Acute Coronary Syndrome

What Every Healthcare Professional Needs To Know

MEMORIAL

Background of ACS

- Acute Coronary Syndrome (ACS) is an umbrella term used to cover a spectrum of clinical conditions that are caused by acute myocardial ischemia.
- Diagnoses can range from unstable angina (UA), non-ST elevation myocardial infarction (NSTEMI), and ST-elevation myocardial infarction (STEMI).
- These life-threatening disorders are a major cause of emergency medical care, hospitalization and mortality.

Pathophysiology of ACS

- ACS can be caused by a number of reasons. Despite the cause, ACS is due to an imbalance between supply and demand of myocardial oxygen.
- More commonly, ACS is precipitated by a cascade of events that occur when plaque within a coronary artery ruptures, stimulating thrombosis formation that occludes an already narrow coronary artery.

Additional Pathophysiology of ACS

- Not all ACS is due to thrombosis formation on disrupted plaque. Plaque dissonance can also be caused by arterial inflammation.
- Less commonly, ACS can be caused by dynamic obstruction (intense focal epicardial coronary artery spasm called Prinzmetal angina , spasm on top of plaque, or dynamic microvascular dysfunction/spasm).
- ACS can be caused by severe narrowing of a coronary artery alone
- Extrinsic factors such as fever, tachycardia, thyrotoxicosis, anemia, hypoxemia, or hypotension can also precipitate secondary unstable angina; causing ACS

Who's At Risk?

Modifiable Risk Factors	Non-modifiable Risk Factors
• Hypercholesteremia • Type II Diabetes • Cigarette Smoking • Obesity • Sedentary Lifestyle • Hypertension • Stress	• Age (men 45 yrs or older, women 55 yrs or older) • Sex (men are more likely than women) • Family History • Ethnicity or Race

Special Populations with ACS

- Certain patient populations may not present like a typical ACS patient. They may require specific, astute attention when addressing medical complaints:
  - Elderly pts
  - Diabetics
  - Cocaine/Methamphetamine users
  - Trauma pts
  - Women
  - Postoperative or Post Percutaneous Intervention pts

Additional Populations At Risk for ACS

- The following patients have a potential risk for developing ACS:
  - Marfan Syndrome
  - Kawasaki disease
  - Aneurysm formation
  - Coronary artery dissections
    - Peripartum women
    - Post percutaneous intervention
    - Post coronary bypass grafting

Recognizing ACS

- The following signs and symptoms are common of patients experiencing ACS:
  - chest pain (angina)
  - shortness of breath
  - light-headedness
  - heavy sweating
  - nausea
  - referred pain (ie. arms, jaw, back, neck or stomach)

Men Vs. Women

- Men are more likely to experience chest pain with acute coronary artery syndromes than women do.
- Women with acute coronary syndromes have more back pain, dyspnea, indigestion, nausea and vomitting, and weakness than men do.
- Special considerations should be taken when assessing elderly patients. Elderly patients, both male and female, may have atypical symptoms such as generalized weakness, stroke, syncope, or a change in mental status.

Women and ACS

- Numerous studies have substantiated that women are older than men when diagnosed with coronary heart disease.
- Because symptoms can be more vague with women, it is speculated that women may not seek treatment in an expeditious manner.
- This difference in symptoms of ACS may explain why women are an average of 10 years older than men when diagnosed with heart disease.

Women and ACS cont.

- Women often go misdiagnosed or undetected because of the symptoms they experience. Although women can present with the same common symptoms previous stated, they can also have the following:
  - upper abdominal pressure or discomfort (can be similar to heartburn)
  - lower chest discomfort
  - back pain
  - unusual fatigue (feeling tired)
  - unusual shortness of breath
  - dizziness or fainting
  - Nausea
  - pressure, fullness or squeezing pain in the chest, spreading to the neck, shoulder or jaw
  - clammy skin

Diabetes and ACS

- Diabetes is a prevailing risk factor for developing coronary heart disease.
- The prevalence of diabetes is significantly higher in women with ACS than in men with ACS.
- Patients with diabetic neuropathy have impaired perception of cardiac pain.
- Patients with diabetes also had higher frequencies of silent exertional ischemia and silent myocardial infarction.

Why is health history so important?

- Early recognition and treatment are the key to preventing irreversible damage to the heart.
- Obtaining an accurate health history is a vital component in recognizing potential ACS patients.
- The five most important factors on the initial history (as it pertains to ACS) is:
  - Nature of the anginal symptoms
  - Prior history of coronary artery disease
  - Sex (males at higher risk)
  - Older age
  - An increasing number of traditional risk factors

STEMI Alert!

- YVMH has implemented the STEMI Alert protocol.
- STEMI Alerts were designed to recognize patients suffering from ACS and to intervene at the earliest moment possible.
- STEMI is recognized on a 12 lead EKG as ST elevation in 2 contiguous leads.
- The STEMI Alert team consists of the Rapid Response Team as well as a nurse from the Emergency Department.
- The goal of a STEMI Alert is to ensure that every patient experiencing an acute myocardial infarction receives emergent standardized treatment according to AHA/ACC guidelines.
- If a cardiac cathlab capable of doing PCI (Percutaneous Coronary Intervention) is available, the patient should be taken there immediately .

What if my patient is suffering from Unstable Angina or NSTEMI?

- For the best outcome in high-risk patients with unstable angina and non-ST elevation myocardial infarction, the consensus has moved to early and aggressive intervention.
- NSTEMI, also known as non-ST elevation myocardial infarction, is a serious but treatable condition.
- Patients diagnosed with UA or NSTEMI who continue to have ongoing symptoms, and have at least 3 risk factors, should be directed to the Cath Lab for early intervention.

ACS Summary

- EKG - If ST elevation into contiguous leads OR ongoing chest pain with a patient with greater than or equal to three Timi risk factors call attending physicians and ask to initiate a STEMI Alert.
- Patients diagnosed with UA or NSTEMI who continue to have ongoing symptoms, and have at least 3 risk factors, should be directed to the Cath Lab for early interventon.
- Early recognition and treatment are the key to preventing irreversible damage to the heart.
- Patients with diabetic neuropathy have impaired perception of cardiac pain.
- Women with acute coronary syndromes have more back pain, dyspnea, indigestion, nausea and vomitting, and weakness than men do.
- Men are more likely to experience chest pain with acute coronary artery syndromes than women do.
- ACS is precipitated by a cascade of events that occur when plaque within a coronary artery ruptures, stimulating thrombosis formation that occludes an already narrow coronary artery.
- Acute Coronary Syndrome (ACS) is an umbrella term used to cover a spectrum of clinical conditions that are caused by acute myocardial ischemia.
- Diagnoses can range from unstable angina (UA), non-ST elevation myocardial infarction (NSTEMI), and ST-elevation myocardial infarction (STEMI).