

ANGINA

- A form of coronary artery disease (CAD)
- Classic cardiac pain that is felt when there is a reduction in blood supply to the myocardium.

PATHOPHYSIOLOGY

→ the main symptom of myocardial ischaemia, usually secondary due to coronary artery disease (CAD) but can also be caused by coronary spasms, severe ventricular hypertrophy or severe aortic stenosis.

- Most commonly due to CAD
- CAD → atherosclerotic plaques developing within the coronary vessels
- This limits blood flow and precipitates symptoms
- On exertion there is increased oxygen demand within cardiomyocytes
- The narrowing of the coronary vessels means blood flow cannot be increased to meet this demand
 - It may be obstructive (>50% of vessel lumen)
 - May be non-obstructive (<50% of vessel lumen)
- This results in myocardial ischaemia which is experienced as pain.

There are other conditions that can cause ischaemia and angina due to reduced coronary artery blood flow or an increased oxygen supply/demand mismatch. These include:

- ❑ Prinzmetal angina (coronary artery spasm)
- ❑ Microvascular angina → diffuse vascular disease within the microvasculature of the coronary circulation
- ❑ Vasculitis → Kawasaki disease, polyarteritis nodosa
- ❑ Anaemia → oxygen supply/demand mismatch
- ❑ Severe left ventricular hypertrophy → reduced subendocardial blood flow and increased susceptibility to ischaemia
- ❑ Severe aortic stenosis → increases myocardial oxygen demand.

There are two main types of lesion:

1. **Stable/stenotic plaque** – has a thick fibrous cap

- These are slow growing
- Fibrin cap matures and isn't prone to rupture
- This will cause stable angina
- This can only be seen on exertional studies

→ occurs predictably with exertion and lasts < 10 minutes.

2. **Unstable/non-stenotic plaque** – has a thin cap which is susceptible to rupture.

- Grow rapidly due to rapid lipid deposition
- Have a thin fibrin cap which is fragile and prone to rupture easily
- Haemorrhage from the plaque also occurs
 - This releases platelet tissue factor → stimulates clotting cascade
 - Exposed collagen → platelet aggregation
 - Thrombus formation occurs
 - This reduces lumen diameter and may occlude it entirely causing an MI
- This is called unstable angina.

→ a sudden new onset of angina or a significant and abrupt deterioration in angina that was previously stable
e.g. pain that is increased in frequency and severity or pain at rest.

→ these px need urgent admission to hospital for exclusion of ACS.