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Interviewing of patients with affection and diseases of the cardiovascular system

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Complaints in the cardiovascular diseases

Specific	Nonspecific
<ul style="list-style-type: none">•Pain in the heart region•Palpitation•Dyspnea•Cardiac asthma•Cough•Hemoptysis•Edema•Syncope	<ul style="list-style-type: none">• Fever• Sweatiness• Weight loss• Fatigue• Headache• Dizziness• Sleeplessness• Deranged vision and hearing• Voice changes• Dysphagia• Dyspepsia• Thirst• Pain in the abdomen• Pain in the joints

Chest pain

(Pain in the heart region)

Diagnostic approach to the patients with pain in the heart region

- **Location:** retrosternal, in the apex region, to the left of the sternum...
- **Intensity:** severe, rather intense, moderate, mild...
- **Character:**
 - a) superficial or profound ("deep");
 - b) type of the pain: squeezing, pressing, stabbing, piercing, burning, boring, gnawing, feeling of tightness, shooting;
- **Frequency:** seldom, every day, every week, several times a day (to indicate how many times);
- **Duration:** transitory, constant, intermittent, attacks of pain (to indicate in seconds, minutes, hours);
- **Radiation:** to the left shoulder, left arm, left shoulder-blade, left supraclavicular and subclavicular region, to the back, interscapular region, to the left of the neck, lower jaw, to the epigastric region, to the right half of the chest;
- **Associated features:** morbid fear of death, palpitation, intermissions, dyspnea, weakness, trembling in the body, cramps, feeling of air deficit, dizziness, excessive urination;
- **Provocation:** during insignificant physical exertion - during walk: quick, ordinary, slow; ascending the stairs or hill; frosty day; in going out of doors in 10-20 minutes; emotional factors; excessive meal; after alcohol use, smoking; in considerable physical loading; without visible cause.
- **Relieving conditions:** is abated by nitroglycerin (how many tablets a day, pain relieve at once, in few seconds, in few minutes); at rest; changing position; physical or emotional exertion; talking; is abated by analgetics.

The main causes of pain in the heart region

Diseases of the heart and pericardium	Diseases of the great vessels
<ul style="list-style-type: none">• Angina pectoris• Myocardial infarction• Pericarditis, Myocarditis• Coronaritis• Heart valvular diseases• Cardiomyopathy• Cardiosclerosis	<ul style="list-style-type: none">• Dissecting aortic aneurysm• Tromboembolism of the pulmonary artery and it's branches• Inflammatory and degenerative affection of the aorta

