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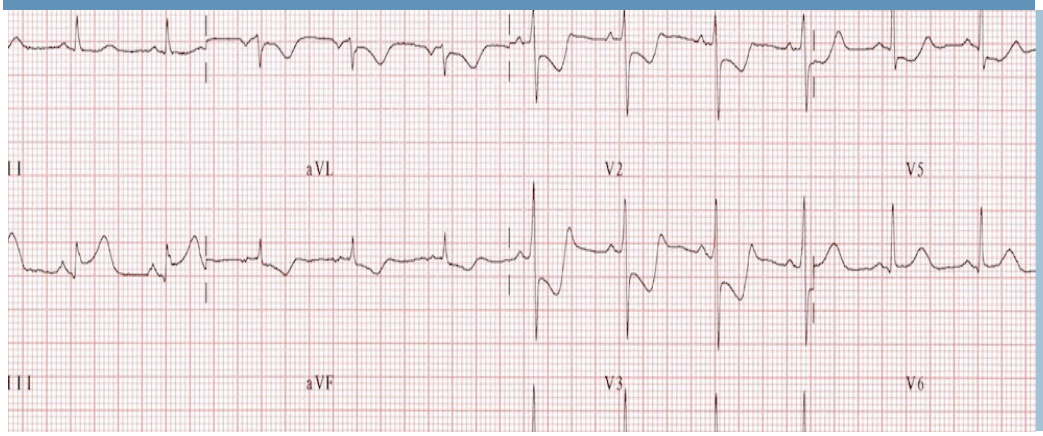

ACS
GUIDELINES UPDATE
FEBRUARY 2012,
ISSUE 2

GUIDELINES UPDATE:

ACUTE CORONARY SYNDROME

Chest pain is a very common symptom: thousands of people present to accident and emergency departments (A&E) and outpatient departments (OPD) with chest pain every year. Causes for chest pain range from the benign to the immediately life threatening.

Diagnosing the underlying cause of chest pain and its associated symptoms relies on risk stratification based on a good history, a thorough physical exam, and focused diagnostic testing.

New guidelines (not out yet!) will focus on initial work up of chest pain, the differential diagnosis of chest pain, and specific recommendations for the management of acute coronary syndromes (ACS).

The burden of heart disease in Botswana is not known. However, with increasing urbanization, the country is witnessing an increase in the incidence of obesity, hypertension, diabetes and dyslipidemia. All of these are risk factors for cardiovascular disease. It is widely anticipated that the incidence of heat attacks and angina will also rise significantly in the next ten years. Learning to recognize chest pain caused by heart disease and how to manage it correctly will be incredibly important.

Definition & Diagnosis

Acute coronary syndrome (ACS) is one of the most important causes of chest pain. However, the differential diagnosis of chest pain is not limited to ACS. It includes several life threatening diagnoses and others with significant morbidity.

ACS is a clinical emergency requiring urgent assessment. It is characterized by (1) chest pain, (2) ECG changes (ST-segment changes) and (3) a rise in the cardiac markers.

The chest pain associated with ACS is classically described as a feeling of tightness, squeezing, or pressure. The onset of the pain can be during physical exertion or at rest. The pain may radiate to the jaw, the left arm, or the back. Associated symptoms can include dyspnea, fatigue, nausea, or diaphoresis.

However, ACS can encompass a variety of clinical presentations. **Risk stratification** is essential to enable triage of patients to the optimal level of care and therapy. Careful clinical assessment is the cornerstone of risk stratification.

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HIV & HEART DISEASE

People living with HIV are at increased risk for heart disease. Research has shown that high viral load levels or advanced HIV disease are associated with narrowing of the arteries which leads to angina and heart attacks. In one study – the SMART study, there were more heart attacks in patients that received intermittent ARVs compared to patients who received continuous ARV therapy [SMART 2006]. In addition to HIV infection, the medications used to treat HIV have also been associated with increased risk of ACS. The D.A.D. study – a large study involving 30000 patients from over 21 countries showed a 26% increase in rates of heart attack per year of ARV exposure, during the first 4-6 years of ARV treatment [Friis-Moller, 2003]. Certain ARVs – notably drugs like Aluvia – are associated with more risk of heart disease than other drugs. All HIV patients should be screened for cardiovascular disease and CVD risk factors (diabetes, smoking) before starting ARVs.

