

① Angina Pectoris

definition

- It is an oppressive, heavy, crushing pain on a constrictive feeling in the center of chest behind the sternum or on the left side of the chest.
- The pain may radiate to one or both arms, more & can be experienced in throat, jaw & stomach & across b/w shoulder blades.

Introduction

- It results when oxygen supply or other nutrients are inadequate for metabolic needs of heart muscle.
- Primary cause is atherosclerosis, platelet aggregation, coronary artery spasm, non-vascular mechanisms (hypoglycemia) & hyperthyroidism.

Types

classical angina

- Primary lesion of atherosclerosis is atheromatous plaque blocking coronary artery, symptomatic after major coronary artery is more than 50% block.

Prinzmetal's variant angina

- most common form of coronary artery spasm, not caused by plaque, occurs at rest or at odd times during day or night, more common in women younger than 50.
- magnesium insufficiency induced coronary artery spasm
- important cause of MI & sig

Etiology (causes)

- Physical exercise, physiological stress, extreme cold & heavy meal are main causes.
- In most cases, cause of angina is coronary atherosclerosis. Narrowing the coronary arteries reduce blood flow to the heart muscle.
- During the increase workload of heart if there is too little oxygen can cause pain in heart leads to angina. In severe cases this can also happen when heart is at rest.
- It can be aggravated by
 - ① sustained fast heartbeat
 - ② Anaemia
 - ③ heart valve disease - as aortic stenosis
 - ④ narrowing of outflow valve of heart
 - ⑤ thickening of heart muscle

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6) hypertrophy which can occur in patients with high blood pressure.

Pathogenesis

narrowing of coronary arteries

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insufficient blood flow

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myocardial oxygen demands exceeds supply

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anaerobic metabolism with lactic acid accumulation

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Myocardial nerve fibres irritated

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Pain message transmitted to cardiac nerve & upper posterior nerve roots

coronary artery atherosclerosis sometimes lead to coronary thrombosis when a coronary narrowing due to plaque gets ruptured.

These leads to coronary acute coronary syndrome such as unstable angina or MI.

Number of coming attacks can be reduced if the blood supply to the heart can be

restored & this is done either by angioplasty or bypass operation.

Diagnosis

- It is based on presence of symptoms of angina, medical history & immediate effect of GTN spray or tablets under tongue to relieve chest pain.
- Resting ECG is also helpful.
- Examination of coronary arteries by coronary angiogram is taken. This involves an injection of contrast medium into circulation through plastic tubes introduced into main artery in groin.

Treatment

Aspirin

GTN

long-acting
nitrates

β -blockers

calcium

potassium

Preventive & Aspirin reduce tendency of platelets to stick together which helps to prevent formation of thrombosis.

glyceryl trinitrate relax arteries of heart & relieve angina attacks.

- long-acting nitrates reduce frequency of angina attacks - main side effects are headache.

- β -blockers block the effect of adrenaline hormone which slow down the pulse & lowering of blood pressure reduce heart's need for oxygen & improve supply of oxyg. blood to heart muscles.

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- Calcium channel blockers reduce muscle tension in coronary arteries, expanding them & creating more room. They also relax heart muscle, reducing heart's need for oxygen & reducing blood pressure.

- Potassium channel activator nicorandil reduce muscular tension in blood vessel walls, expanding them & improving flow of blood & supply oxygen.