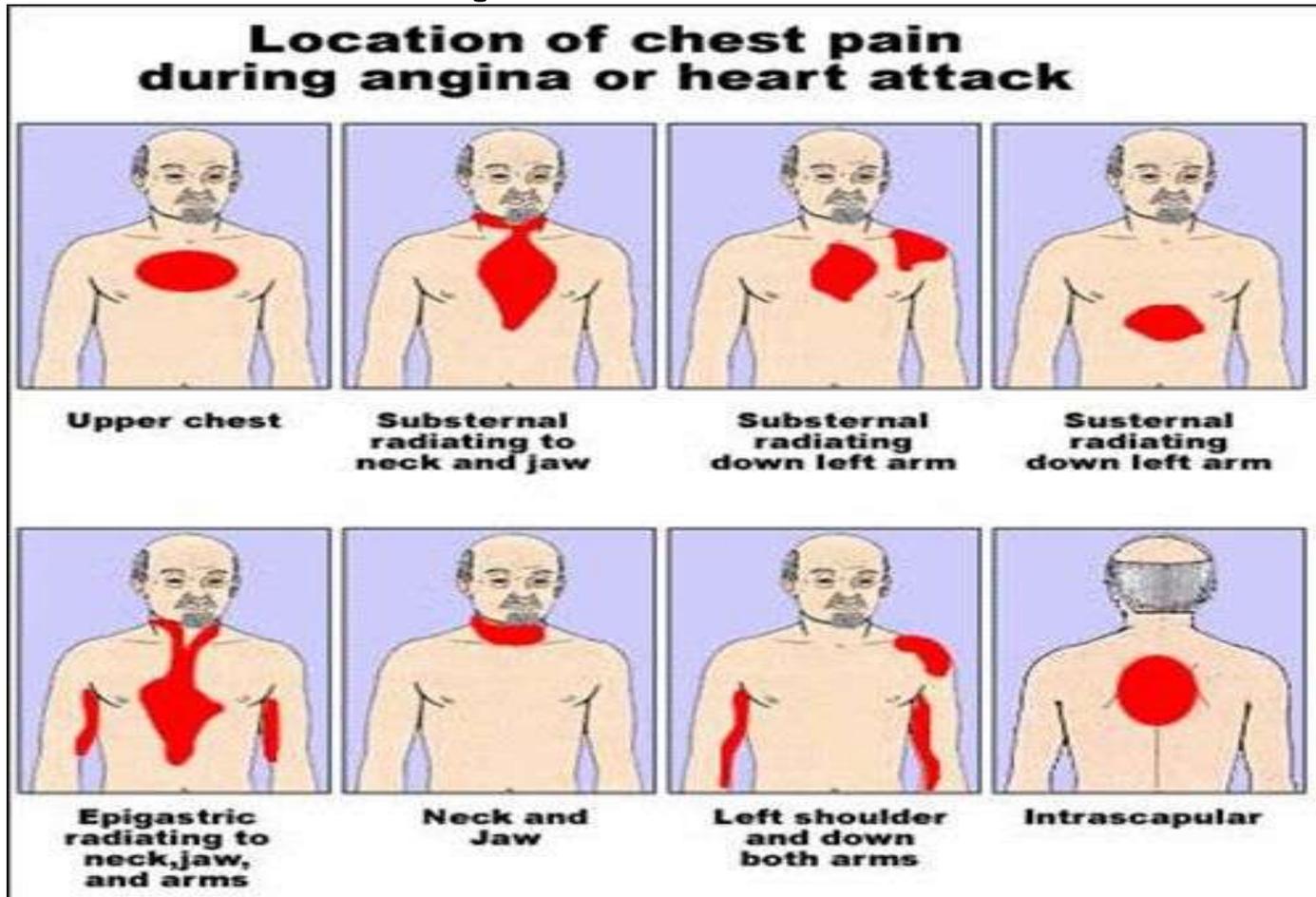
Pathophysiology of pain in myocardial ischemia

- Chest pain is one of the main symptoms indicating active cardiac ischemia.
- It has been suggested that **mediators such as prostaglandins or bradykinin** might be released from cells damaged from ischemia and stimulate pain receptors in sympathetic afferent nerves.
- Mechanoreceptors and chemoreceptors are most likely involved in the genesis of ischemic chest pain

