : for the visualization of left ventricle
- CT-Scan and MRI Scan

Medical management

- Beta adrenergic blockers: eg- atenolol
- Calcium channel blocker: eg- verapamil
- Steriods: hydrocortisone
- Antidysrhythmic drugs : eg- amiodarone

Surgical management

- A heart transplantation may be considered if the heart function is very poor and the symptoms are severe

Nursing management

- Instruct the patient to take all medicines on prescribed time.
- Encourage to use low sodium diet
- Instruct to drink more water
- Instruct the patient to maintain proper body weight
- Teach the patient to balance activity and rest
- Instruct the patient to avoid vigorous activities and exercises

- Encourage to perform stress reduction activities.
- Teach about breathing and coughing exercise
- Suggest the family members to learn about CPR.


THANK
YOU