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Lecture three

Cardiovascular system

Cardiovascular disease is the most frequent cause of adult death,

CORONARY ARTERY DISEASE Coronary artery disease (CAD) is the most common form of heart disease

Risk factors

• Age and sex. Age is the most powerful independent risk factor for atherosclerosis. Pre-menopausal women have lower rates of disease than men, although this sex difference disappears after the menopause

• Family history

. • Smoking. This is probably the most important avoidable cause of atherosclerotic vascular disease.

• Hypertension.

Hypercholesterolaemia .

. • Diabetes mellitus.

. • Physical activity.

Physical inactivity

• Obesity .Obesity, particularly if central or truncal, is an independent risk factor,

. • Alcohol. Alcohol consumption is associated with reduced rates of coronary artery disease. Excess alcohol consumption is associated with hypertension and cerebrovascular disease. • Other dietary factors. Diets deficient in fresh fruit, vegetables and

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polyunsaturated fatty acids are associated with an increased risk of cardiovascular disease

Stable angina

Angina pectoris is the symptom complex caused by transient myocardial ischemia It occur whenever there is an. Coronary atheroma is by far the most common cause of angina

Clinical features:- •

-central chest pain Related to effort

Investigations

1- Resting ECG
2- 2-Exercise ECG
3- 3-Coronary arteriography This provides detailed anatomical information about the extent and nature of coronary artery disease

Treatment

1-Advice to patients with stable angina:-

• Do not smoke

• Aim for ideal body weight

• Take regular exercise (exercise up to, but not beyond, the point of chest discomfort is beneficial and may promote collateral vessels)

Take sublingual nitrate before undertaking exertion that may induce angina

2 Low-dose (75 mg) aspirin reduces the risk

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of adverse events such as MI and should be prescribed for all

patients with coronary artery disease indefinitely. Clopidogrel

(75 mg daily) is an equally effective

3-Anti-anginal drug treatment Example: Nitrates produce venous and arteriolar dilatation.. Sublingual glyceryl trinitrate (GTN)will relieve an attack of angina in2–3 minutes.
Side effects include headache, symptomatic hypotension and, rarely, syncope.

Beta-blockers

. 4-Invasive treatment Percutaneous coronary intervention (PCI

Acute myocardial infarction

MI occurs when symptoms occur at rest and there is evidence of myocardial necrosis, as demonstrated by an elevation in cardiac troponin

Clinical features

• Prolonged cardiac pain: chest, throat, arms, epigastrium or back

• Anxiety and fear of impending death

• Nausea and vomiting

• Breathlessness

• Collapse/syncope

Painless or ‘silent’ MI is particularly common in older patients or those with diabetes mellitus

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Investigations

ECG : The initial ECG may be normal or nondiagnostic in one-third of cases

Plasma cardiac biomarkers: In stable angina, there is no detectable rise in cardiac biomarkers or enzymes, and the initial diagnosis is made from the clinical history and ECG only. In contrast, MI causes a rise in the plasma concentration of troponin

Echocardiography This is useful for assessing ventricular function

Treatment : Patients should be admitted urgently to hospital. Patients are usually managed in cardiac unit,

Analgesia Adequate analgesia is essential, Intravenous opiates (morphine sulphate 5–10 mg or diamorphine2.5–5 mg) Antithrombotic therapy :Antiplatelet therapy In patients with acute coronary syndrome, oral administration of aspirin daily improves survival, with a 25% relative risk reduction in mortality. Anticoagulants Anticoagulation reduces the risk of thromboembolic complications, and prevents re-infarction in the absence of reperfusion therapy or after successful thrombolysis. Anti-anginal therapy Sublingual glyceryl trinitrate (300–500 μg) . β-blockers

Reperfusion therapy :Thrombolysis