Comprehensive Cardiology - Final Class

SARAH BEANLANDS
BSC N RN MSC
Overview for today

- Heart Disease in the Past
- Global and Public Health perspectives on Heart Disease
- The Future of diagnosis and treatment
- Class questions
History of Heart Disease

- Not just a disease of the present- Ancient Egyptians had CAD
- https://www.youtube.com/watch?v=QPdSZlaDt5g

“Shouldst though examine a patient with stomach disease suffering from pain in the arms, the breast, and on the side of the stomach, say: ‘Death threatens.’ And if thou examinst a man for illness in his cardia, and he has pains in his arm, in his breast, and in side of his cardia, and it is said of him: It is [w3d] illness, then thou shalt say thereof: It is due to something entering the mouth it is death that threatens him. Thou shalt prepare for him: Stimulating herbal remedies...”
17th-19th Century Europe

- Leonardo Davinci - “thickening of the tunics”
- Anatomical drawings
- Coronary arteries, Valves
Angina Pectoris

- Heberden- British physician 1600’s
- Angina- Strangulation, Pectoris-chest
- Emotional link
- Insight into epidemiological components of heart disease
The not so distant past

- In North America, once communicable diseases decreased, heart disease increased
- 1929 - Forssman right heart cath
- 1950’s - first angiogram was accidental
The Framingham Heart Study

- Study spanning 70 years
- Spurred by Roosevelt’s death
- 6000 participants aged 30-59 years old
- Credited with much of today’s knowledge about risk factors for heart disease
Heart Disease - Global Perspectives

Past - Disease of the rich

Causes: lack of early prevention, lack of funding, spread of ‘western’ culture, ‘brain drain’

Present - 75% of cases occurring in developing nations

Poor living conditions contribute - pollution, stress
WHO - Global hearts initiative

THE GLOBAL CARDIOVASCULAR DISEASE (CVD) CRISIS

Cardiovascular disease is the world's biggest killer, claiming 17.7 million lives per year. 1/3 prematurely under 70 years.

This number is steadily increasing.

Global Hearts Initiative
Working together to beat Cardiovascular Diseases

#beatNCDs

Healthy Lifestyle
Counsel on tobacco cessation, diet, physical activity and self-care

Evidence-Based Treatment Protocols
Simple and standardized protocols

Access to Essential Medicines and Technologies
Access to a core set of affordable medicine and basic technology

Risk-Based Management
Total cardiovascular risk assessment, treatment and referral

Team-Based Care and Task-Sharing
Patient-centred care through a team approach and community participation

Systems for Monitoring
Patient registries and programme evaluation
Exercise recommendations for heart disease

- Types of exercise - flexibility, strength, balance, endurance
- Endurance/ Aerobic - Preferred
  - 2x 10 minutes per day or 150 minutes per week
  - Increase your heart rate - target depends on goals/ tolerance
- Strength - increase basal metabolic rate, keep blood sugar levels in check
- Yoga and Heart Disease - balance and flexibility
Dietary recommendations for Heart disease

- Low salt, low processed foods
- Specific foods depend on medication regime
  - Bananas, Leafy Green Vegetables, Fluid restriction
- Canada’s Food Guide Controversy
Sex, Drugs, and Heart Disease

- Cardiac Syphilis
- Alcohol
- What does legal weed mean for heart disease?

Public Health and Heart Disease

CLIMATE CHANGE & HEART HEALTH
What does climate change have to do with heart disease?

- Climate pollution changes our climate and makes the world warmer.
- Warmer temperatures lead to more air pollution, and more extreme heat.
- Air pollution increases the risk of heart attacks.
- Cars & trucks, industry and power plants all create climate and air pollution.
- Extreme heat can lead to irregular heartbeat and stroke.

Who is most at risk? Older adults and those living alone, people with existing high blood pressure, diabetes or obesity, people who smoke and people who drink too much, and people who don't get enough exercise.