Differential diagnosis of pain in the heart region from history

I. Pain in angina pectoris

Variants of pain location in angina pectoris



Characteristics of the angina pectoris pain

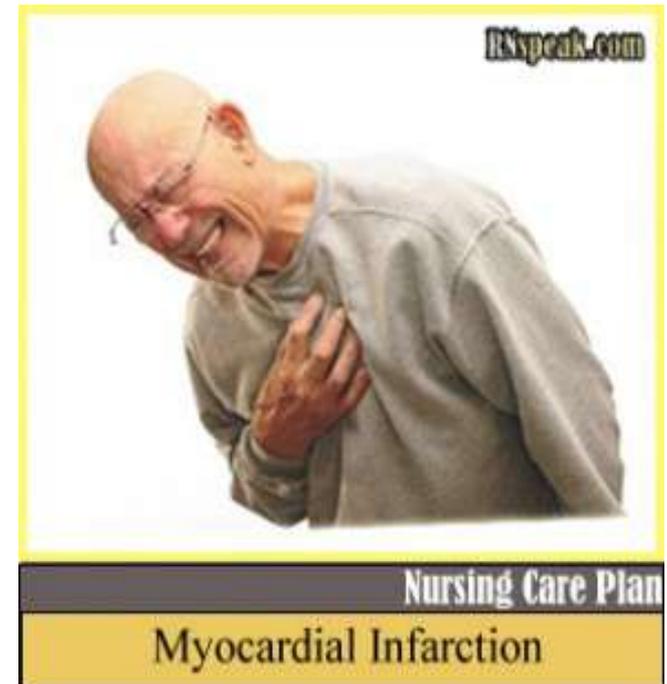
- *Location:* retrosternal
- *Intensity:* from moderate to severe
- *Character:* pressing, constricting, feeling of heaviness or tightness
- *Frequency:* varies from every day or several times a day to every week
- *Duration:* attacks of pain from few seconds to 15 min
- *Radiation:* radiate to the left arm, scapula, jaws, the neck
- *Associated features:* morbid fear of death
- *Provocation:* during insignificant physical exertion - during walk: quick, ordinary, slow; ascending the stairs or hill; frosty day; in going out of doors in 10-20 minutes; emotional factors; excessive meal; in considerable physical loading.
- *Relieving conditions:* is abated by nitroglycerin (how many tablets a day, pain relieve at once, in few seconds, in few minutes); at rest

II. Pain in myocardial infarction

Characteristics of the angina pectoris pain

Typical chest pain in acute myocardial infarction has the following characteristics:

- Intense and unremitting for 30-60 minutes
- Usually described as a substernal pressure sensation that also may be characterized as squeezing, aching, burning, or even sharp
- Retrosternal and often radiates up to the neck, shoulder, and jaw and down to the ulnar aspect of the left arm
- In some patients, the symptom is epigastric, with a feeling of indigestion or of fullness and gas
- Does not relieved by nitrates



Differential diagnosis of another types of chest pain

Retrosternal, extremely severe, sharp and tearing, piercing, radiate to the spinal column, moves gradually along course of the aorta, associated with collapse, syncope, cyanosis, with very sudden onset.	Consider aortic dissection
Middle of the sternum or heart apex or entire heart region, stabbing, shooting, feeling of heaviness, persist several days or may arise in attack during inspiration, coughing, radiate to the left scapular, the neck, epigastric region, left arm, varies in intensity with movements, the phase of respiration, and under the pressure of stethoscope.	Consider pericarditis
Behind manubrium sterni, permanent, does not respond to exertion	Consider aortitis
Very variable in site and intensity, may vary with posture or movement, very commonly accompanied by local tenderness over the rib or costal cartilage.	Consider musculo-skeletal cause

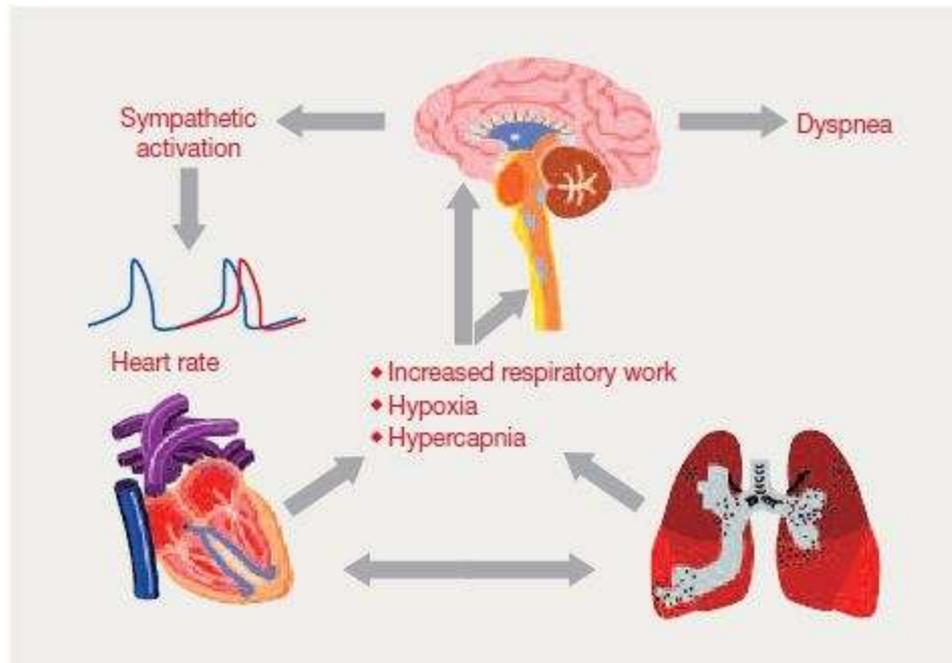
Dyspnea (breathlessness)

