CABG

Emergency CABG is high risk procedure considered only in:

Failure of fibrinolysis & PCI.

Cardiogenic shock.

Life threatening ventricular arrhythmia associated with lt main or three vessels disease

How To Diagnose STEMI

How To Diagnose STEMI

Physical Examination:.

ABC.

Vitals.

General : anxiety,

Responsiveness & mental status.

Evidence of systemic hypoperfusion.

Evidence of LT sided heart failure.

Auscultation for new murmurs, gallop rhythm,

Evidence of RT side heart failure.

How To Diagnose STEMI

Criteria:

History of prolonged chest discomfort or angina equivalent (30 min).

Presence of 1mm or more ST- segment elevation in two consecutive leads.

Presence of elevated cardiac enzymes.

How To Diagnose STEMI

History: Risk factors

Typical presentation.

Atypical presentation: DM, elderly, women, post-operative patients.

present with nausea, confusion, dyspnea, unexplained hypotension, exacerbation of CHF.

you have to cover the contraindications of fibrinolytic therapy,

cocaine , seldinafil.

How To Diagnose STEMI

Investigations:

ECG,

Cardiac enzymes.

Chest x-ray.

Echocardiography.

Others: ABG, CBC, U&Es, PT, PTT, RBS, Lipid profiles.

Management Of STEMI

ACE inhibitors:

Provide a reduction in short term mortality , incidence of CHF & recurrent MI when initiated within the first 24 hrs of an acute MI.

Therapy can be initiated with captopril, ramipril, or enalapril and titrated as BP permits.

Used in caution in patient with renal insufficiency , contraindicated in patient with hypotension.

IV enalaprilate should be avoided as initial therapy , due to increase mortality when BP reduced excessively.

Patients intolerant to ACE inhibitors can receive ARBS (valsartan 160 mg bid & losartan 50 mg daily are equivalent to captopril.

Management Of STEMI

Aldosteron antagonist:

Decrease mortality in all STEMI patients who meet the following criteria:

Have LT.VENT.EF<40%

Symptomatic heart failure.

DM.

Serum cr<2mg/dl'

Serum K <5 meq/l

Eplernone 25 mg daily or spironolactone 25 mg daily should be started early.

Management Of STEMI

Antianginal Therapy:

Nitrate: Nitroglycerin should be administered to most patients with ischemic chest pain.

Sublingual 0,4 mg /5 min for a total of 3 doses in absence of hypotension.

If pain not controlled, IV nitroglycerin at 10mcg/min should be initiated.

If pain still not controlled, dose titration can be performed by increment of 10 mcg/5min until pain resolves or heart rate increase or BP decrease more than 10% from base line. Generally main systolic BP should be maintained > 100mmhg

Management Of STEMI

Anticoagulation:

UFH Should be started in all patients except those who receive non selective fibrinolytic agents.

Started as initial bolus of 60 U/kg (max of 5000 U) followed by infusion of 12 U/kg /hr (max of 1000 U /hr).(liprudine)

Continued over 48 hrs, after that, decision to continue anticoagulation will depend on the individual condition.

IV UFH or LMW heparin (enoxaparin 1mg/kg bid) can be used for patients who are committed to medical therapy or PCI.

Management Of STEMI

Antiplatelet therapy:

Aspirin :reduces mortality in all patient with MI ,

Given as loading dose (162-325)mg of non- enteric coated aspirin (chewed)..

Continued indefinitely on a daily bases of (81-325)mg.

Clopidogrel: 75mg /day can be substituted for aspirin allergy.

Management Of STEMI

Associated conditions and complications:

Recurrent chest pain.(causes)

Arrhythmias.

Left ventricular failure.

Right ventricular MI.

Cardiogenic shock.

Mechanical complications.

Management Of STEMI

B- adrenergic blockers

Decrease cardiac load , oxygen consumption, ischemia, and limit the infarct size,

Started as soon as possible as IV (metprolol 5mg)/5 min for total of 3 doses, if tolerated, it can be continued orally (25-50) mg q6-12 hrs.

