

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 angiography
- 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 & plaque 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
    - Ventricular depolarization

- T wave
  - Ventricular 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 arrhythmia → arrhythmia can result in ischemia
- ❖ **RPP: Rate Pressure Product**
  - "double product"
  - $RPP = \text{Heart Rate [HR]} \times \text{Systolic Blood Pressure [SBP]}$
- ❖ **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