Dyspnea (breathlessness)

- The term "dyspnea" is derived from the Greek roots *dys* (difficult, painful) and *pnoia* (breathing).
- Breathlessness or dyspnea is disorder of the respiratory ventilation of the lungs, manifested by unreasonably accelerated and intensified breathing.
- Patients describe dyspnea as 'the sensation of difficult, labored, uncomfortable breathing', as 'distressing feeling of air deficit', and as 'the consciousness of the necessity for increased respiratory effort'. Often dyspnea accompanied by the feeling of the fear and alarm, and by others unpleasant feelings.

Cardiac dyspnea mechanism

- Cardiac dyspnea is caused by upset gas exchange and accumulation of underoxidized metabolites in the blood, which stimulate the respiratory center to accelerate and deepen respiration.



Types of dyspnea

- *Exertional dyspnea*
- *Orthopnea*
- *Paroxysmal nocturnal dyspnea*
- *Acute dyspnea at rest*: this is uncommon. It may complicate myocardial infarction, severe arrhythmias (supraventricular or ventricular tachycardia), other catastrophic events: acute dissection of the aortic root, mitral chordal or papillary muscle rupture, large pulmonary embolism

New York Heart Association scale for Exertional dyspnea

Dyspnea on exertion is caused by failure of the left ventricular output to rise during exercise with resultant increase in pulmonary venous pressure.

It occurs in the patients with left heart failure.

This may be graded according to the revised New York Heart Association scale.

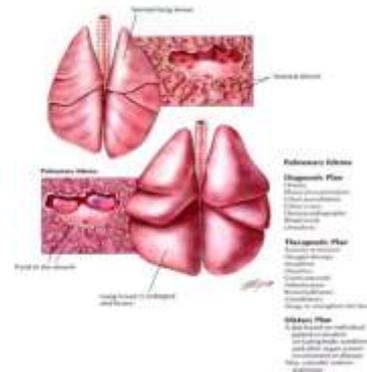
Class I	Patient with cardiac disease but without resulting limitation of physical activity; ordinary physical activity does not cause undue dyspnea (or fatigue, palpitation, or anginal pain).
Class II	Patient with cardiac disease resulting in slight limitation of physical activity; they are comfortable at rest; ordinary physical activity results in dyspnea (or fatigue, palpitation, or anginal pain).
Class III	Patient with cardiac disease resulting in marked limitation of physical activity; they are comfortable at rest; less than ordinary physical activity causes dyspnea (or fatigue, palpitation, or anginal pain).
Class IV	Patient with cardiac disease resulting in inability to carry on any physical activity without discomfort; symptoms of dyspnea (or of angina) may be present even at rest; if any physical activity is undertaken, discomfort increased.



Orthopnea



- Orthopnea is difficulty in breathing that occurs when lying down and is relieved upon sleeping propped up in bed or sitting in a chair.
- Orthopnea is due to congestion of blood in the pulmonary circulation while recumbent.
- Orthopnea is often a symptom of left ventricular heart failure and/or pulmonary edema.
- It can also occur in asthma and chronic bronchitis.



Paroxysmal nocturnal dyspnea

- Paroxysmal nocturnal dyspnea (or PND) refers to attacks of severe shortness of breath and coughing that generally occur at night. It usually awakens the person from sleep, and may be quite frightening.
- Though simple orthopnea may be relieved by sitting upright at the side of the bed with legs dependent (legs dangling), in a patient with paroxysmal nocturnal dyspnea, coughing and wheezing often persist even in this position.
- Is found in left ventricular failure, nocturnal asthma, and gastro-esophageal reflux with aspiration.

