Coronary Heart Disease in Young Adults

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Raja Isteri Pengiran Anak Saleha Hospital
Which of these gentleman could have heart disease?
Mr AH

19 year old gentleman, university student

Smokes occasionally

Childhood asthma

On and off chest discomfort for 2 days – needed to take paracetamol and used thermal patches
Mr AH

Severe chest pain and profuse sweating whilst in the movie theatre

Taken straight to RIPAS Hospital

Pronounced dead by doctors 45 mins later

Cause of death: Myocardial infarction (“Heart attack”)
What this case highlights

Coronary heart disease although rare, does occur in young individuals

Late recognition of symptoms can be FATAL
THE HUMAN HEART
The Heart
The Human Heart

Small but majestic organ

Roughly the size of your fist (250-350g)

Located inside your chest in close proximity to the lung and other major blood vessels

Never rests
The heart’s function

Essentially a PUMP -> 5-7 litres of blood/minute (7600 litres/day)

Our body relies on oxygen and nutrient to function properly

These are transported to/fro the various organs by our blood via blood vessels (arteries, capillaries and veins)

The heart is the pump that ensures optimal flow of blood
The heart’s function

Able to adjust according to needs, for example:
- Faster heart rate during exercise
- Slower heart rate during sleep

Heavily influenced by other factors such as hormones and drugs
WHAT IS CORONARY HEART DISEASE?
Anatomy of the heart
Coronary artery
Coronary artery

The heart is mostly muscle

Needs nutrients and therefore adequate blood supply to function properly

This is supplied via the coronary arteries

There are 3 main coronary arteries supplying the heart
Coronary heart disease

Usually refers to blockage of the coronary artery

This leads to impediment in blood flow to the heart muscle

Vicious cycle as heart will have to work harder
Coronary heart disease
Progression of coronary heart disease

Atherosclerosis Timeline

- Foam Cells
- Fatty Streak
- Intermediate Lesion
- Atheroma
- Fibrous Plaque
- Complicated Lesion/Rupture

Endothelial Dysfunction

From First Decade
From Third Decade
From Fourth Decade

Adapted from Pepine CJ. Am J Cardiol. 1998;82(suppl 1A).
Risk factors for coronary heart disease

Non-modifiable:
- Age
- Male gender
- Family history
- Race
Risk factors for coronary heart disease

Modifiable:
- Obesity
- Dietary factors
- Sedentary lifestyle
- Smoking
- Drugs and substance abuse
- Diabetes
- High cholesterol levels
Epidemiology

Cardiovascular disease contributes to 17.5 million deaths worldwide.

Heart disease (without stroke) is the second leading cause of death in Brunei behind cancer. It contributed to 12.9% of deaths in 2016.

Worrying trend in Brunei -> young adults with cardiovascular disease.
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Symptoms of coronary heart disease (stable state)

Chest pain – mainly on exertion or exercise

Breathlessness – on exertion

Easy fatigue

Chest pain after heavy meals
Symptoms in unstable situation/heart attack

Severe chest pain at rest – may radiate to neck or arms

Profuse unexplained sweating

Nausea

Upper abdominal pain

Escalation of usual stable symptoms
SEEK URGENT MEDICAL ATTENTION!!
Where to seek medical attention?

Nearby health clinics if symptoms are stable and infrequent

If symptoms appear unstable -> go to nearest Emergency Department

Time is muscle!!!
What is typically done by your doctors

Detailed history
- This helps categorize severity/urgency of symptoms

Examination
- Examining your pulse
- Listening to your heart sounds

Send you for investigations
CARDIAC INVESTIGATIONS
Blood tests

To establish a baseline

To rule out other diseases

To check whether you have had a heart attack/damage to heart muscle
Echocardiogram
Stress test (treadmill)
Coronary CT scan
Coronary angiogram
Coronary angiogram
Coronary angiogram

Anabolic steroid user
WHAT ABOUT MEDICATIONS?
Medications

Depends on clinical situation

May be put on several different types of medications

Medications for coronary heart disease are usually taken lifelong

Lifestyle adjustments will be necessary
WHAT HAPPENS IF I LEAVE IT ALONE?
Untreated coronary heart disease

FATAL

Could lead of permanent muscle damage and weakened heart ("heart failure")

Repeated episodes of heart attack

Irregular heart rhythms

Affects patient as well as loved ones
Key take home messages

Coronary artery disease does occur in the young

Be weary of supplements and anabolic steroids

Healthy lifestyle important

Follow medical advice and take medications as prescribed

Early recognition and treatment may prevent long-term sequelae
Thank you