Avoided in:

Clinical evidence of heart failure.

Hypotension (sys BP<90 mmHg)

Marked first degree heart block (PR interval>250 ms).

Significant broncospastic lung disease.

Management Of STEMI

Calcium channel blockers:

(other than short acting nifedipine) can be used in patient with normal ventricular function, no evidence of heart failure, or AV block if B- blockers is contraindicated.

Also can be used as adjunct therapy in patient with ongoing or recurrent symptoms despite optimum therapy with B-blockers.

Management Of STEMI

Continuous monitoring:

Cardiac monitor.

Pulmonary artery catheter:

Hypotension not corrected by fluid administration.
Hypotension in presence of CHF.
Cardiogenic shock
Potential or confirmed mechanical complication.
Unexplained cyanosis or hypoxia.
RT VENT MI.

Management Of STEMI

Contraindications:

Hypotension, systolic BP < 90 mmHg.

RT ventricular MI.

Tachycardia(>100 bpm) or bradycardia <50 bpm).

Documented use of phosphatediestrase inhibitors (as sildenafil). within the last 48 hrs.

Management Of STEMI

Coronary angiography:

Positive stress test ,

Complicated MI.

Revascularization:

CABG:

LT main disease ,

Two or three vessels disease involving the proximal LAD artery & LV dysfunction.

DM & multivessel disease.

PCI.

Management Of STEMI

HMG- CoA reductase inhibitors (Statins) :

Should be started in all patients in the sitting of acute STEMI/ACS,

Atrovastatins 80mg/d

Target LDL<70 mg/dl.

Management Of STEMI

Initial measures, can be started in the ER.

Reperfusion therapy.

Antiplatelet , anticoagulant, and antianginal medications.

Continuous monitoring.

Peri-infarct management.

Associated conditions & complications.

Risk assessment. (pre, post discharge)

Secondary prevention.

Follow up.

Management of STEMI

Initial measures:

Airway breathing, and circulation assessed,
12- lead ECG obtained-
Resuscitation equipment brought near
Cardiac monitor attached
Oxygen given, assisted ventilation may be ne
IV access and blood work obtained
to 325 mg given 162 Aspirin
((unless contraindicated morphine and Nitrates

Management Of STEMI

Morphine sulfate:

Adequate analgesia,

Decrease levels of circulating catecholamine,

Reduce myocardial O_2 consumption.

Venodilator, arterial vasodilator,

Vagotonitc effect (decrease heart rate),

Dose: 2-4 mg IV , can be repeated / 5 min until pain resolved or side effects ensue:

Morphine toxicity: hypotension, resp depression, sever vomiting, (non reactive pen point pupil)

Management Of STEMI

Peri-infarct Management:

Bedrest , avoid valsava maneuver.

Pain relief

Patient reassurance & relief of anxiety.

DVT prophylaxis.

GIT prophylaxis.

Tight blood sugar control .

Management Of STEMI

Positive stress test indicative of sever CAD:

New ST-segment depression at start of exercise,

New ST-segment depression>2mm in multiple leads.

Inability to exercise for>2min.

Depressed systolic BP with exercise,

Development of heart failure or sustained ventricular arrhythmia.

Prolonged interval after exercise cessation (>5min) before ischemic ST changes return to baseline.

Management Of STEMI

Reperfusion Therapy:

Primary PCI.

Thrombolytic therapy.

Emergency CABG.

Management Of STEMI

Risk assessment:

Stress test ,followed by diagnostic catheterization .

Catheterization without prior non invasive assessment.

Management Of STEMI

Secondary prevention:

Life style modification.

Medical therapy:

Antipltelet,

ACE inhibitors.

Aldosteron blockers.

B- blockers.

Calcium channel blockers.

Statins.

Prolonged anticoagulation therapy

Clinical follow up

Management Of STEMI

Stress test:

Submaximal. (4-6) days after MI.