Cardiac asthma

Cardiac asthma

- Cardiac asthma is a medical diagnosis of wheezing, coughing or shortness of breath due to congestive heart failure. The wheezing is due to a decrease in airway diameter caused by pulmonary congestion, not bronchoconstriction.
- It is known as cardiac asthma because the symptoms mimic ordinary asthma.

The main symptoms and signs of cardiac asthma are:

- shortness of breath with or without wheezing;
- cough;
- rapid and shallow breathing;
- an increase in blood pressure and heart rate; and
- a feeling of apprehension.

Cardiac asthma signs

- Cardiac asthma is seen in the patients with myocardial infarction, aortic stenosis and regurgitation, and in essential hypertension.
- Attacks of cardiac asthma arise suddenly at rest or soon after physical or emotional stress, and usually during night sleep. This can be explained by an increased vagus tonus during sleep, which causes narrowing of the coronary arteries and thus impairs nutrition of the myocardium.
- During an attack of cardiac asthma in patients appears feeling of intense pressure in the chest, acute lack of air; the patient suffocates, catches the air by the mouth, marked weakness develops, and appears cold sweat. The skin becomes pallid and cyanotic. The face of the patient, not infrequently, expresses the fear and suffering. Respiration becomes superficial and accelerated, inspiratory dyspnea develops. The patient become coughing and expectorated tenacious sputum. During an attack of cardiac asthma the patient has to assume forced position - orthopnea, or stands up.
- If congestion in the lesser circulation progresses, edema of the lungs develops. The feeling of suffocation and cough intensify still more, respiration becomes stertorous, ample foaming sputum with traces of blood (pink or red) is expectorated. Edema of the lungs requires prompt and energetic measure to be taken to prevent possible death of the patient.

Palpitations

Palpitations

- Palpitation is an abnormality of heartbeat that ranges from often unnoticed skipped beats or accelerated heartrate to very noticeable changes accompanied by dizziness or difficulty breathing.
- A sensation of rapid or irregular beating of the heart



Chief complaints

- “fluttering”
- “pounding out of my chest”
- “thudding”
- “throbbing”
- “quivering”
- “skipping beats”
- “my chest is going to explode”
- “can’t catch my breath”
- “skipped beats” or “flopping”: PAC’s / PVC’s
 - PAC’s/PVC’s → compensatory pause
 - pause → ↑’d LV volume
 - post-extrasystolic potentiation → ↑’d contractility
- “sustained bursts”: ventricular or SV tachyarrhythmias
- “irregular”: Atrial Fibrillation
- “abrupt”: Sustained ventricular or SV tachyarrhythmias
- “gradual”: Sinus tachycardia

PALPITATIONS

Rhythm Disorders

- Extrasystoles
- Tachycardias
- Bradycardias
- Heart Block
- Pacemaker malfunction

Structural Diseases

- Aortic/Mitral regurgitation
- Mitral valve prolapse
- Congenital shunt
- Heart Failure
- Cardiomyopathy

Systemic Conditions

- Thyrotoxicosis
- Pyrexia
- Hypoglycaemia
- Anaemia
- Pregnancy
- Hypotension
- Hypovolaemia
- AV fistula
- Post-menopause
- Pheochromocytoma

Psychosomatic

- Anxiety
- Panic attacks
- Depression
- Somatic disorders

Drugs

- Sympathomimetic drugs
- Inhalers
- Vasodilators
- β -Blocker withdrawal
- Caffeine
- Alcohol
- Cocaine
- Nicotine
- Cannabis
- Weight loss drugs

'The traffic light system' risk stratification for palpitations

- Skipped beats
- Thumping beats
- Short fluttering
- Slow pounding
AND
- Normal ECG
AND
- No family history
AND
- No structural heart disease

