PET3932 (SECTION 2): EXERCISE & DISEASE

EXAM 1 STUDY GUIDE

- **Assessment/Diagnosis of CAD/CHD**
  - (looking for underlying Coronary Artery Disease)
  - Risk factors
  - Signs & symptoms
  - Resting ECG
  - Cardiac biomarkers
  - Exercise ECG including in the ER
  - Exercise nuclear imaging (perfusion, nuclear, thallium, cardiolite)
  - Pharmacological (dobutamine, dipyridamole, adenosine)
  - Echocardiography
  - CT scan (electron beam computed tomography)
  - Coronary aniography
  - Autopsy
- **P. 114 quote**
  - "Standard graded exercise tests (GXT) are used clinically to assess a patients' ability to tolerate increasing intensities of aerobic exercise..."
- **Classification of coronary risk factors**
  - Primary non-modifiable
    - Advancing age
    - Male gender
    - Family Hx
  - Primary modifiable
    - Dyslipidemia
    - Hypertension
    - Tobacco smoking
    - Diabetes mellitus
    - Overweight or obesity
    - Sedentary lifestyle
    - Atherogenic lifestyle

- Emerging risk factors (lipids)
  - Lipoprotein (α)
  - Lipoprotein remnants
  - Small LDL particles
  - HDL subspecies
  - Apolipoproteins B & A-1
  - TC/HDL ratio
- Emerging Risk factors (non-lipids)
  - Homocysteine (amino acid – LDL, clot) (metabolic syndrome*)
  - Thrombogenic & hemostatic factors
  - Inflammatory markers (C-reactive protein)
  - Impaired glucose tolerance *
  - Subclinical atherosclerosis & plague burden

❖ **Risk Assessment tool for estimating 10-year risk of developing hard CHD**

- Framing Hand Ten Year Risk

❖ **Major signs or symptoms suggestive of cardiovascular, pulmonary or metabolic disease**

- Angina (symptom of ischemia –hard/soft/silent)
- SOB at rest or with mild exertion
- Dizziness or syncope
- Orthopnea or paroxysmal nocturnal dyspnea
- Ankle edema
- Palpitations or tachycardia
- Intermittent claudication
- Known heart murmur
- Unusual fatigue or SOB with usual activities
- Prizmental (random heat problems – coronary spasms)
- Claudication → diabetes

❖ **ECG reading (p.148 *see images)**

- P wave: electrical impulse going through atria (superior aspect of heart)
  - Atrial depolarization (atria – pacemaker of the heart)
- QRS complex: electrical impulse going though the ventricles
  - Ventrical depolarization

- T wave
  - Ventrical repolarization – electrical recovery (repolarization) of the ventricles
- ST depression: subendocardial ischemia
- ST elevation: transmural ischemia (acute MI)
  - Will come back down as an inverted T wave
  - Evidence of ischemia or recent MI
  - Significant Q wave
- Old MI
  - Q wave width: >40 msec
  - Q wave height: > ¼ of R wave

- **EKG – important pointers when performing test**
  - Magnitude: amount (1 ml, 2 ml, etc.) – the greater the amount, the worse it is
  - Slope: upsloping (best)→horizontal→ downsloping (worst)
  - Number of leads
  - Duration
- **EKG – severity of ischemia**
  - ≥ 1 mL horizontal or downsloping ST depression is positive for ischemia
    - If you see 2 mL → stop testing
  - Use 2-lead to check for arythmia → arythmia can result in ischemia
- **RPP: Rate Pressure Product**
  - "double product"
  - RPP = Heart Rate [HR] x Systolic Blood Pressure [SBP]
- **Signs of an acute MI**
  - Symptomology (myocardial infarctions, indigestion, etc.)
  - EKG (ST elevation)
  - Cardiac biomarkers – levels of myoglobin, troponin I, LDH, total CK, CK-MB
- **Difference between MIs**
  - Acute MI – recently happened
  - Major MI – larger MI
    - Depression comes before elevation
- **Clinical exercise ECG (GXT) – (p. 128; p.144 Box 6.1)**
  - Insult the myocardium