Symptom limited.(10 -14)days after MI.

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Management Of STEMI

Stress test:

Submaximal. (4-6) days after MI.

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;

Primary PCI

Immediate angioplasty of infarct- related coronary artery with placement of stent either bare metal stent or in most of the time drug-eluting stent.

Primary PCI

Adjunct therapy:
Antiplatelet therapy : aspirin &clopidogrel
Antithrombotic agents: UFH.
Beta blocker agents.
Intraaortic balloon counterpulsation pumb.
PCI after fibrinolytic therapy:
facilitated,
adjuncted,
elective.

Primary PCI

Candidate for primary PCI: •

Patient with chest pain suggestive of MI & having ECG evidence of acute MI manifested by ST elevation : more than 1mm in two consecutive leads.

Patient with typical & persistent symptoms in the presence of new or presumably new LBBB.

True posterior MI.(depressed ST segment with prominent R wave in V2-V3)

Immediate implementation of reperfusion therapy should not be delayed until cardiac enzymes results are available.

Primary PCI

optimum results could be achieved if door to balloon time is less than 90 min.

If the patient present (12-24) hrs later, PCI still can be done if the patient has sever HF, hemodynamic, electrical instability or persistent ischemic symptoms.

It is preferred over fibrinolysis in patient who present with symptom duration greater than 3 hrs.

Primary PCI

Outcome :

TIMI 3 flow is achieved in greater than 90% of patients underwent primary PCI.

No risk of ICH.

Limitations: not available in all centers.

requires cardiac surgery ready to deal with possible complications.

Vent. rate 91 bpm
PR interval 170 ms
QRS duration 92 ms
QT/QTc 322/396 ms
P-R-T axes 72 4 8

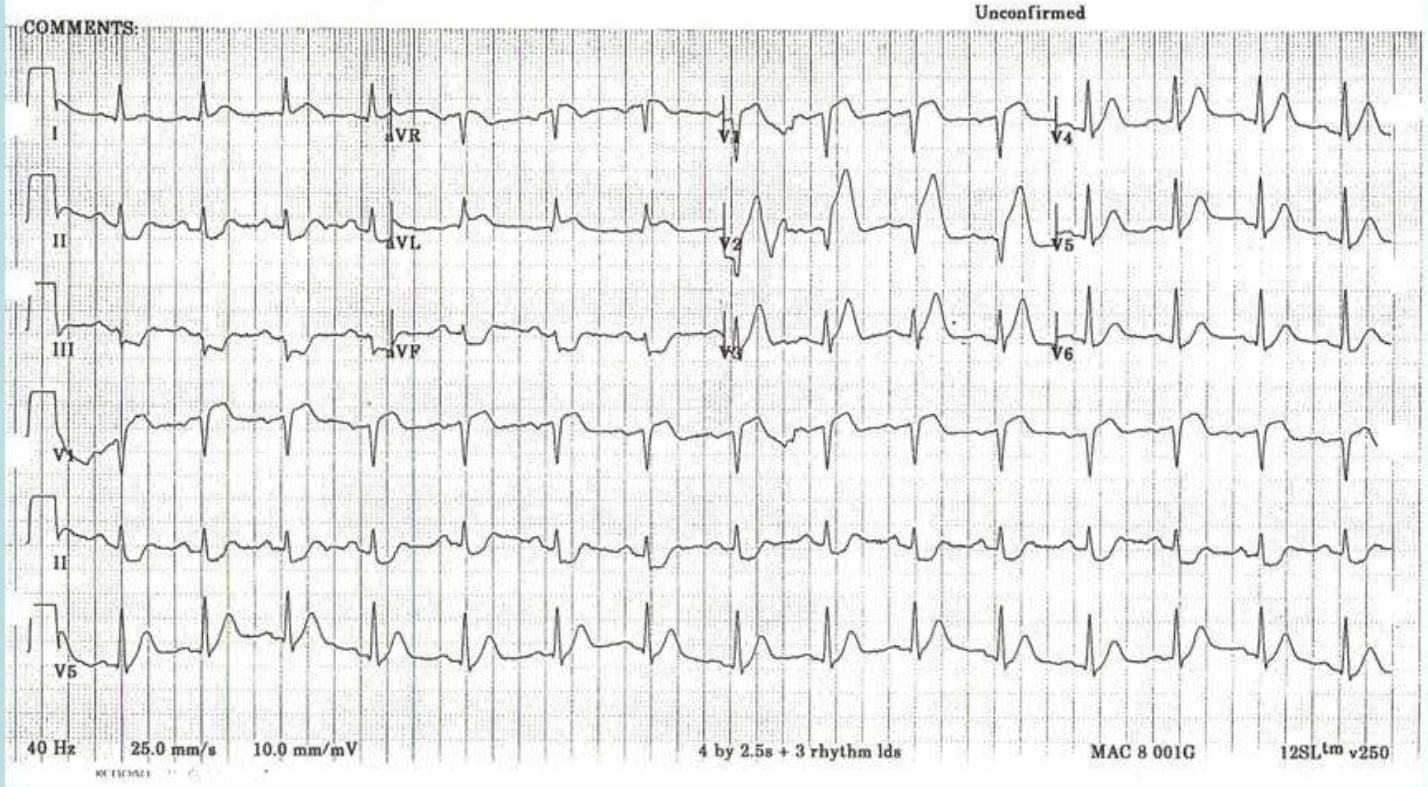
Normal sinus r am
Septal infarct, possibly acute
Lateral injury pattern
** ** ** ** * Acute MI * ** ** ** **
Abnormal ECG