Low risk: manage in
Primary Care

- History suggests recurrent tachyarrhythmia
- Palpitations with associated symptoms
AND / OR
- Abnormal ECG
AND / OR
- Structural heart disease

Refer to cardiology /
arrhythmia care co-ordinator

- Palpitation during exercise
- Palpitations with syncope / near syncope
- High risk structural heart disease
- Family history of inheritable heart disease / SADS
- High degree atrioventricular block

Refer to cardiology with
urgency

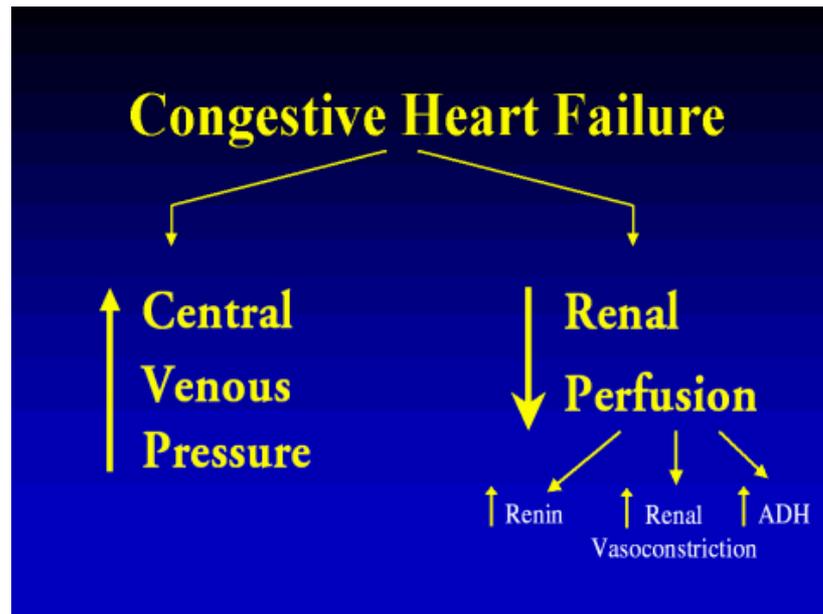
Cardiac edema

Cardiac edema

- Edema is defined as a palpable swelling caused by an increase in interstitial fluid volume.
- Cardiac edema is an accumulation of serum fluid from blood plasma in the interstitial tissues as a result of congestive heart failure. In severe cases, the fluid may also accumulate in serous cavities.

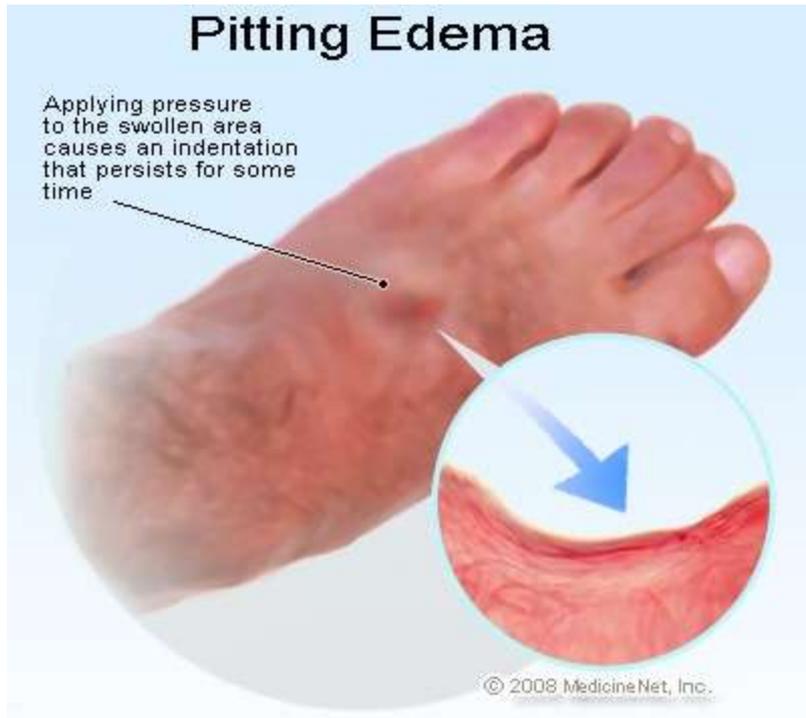
Pathogenesis of cardiac edema

- The sympathetically-mediated renal vasoconstriction and the mobilization of the renin-angiotensin-aldosterone system, is responsible for the salt and water retention
- Increased hydrostatic pressure