RISK STRATIFICATION

The treatment given to a patient with ACS is based upon the individual's risk factor profile. The most important risk factors include:

Pre-existing risk factors:

- Age>65
- Known Cardiovascular Disease
- 3+ cardiac risk factors (Diabetes, HTN, Smoker, Family History, Dyslipidmia)
- Known CCF
- Aspirin use in past 7 days

Event risk factors:

- **History:** prolonged chest pain at rest
- **Examination:** signs of heart failure, cardiac shock
- **ECG:** ST depression, T wave inversion, ST elevation
- **Cardiac markers**: Elevated CKMB, CPK and troponins

High Risk:

Hemodynamic instability +/-
2+ event risk factors **OR**
3+ pre-existing risk factors **OR**
1+ event risk factor **AND** 2 pre-existing factor

Intermediate Risk:

Hemodynamic stability +
1 event risk factor alone +/- 1 pre-existing risk factor **OR**
1 or 2 pre-existing risk factors without any risk factors

Low Risk:

Hemodynamic stability +
No event risk factors **AND**
No pre-existing risk factors

Acute coronary syndromes includes three specific conditions:

1. ST-Elevation Myocardial Infarction (STEMI): Chest pain is associated with ST segment elevation or a new left bundle branch block on an electrocardiogram (ECG). Cardiac markers are always elevated.
2. Non ST Elevation MI (NSTEMI): Chest pain and associated ECG may show ST segment depression or T wave inversion. Cardiac markers are always elevated.
3. Unstable Angina: Presents with chest pain, either more frequent or severe or chest pain at rest. ECG may show ST segment depression or T wave inversion. Serum cardiac makers are normal.

ACS is an emergency! If a patient presents with symptoms suggestive of ACS, prompt action is necessary!

Chest Pain suggesting cardiac ischemia

Clinical Examination, ECG, Serum markers

ST depression, T wave inversion, Normal ECG

ST elevation, new LBBB

UA/NSTEMI

STEMI

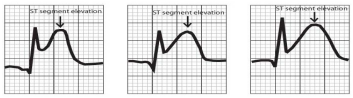
Risk Stratify the patient

(High, Intermediate, Low)

Determine subsequent management

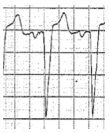
ECG Findings:

ST elevation: greater than 1 mm elevation in 2 consecutive limb leads of 2mm elevation in 2 consecutive chest leads:

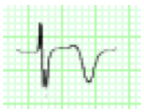


ST depression:

Left Bundle Branch Block



T Wave Inversion:



Cardiac Markers: Serum markers should also be ordered to determine if there has been damage to the heart. Only order these tests if results are available the same day. **Troponin** is the most sensitive test of cardiac damage and should be measured if available. **CK-MB** should be measured at initial presentation and then every 6 to 8 hours for the following day. CK-MB typically begins to rise four to six hours after the onset of infarction but is not elevated in all patients until about 12 hours. Elevations return to baseline within 36 to 48 hours, in contrast to elevations in troponin, which can persist for as long as 10 to 14 days

ACS MANAGEMENT

Patients with ACS should be managed in accordance with their risk profile:

LOW RISK PATIENTS

Presentation:

Chest pain settled *and* normal ECG *and* normal serum markers. No pre-existing risk factors present

Management

- Aspirin, 300mg (PO)
- Monitor in A&E repeat blood tests & ECG
- If no evidence of ischemia or infarction, discharge to follow up in clinic

INTERMEDIATE RISK PATIENTS

Presentation

1 event related +/- 1 pre-existing ACS risk factor *or* 1 or 2 pre-existing risk factors in isolation

Management

- Admit to general ward, for 24 hours, repeat markers and ECG in 8 Hours
- Oxygen – especially if oxygen sats < 95%
- Aspirin, 300mg (PO)
- Nitroglycerin, 0.5mg (SL) every 15 minutes until pain free (monitor for low BP)
- Morphine, 5mg (IV) for pain relief
- Beta blocker (especially if high BP or tachycardia): Atenolol, 50mg (PO) or Labetalol, 10-20mg (PO)

HIGH RISK PATIENTS

Presentation

Hemodynamically unstable *or 2* event related risk factors *or* 1 event related + 2 pre-existing risk factors *or* 3 pre-existing risk factors

Management

- Oxygen – especially if oxygen sats < 95%
- Aspirin, 300mg (PO)
- Nitroglycerin, 0.5mg (SL) every 15 minutes until pain free (monitor for low BP)
- Morphine, 5mg (IV)
- Beta blocker (especially if high BP or tachycardia): Atenolol, 50mg (PO)
- Labetalol, 10-20mg (PO)
- Enoxaparin – 1mg/kg, (SC) every 12 hours or unfractionated Heparin – 333units/kg (SC) followed by 250units/kg every 12 hours

Patients who have had a STEMI should be evaluated for **Reperfusion Therapy** where available and if not contraindicated:

Themobolysis*: Steptokinase, 1.5 million IU

Or

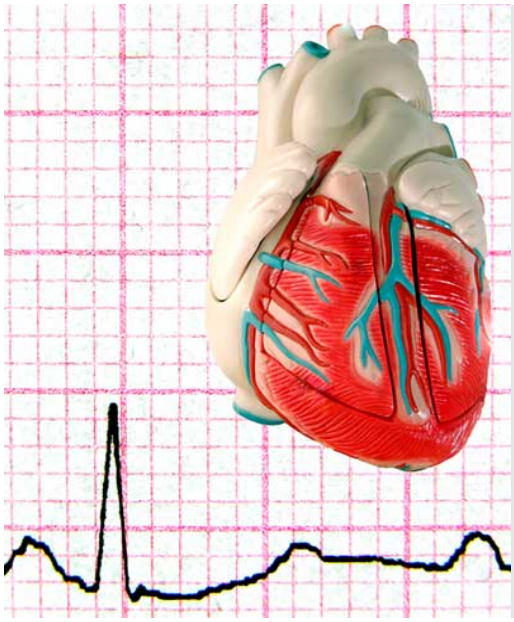
Cardiac catheterization – if available at Princess Marina or Bokomoso Private hospital. If available at these patients should also be evaluated for (IV) GP IIB/IIIA inhibitor therapy (tirofiban) either in patients requiring reperfusion therapy or as adjunctive therapy in high-risk patients unable to undergo angiography.

*Contraindications to thromboylysis including, but not limited to: head injury, CVA/TIA, recent GI or GU bleed, bleeding tendency (Warfarin), severe HTN, aortic dissection, major surgery in recent weeks, pregnancy, proliferative diabetic retinopathy

If chest pain is not ACS what is it?

There are many different causes for chest pain. Consider all of the following?

- Pneumothorax - History of trauma, unequal breath sounds, increased risk in TB & HIV patients
- Pneumonia – Fever, cough
- Aortic Dissection – Pain radiating to back, unequal pulses
- Pulmonary Embolism – Unilateral leg swelling, tachycardia, tachypnea
- Congestive Cardiac Failure – dyspnea, bilateral leg swelling, orthopnea, hypoxia
- Herpes Zoster – dermatomal rash, pain preceding rash
- Cancer – history of smoking, cough with bloody sputum
- Pancreatitis – history of alcohol, HAART containing DDI or d4T.
- Rib Fracture – history of trauma, point tenderness on chest pall.
- Muscle Strain – recent physical exertion, pain reproducible with movement
- Costochondritis – recent physical exertion or recent viral syndrome, pain reproducible on palpation



Ready for Discharge?

It is difficult to make concrete guidelines for when any ill person is stable enough to leave the hospital. Below are recommendations:

Patients who are deemed intermediate risk for ACS and are admitted to the hospital for evaluation and management of chest pain may be discharged after 24 hours if they:

- Are free of chest pain
- Have two normal CK-MB or troponin measurements, 8 hours apart
- Have a normal ECG at presentation and 12 hours after admission

Individuals high risk for ACS who have had NSTEMI/UA can be discharged after 48-72 hours if they are free of chest pain for greater than 24 hours, have no more dynamic ECG changes, are tolerating the medicines, and have a plan for follow-up. The discharge plan for those with STEMI is more complicated and will depend on whether thrombolytics were administered or whether the patient underwent cardiac catherization. Consultation with a specialist in these cases is recommended.

ACS GUIDELINES UPDATE

SECONDARY PREVENTION

Consider discharging all patients with known cardiovascular disease or recently discharged after ACS, on each of the following –

- Aspirin: shown to reduce repeat MI or death from ACS by 29%
- Beta blocker: (atenolol or propranolol) reduces mortality by a quarter in patients who have had an MI
- ACE-inhibitor: (enalapril) protects the heart against worsening heart failure after ACS
- Statin**: (atorvastatin) cholesterol reduction post-ACS shown to benefit patients with both normal & elevated cholesterol
- Blood Pressure control: target is < 140/90 but130/80 if diabetic or has kidney disease
- Screen for diabetes and start treatment if diagnosed with diabetes
- Address modifiable risk factors:
    - STOP SMOKING
    - WEIGHT LOSS
    - EXERCISE: Encourage daily exercise.
    - DIET: Encourage patients to eat a diet high in oily fish, fresh fruit and vegetables, and fiber and low in saturated fats.

** Caution statin use in people with HIV: Statins can interact with certain ARVs, especially protease inhibitors such as Aluvia. Patients who warrant a statin should be monitored closely for signs of statin toxicity (hepatitis and myositis).

UPCOMING LECTURES

March	Topics in HIV: Adherence
April	Guidelines Update: Diabetic Emergencies
May	Topics in HIV: Mental Health
June	Guidelines Update: Overdose

Got a clinical question about a complicated medical patient or a patient with HIV?
Call Mike Reid -267 724 78 777 **OR** Miriam Haverkamp 267 76516520

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