

CARDIOVASCULAR DISEASES

Key Points in Anatomy and Physiology

The heart

The right heart – atrium and ventricle – receives blood from the central veins, sends blood to the pulmonary artery and lungs. Valves – tricuspid and pulmonary.

The left heart – atrium and ventricle – receives blood from the pulmonary veins and sends blood to the aorta and the rest of the body. Valves – mitral and aortic.

The pericardium surrounds the heart.

The conducting system – sinoatrial node and atrioventricular node, left and right Bundles of HIS – control cardiac rate and rhythm.

The peripheral vascular system

Clinically important arteries

- Aorta
- Carotid
- Subclavian
- Brachial
- Radial
- Ulnar
- Femoral
- Popliteal
- Posterior tibial
- Dorsalis pedis

Veins

- Superior and inferior vena cava
- Jugular veins
- Femoral veins
- Saphenous veins

Lymphatic system

- Thoracic duct

History Taking

Major presentations of disease specific to this system

- Chest pain (angina, myocardial infarction, pericardial pain, aortic dissection)
- Breathlessness
- Palpitation

- Syncope (fainting)
- Oedema
- Hypertension
- Intermittent claudication
- Gangrene

History of the present illness (HPI)

Chest pain

- Where do you feel the pain?
- Does it go anywhere else?
- How did it start?
- How long did it last?
- How would you describe the pain?
- How severe is it?
- Do you feel any other symptoms at the same time?
- Does anything bring it on or make it worse?
- Does anything make it better?

Breathlessness

- Do you ever feel short of breath?
- Is it only when you exert yourself, or does it happen at rest?
- Is it made worse by lying flat, e.g. in bed at night?
- Do you ever wake up in the night very short of breath?
- Does anything bring it on or make it worse?
- Does anything make it better?

Palpitation

- Are you ever aware of your heart beat, like a fluttering in your chest, or like a “thump”?
- Does anything bring it on or make it worse?
- Does anything make it better?

Syncope (fainting)

- Have you ever fainted?
- Did anything bring it on?
- Were you standing or lying down at the time?

Oedema

- Have you noticed any swelling of your ankles?

Hypertension

- Do you have high blood pressure?

- For how long?
- Are you on treatment?

Intermittent claudication

- Do you get pain in your legs when you walk?
- How far can you walk before it happens?
- Does it go away when you rest?

Gangrene

- Have you noticed any change in colour of your feet and toes?
- Is it painful?

Past Medical History (PMH)

- Rheumatic fever
- High blood pressure
- Thyroid disease
- Diabetes
- Stroke
- High cholesterol

Review of systems (ROS)

Ask about above symptoms, plus:

- Fevers (? Subacute Bacterial Endocarditis)
- Abdominal pain (mesenteric ischaemia or embolism)

Family history

Ask about:

- Family history of hypertension or diabetes
- Family history of heart or vascular disease
- High cholesterol

Social history

Emphasise – smoking, alcohol, poor nutrition, obesity.
Recreational drugs causing cardiac disease.

Sexual and reproductive history (if appropriate)

- Ask about cardiac problems or high blood pressure during pregnancy

Drug history

- ACE inhibitors (ACEI) and Angiotensin Receptor Blockers (ARB).
- Non-steroidal anti-inflammatory drugs (NSAID).
- B-blockers (aggravate peripheral vascular disease)

Allergies

Medications, food, latex, and other environmental factors

Physical Examination

General

- Pallor
- Breathlessness,
- Cyanosis
- Signs of hyperlipidaemia (corneal arcus, xanthelasma)
- Splinter haemorrhages (SBE)
- Oedema (ankles, sacrum)
- Crackles in lungs

Pulse (radial, brachial, carotid, femoral, pedal)

- Rate
- Rhythm
- Volume
- Character

Blood pressure

- may be high or low

Jugular venous pressure

- measured in centimetres from the sternal angle with patient at 45 degree angle

Praecordium

Look (inspection)

- Scars
- Skeletal abnormalities, e.g. pectus excavatum

Feel (palpation)

- Apex beat (? displaced, ? abnormal character)
- Ventricular "heave" due to hypertrophy
- Palpable Thrills

Listen (auscultation)

- Heart sounds – first, second (normal), ? third and fourth (abnormal)
- Added sounds (clicks, opening snap, pericardial friction rub)
- Murmurs
 - Systolic or diastolic
 - Duration (e.g. short; pan-systolic)
 - Character and pitch (e.g. harsh; blowing)
 - Loudness
 - Location and radiation

Differential Diagnosis – common clinical conditions

- Myocardial infarction
- Angina
- Pericarditis
- Aortic dissection
- Heart failure
- Cardiomyopathy
- Pulmonary hypertension
- Valvular disease – aortic stenosis/incompetence, mitral stenosis/incompetence, pulmonary stenosis, tricuspid incompetence
- Arrhythmias – atrial fibrillation, atrial flutter, atrial and ventricular extrasystoles, heart block
- Hypertensive heart disease with left ventricular hypertrophy
- Peripheral atherosclerosis
- Ischaemic or embolic stroke
- Raynaud's syndrome (digital vasospasm)

Investigations

- Electrocardiography
- Echocardiography
- Chest X-ray
- Cardiac catheterisation
- Cardiac CT, MRI
- Ambulatory blood pressure monitoring
- Plasma lipids (cholesterol, triglycerides)
- Cardiac enzymes (troponin)

Management of Diseases

Ischaemic heart disease

Prevention

- Smoking cessation
- Lipid-lowering drugs (statins)
- Nutrition and obesity

Treatment

- Coronary revascularisation – angioplasty, stenting; coronary artery bypass grafting
- Thrombolysis
- Anti-platelet drugs (aspirin, clopidogrel)

Drugs for heart failure

- Diuretics (frusemide, bumetanide)
- ACE inhibitors, Angiotensin Receptor antagonists

Drugs for arrhythmia

- Digoxin
- B-blockers
- amiodarone