Pitting Edema

Cardiac edema due to heart failure is characterized as peripheral bilateral edema, starting to localize from pedal and progressing to low 1/3 of shins. It is nonpainful, improving overnight or after diuretics



Anasarca

- Anasarca is a severe generalized, massive edema accompanied by accumulation of serous fluid in various tissues and cavities of the body.
- Anasarca often occurs in congestive heart failure, liver failure, or renal disease.



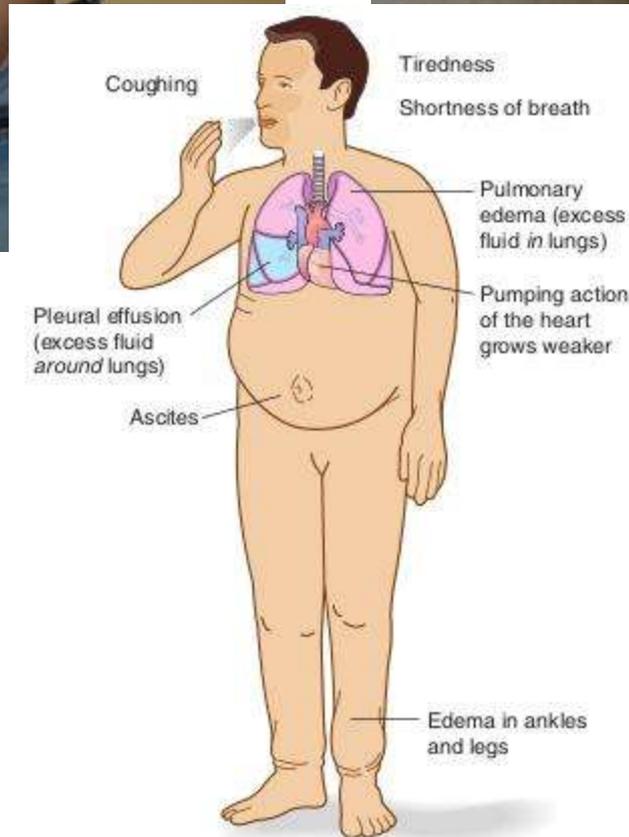
Anasarca



ascites



scrotal edema



Cardiac syncope

Syncope

- Syncope is defined as the abrupt and transient loss of consciousness associated with loss of postural tone, typically followed by rapid recovery.
- It is also described as fainting or passing out.
- Syncope is a common problem that affects 1 million Americans every year. It also accounts for 3% of all emergency department visits and 6% of all hospital visits. Approximately one third of us will have syncope at least once in our lifetime
 - <http://circ.ahajournals.org/content/113/16/e715.full>



Cardiac syncope pathophysiology

- Cardiac abnormalities can cause syncope through a temporary reduction in blood flow to the brain.
- This can occur if the heart's electric system malfunctions (producing a heart rate that is abnormally slow or fast) or if there is an obstruction of blood flow out of the heart caused by a narrow heart valve or a thick heart muscle.

Causes of cardiac syncope

Arrhythmic

Bradycardia
(less than 40
beats per minute)

Tachycardia
(greater than 100
beats per
minute)

Mechanical

- Narrowed heart valves, particularly the aortic valve.
- Obstruction of outflow tract of left ventricle (hypertrophic cardiomyopathy)

Cardiac cough

Cardiac cough

- Cough in the patients with cardiovascular diseases is due to congestion in the lesser circulation.
- *Dry cough*: a persistent dry cough may occur in chronic left heart failure, particularly after exercise and when lying flat in bed at night.
- A dry cough may persist for about half an hour after an episode of paroxysmal nocturnal dyspnea.
- Treatment with angiotensin-converting enzyme inhibitors sometimes causes troublesome cough.
- In prolonged congestion cough is with sputum.