Room:
Loc: 109

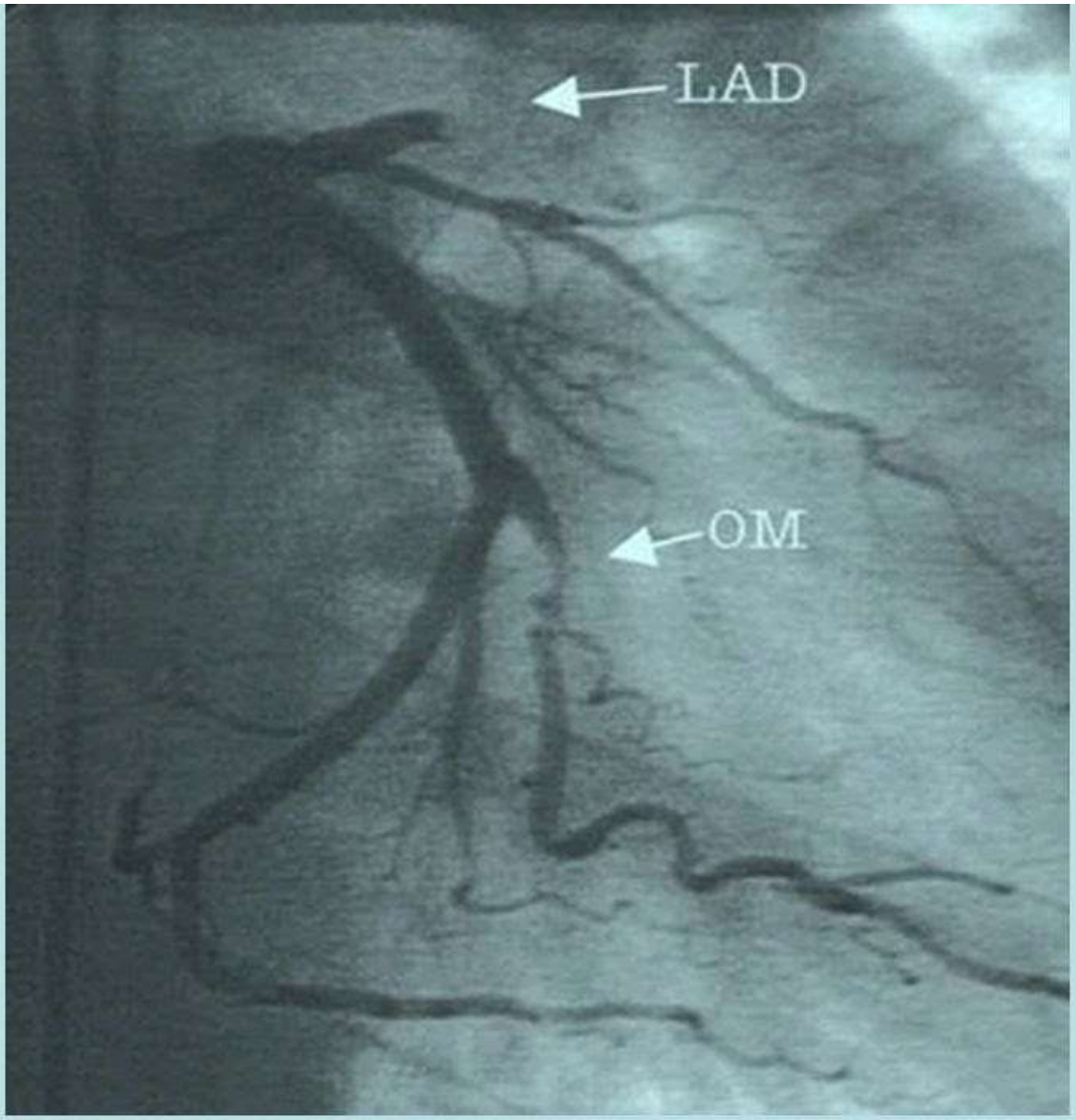
Technician:
Test ind:

Unconfirmed

COMMENTS:



40 Hz 25.0 mm/s 10.0 mm/mV 4 by 2.5s + 3 rhythm lds MAC 8 001G 12SL^{tm} v250


LAD
OM


thank
you!

Thrombolytic Therapy

Contraindication:

Relative :

Allergy or previous use (>5 d) ago of streptokinase or anistreplase.
Active PUD.
Noncomprssible vascular punctures.
Internal bleeding (2-4) wks .
Prior ischemic strok > 3m.
prolonged/ traumatic CPR >10 min.
Major surgery < 3 wks.
Severe menstrual bleeding .
Hx of intraocular bleeding.

Thrombolytic Therapy

Contraindications;

Absolute:

Hx of ICH.
Known structural cerebrovascular lesions. ,
Aortic dissection.
Hx of ischemic stroke< 3m
Trauma within 3 months.
Severe uncontrolled HTN.
Bleeding diathesis.
Acute pericarditis.
Pregnancy.

Thrombolytic Therapy

Fibrin- selective:

Altepase
Reteplase.
Tenecteplase.

Non- fibrin selective:

Streptokinase.

Thrombolytic Therapy

IF thrombolytic therapy failed, patient urgent coronary angiography and rescue PCI should be considered.

Thrombolytic Therapy

Optimum door to needle time is <30 min.

Done for any patient present within 12 hrs of symptom onset.

Can be considered up to 24 hrs as long as the patient still having chest pain or ST elevation.

Adjunct therapy: clopidogrel;

UFH.

FH.

Thrombolytic Therapy

TIMI 3 flow is achieved in 50%-60% of the patients.

Non invasive evidence of reperfusion after fibrinolysis: relief of symptoms.

restoration or maintenance of hemodynamic & electrical stability.

reduction of at least 50% of the initial ST segment injury pattern on follow up ECG (60-90) min after initiation of therapy.

serial measurement of biomarkers as CK-MB & myoglobins.

Thrombolytic Therapy

Widely available.
Easily & rapidly administered.
High risk for ICH.
Candidate for thrombolytic therapy:
Patient with chest pain suggestive of MI with:
ST segment elevation greater than 1mm in two or more contiguous ECG leads.
Posterior wall MI.
New onset LBBB.
No contraindications. (age).