You can take action today to make sure we have a healthy planet with healthy places for healthy people!
Indigenous Canadians and Heart Disease

- 2x more likely to have heart disease than other Canadians
- Earlier onset of problems
- Higher rates of diabetes and high blood pressure
- Challenges: isolation, lack of trust
- Preventative measure: Grade 8 CPR curriculum
The future of Cardiology

- Early detection means better results - predictive enzymes, continuous monitoring technology
- Treatment of the future - robotic sleeves and stem cells
Questions from participants

- Resistance Training for Cardiology
- Beta Blockers and their role in treating heart conditions
- Bicuspid Aortic Valve
- 12 lead ECG’s and Axis Deviation
- The Good, the Bad (fat) and Cholesterol
- Lifestyle and modifiable Risk factors in Cardiac Conditions
Resistane Training for Heart Disease

- Increased blood flow, decreased arterial stiffness
  - Decrease in blood pressure
- Better absorption of insulin
- Increased basal metabolic rate
Beta Blockers

- Prevent the stimulation of adrenergic receptors in the heart
- Slowed heart rate, vasodilation, reduces heart’s O2 demands
- Those with asthma should be careful
Bicuspid Aortic Valves

- Often goes unnoticed
- Problems arise when stenosis occurs
- 30% have complications from this deformity:
  - heart failure
  - aortic aneurysm
- 80% will require valve replacement/repair—normally occurs in their 30’s-40’s
- Stenosis vs regurgitation = replacement vs repair
The Skinny on fat

- Triglycerides
- Cholesterol
- HDL
- LDL
- Omega 3 vs 6

OMEGA 3 vs. OMEGA 6

FUNCTIONS
- PROMOTE BLOOD VESSEL DILATION
- HAVE ANTI-INFLAMMATORY EFFECTS
- ANTI-COAGULANT EFFECTS
- DECREASE PAIN
- INCREASE AIRWAY DILATION

HDL

- PROMOTE BLOOD VESSEL CONSTRUCTION
- AID IN INFLAMATION
- HELP WITH BLOOD CLOTTING
- PROMOTE PAIN SIGNALING
- AID IN AIRWAY CONSTRUCTION

LDL

- KEEP CELLS MORE FLUID
- TRANSMISSION OF NEUROCHEMICALS
- INCREASES INSULIN SENSITIVITY
- IMPROVES CARDIOVASCULAR FUNCTION
- IMPROVES NERVOUS SYSTEM FUNCTION
- STRENGTHENS IMMUNE SYSTEM

Omega 3

- DUE TO THE LOW COST OF CORN, THE AVERAGE NORTH AMERICAN DIET HAS A RATIO OF OMEGA 6: OMEGA 3 OF APPROXIMATELY 16:1. THE RATIO SHOULD BE CLOSER TO 2:1 OR 1:1 TO PREVENT A MULTITUDE OF DISEASES (ESPECIALLY CARDIOVASCULAR)

Omega 6

- FLAX SEEDS
- FISH
- FISH OILS
- CORN OIL
- SAFFLOWER OIL
- CORNFED MEAT
A GUIDE TO THE DIFFERENT TYPES OF FAT

Fat is an essential part of our diets, and has a number of important roles in the body. However, there are different types, and there are health concerns surrounding eating too much of some types of fat. Here, we look at what distinguishes different types of fat, and their effects on the body.

TRIGLYCERIDES & FATTY ACIDS

Saturation refers to the number of double bonds between carbons in a fatty acid. Saturated fats have no double bonds. Monounsaturated fats have one double bond, and polyunsaturated fats have 2 or more double bonds. Polyunsaturated fats are further broken into omega-3 and omega-6 fats. Trans fats occur when the double bonds are moved from the normal cis position to a trans position.

SATURATED FATS

Contain no carbon-carbon double bonds. Saturated fats are solids at room temperature. They increase levels of LDL in the bloodstream. They have previously been associated with heart disease, though more recent studies and reviews have called this association into question.

MONOUNSATURATED FATS

Contain one carbon-carbon double bond. They are liquids at room temperature, but solidify when chilled. They reduce levels of LDL in the bloodstream, thereby decreasing the total cholesterol to HDL ratio (HDL helps take cholesterol back to the liver where it can be disposed of).

POLYUNSATURATED FATS

Contain two or more carbon-carbon double bonds. They are liquids at room temperature, but they start to solidify when chilled. They are split into omega-3 and omega-6 fatty acids. Polyunsaturated fats help reduce LDL levels, decreasing the total cholesterol to HDL ratio.

TRANS FATS

Contain carbon-carbon double bonds in a trans rather than cis configuration. Formed artificially, via a process called hydrogenation. They increase LDL levels, and are associated with heart disease. Many countries are phasing them out.
ECG’s and axis deviation

- Video explaining axis deviation: https://www.youtube.com/watch?v=_CCUWdAaQoA
That’s all for now, folks!