Differential diagnosis of cardiac cough

Cough features	Causes of cough	Disease
Periodic, dry, persistent, sonorous, comes on with exertion, at rest, in the lying position, at night	Congestion in the lesser circulation, increases of bronchial secretion	Chronic heart failure
Periodic with insignificant bloody sputum, comes on with exertion, in lying position	Significant hypertension in the lesser circulation	Mitral stenosis

Differential diagnosis of cardiac cough

Cough features	Causes of cough	Disease
<p>In attacks, dry, mainly at night, comes on directly before the beginning of the night sleep or in 1-2 hours of staying in the bed. In the morning the cough resumes, but slightly of lesser intensity, after expectorating of the mucus sputum the condition of the patient relieves</p>	<p>Aggravation of the septic process and spreading of infection to the upper respiratory tract</p>	<p>Long-standing septic endocarditis</p>

Differential diagnosis of cardiac cough

Cough features	Causes of cough	Disease
Dry, transitory, sharp rending, accompanied by sensation of pain in the heart	Irritation of the pleural coughing zone	Pericarditis
Strong, sonorous, dry, barking, and dull.	Pressure of enlarged great vessels on bronchi and trachea	Aortic or pulmonary aneurysm

Other respiratory symptoms associated with cough

- *Acute pulmonary edema*: acute severe dyspnea accompanied by cough producing copious white or pale pink frothy sputum. There is usually cyanosis, sweating, tachycardia, and raised systemic blood pressure.



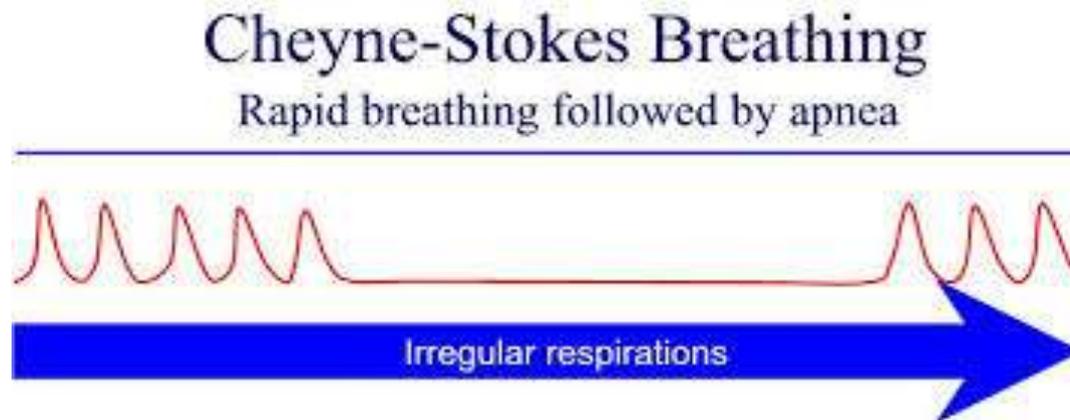
Other respiratory symptoms associated with cough

- **Hemoptysis:** Coughing of blood or of blood-streaked sputum from the larynx, trachea, bronchi, or lungs.
- Hemoptysis in cardiac pathology is mostly due to congestion in the lesser circulation and rupture of fine bronchial vessels during coughing
- Small hemoptysis occur in severe mitral stenosis and occasionally in severe left ventricular failure.
- Massive hemoptysis may occur with rupture of a thoracic aortic aneurysm, pulmonary artery aneurysm, or arteriovenous malformation.



Other respiratory symptoms associated with cough

- *Irregular respiration*: Cheyne-Stokes periodic respiration is well known to occur in advanced cardiac failure, but is uncommon.



The end.
Till we meet again!

