CHRONIC STABLE ANGINA

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CHRONIC STABLE ANGINA

- **Site Of Pain:**
  Usually retrosternal, But it can occur at any site of radiation such as:
  - Ulner surface of the Lt arm
  - Rt arm
  - Outer surface of both arms
  - Back
  - Epigastrium
  - Neck
Continued

**Character**: Heaviness
- Squeezing
- Burning
- Sense of discomfort

- Strangulating
- Constricting
- Crushing
- Suffocating
Diagnosis: Practical Points:

- The typical episode of angina usually begins gradually and reaches its maximum within minutes before disappearing, it is unusual to reach its intensity within seconds.
- Anginal discomfort above the mandible or below the epigastrium is rare.
CONTINUED

- Typical angina is relieved within minutes by rest or nitroglycerin. The response to the latter is often a useful diagnostic tool.

- **Angina equivalent** (symptoms of myocardial ischemia other than angina) such as: Dyspnea, fatigue, faintness, and eructation.
# Grading of Angina Pectoris

**Canadian Cardiovascular Society**

Functional Classification

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Grade-1</td>
<td>Ordinary physical activity such as walking and climbing stairs. does not cause angina.</td>
</tr>
<tr>
<td>Grade -2</td>
<td>Slight limitation of ordinary activity, walking or climbing stairs rapidly, walking uphill, climbing more than one flight of stairs</td>
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<tr>
<td>Grade-3</td>
<td>Marked limitation of ordinary physical activity</td>
</tr>
</tbody>
</table>
Clinical Symptoms and Angiographic Disease

Results:

No correlation between site of pain, radiation, quality of pain, or relief with NTG and presence of disease

Only four clinical variables separated groups:

a. Reproducibility with exercise (10/10 v. 1-9/10)

b. Lack of rest symptoms (0-1/10 v. 2-10/10)

Duration of 5 minutes or less (5 min. v > 5 min)

Age (<55 v. ≥55)

Differential Diagnosis

Musculoskeletal •
Gastrointestinal •
Cardiac •

Psychiatric •
Pulmonary •
Other/unknown •
NONINVASIVE TESTING

**Resting ECG:**

- Could be normal in approximately half of Pts with chronic stable angina.
- Normal resting ECG is a more favorable long term prognosis.
- The most common abnormality, is nonspecific ST_T changes with or without Q wave, many other conditions can produce same picture.
Resting ECG:

- During episode of angina the ECG becomes abnormal in 50%. The most common finding is ST segment depression, although ST elevation or inversion may develop.
- Various conduction abnormalities, mostly LBBB, Lt ant fascicular block may occur and reflects multivessele disease and poor prognosis.
EXERCISE ECG

Is helpful in Pts with chest pain syndrome in whom the resting ECG is normal.

1-Patients with typical chest pain during exercise:

a-If horizontal or down sloping ST segment depression of 1mm or more the predictive value for detection of CAD is 90%.

b-ST segment depression of 2mm or more is virtually diagnostic of significant CAD
EXERCISE ECG

2-In the absence of typical anginal pain:

- a-Down sloping or horizontal ST segment depression of 1mm or more has a predictive value of 70%.
- b-The predictive value increase to 90% with ST segment depression of 2mm or more.
- 3-The long persistence of ST changes, its early onset, and a low work capacity are strongly associated with multivessel disease.
Angina caused by increased myocardial O2 requirement (demand angina)

Angina caused by transiently decreased O2 supply (supply angina)
Pathophysiology

**Increased Myocardial O2 Requirement:**

- The increase requirement commonly stems from nor epinephrine release as result of exercise, emotion, or mental stress. Also anger, chills, fever, sexual activity, thyrotoxicosis, hypoglycemia.
**PATHOPHYSIOLOGY**

**Transiently Decreased O2 Supply:**
- In the presence of organic stenosis, platelet thrombi, leukocytes may elaborate vasoconstrictor substances such as serotonin and thromboxane A2.
- Endothelial damage in atherosclerotic CA may result in decreased vasodilators and abnormal vasoconstrictor response to exercise.
Management of Chronic Stable Angina

1. Medical Management

2. Percutaneous Coronary Intervention

3. Coronary Artery Bypass Surgery
GOALS OF MEDICAL MANAGEMENT

- 1-Identification and Treatment of associated diseases.
- 2-Reduction of coronary risk factors.
- 3-Life style modification.
- 4-Pharmacological management.
- 5-Revascularization by PCI or CABAG
Conditions that can increase O2 demand or reduce delivery:

- Anemia
- Obesity
- Occult thyrotoxicosis.
- Fever, Infections.
- Drugs: amphetamine, isoproterenol.
- Cocaine
Risk Factor Modification

I  IIa  IIb  III

Smoking Cessation Counseling

Dietary Counseling and Modification

Cardiac Rehabilitation Referral

HTN Control (BP < 130/85 mm Hg)

Tight Glycemic Control in Diabetics
 Logical link between HTN and CAD severity and mortality is well established.

The risk of CAD doubles for each 20mm/Hg increment in systolic BP across the entire range of 115-185 mm/Hg.

Meta-analysis of clinical trials of treatment of HTN showed a statistically significant 16% reduction in CAD events and mortality.
Among Pts with angiographyically documented CAD cigarette smoking have a 5-year risk of sudden death, myocardial infarction, and all cause mortality.

Cigarette smoking may be responsible for aggravating angina pectoris other than through the progression of atherosclerosis.
Clinical trials in Pts with established atherosclerotic vascular disease have demonstrated a significant reduction in a subsequent CV event in Pts with a wide range of serum cholesterol & LDL-cholesterol who are treated with statins.

Statins reduce C-reactive protein, decrease thrombogenicity, and favorably alter the collagen and inflammatory component of arterial atheroma.
# NCEP ATP III Guidelines

<table>
<thead>
<tr>
<th>Patients with</th>
<th>Initiate TLC* if LDL-C</th>
<th>Drug therapy considered if LDL-C</th>
<th>LDL-C treatment goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 risk factors</td>
<td>≥160 mg/dL</td>
<td>≥190 mg/dL (160–189 mg/dL: drug optional)</td>
<td>&lt;160 mg/dL</td>
</tr>
<tr>
<td>2 risk factors (10-year risk ≤20%)</td>
<td>≥130 mg/dL</td>
<td>10-year risk 10-20%: ≥130 mg/dL</td>
<td>&lt;130 mg/dL</td>
</tr>
<tr>
<td>CHD and CHD risk equivalents (10-year risk &gt;20%)</td>
<td>≥100 mg/dL</td>
<td>10-year risk &lt;10%: ≥160 mg/dL</td>
<td>&lt;100 mg/dL</td>
</tr>
</tbody>
</table>

*TLC: therapeutic lifestyle changes

(National Cholesterol Education Program, Adult Treatment Panel III, 2001)
Aspirin

- Meta-analysis of 140,000 Pts in 300 studies confirmed the prophylactic benefit of aspirin in Pts with angina pectoris, myocardial infarction, previous stroke, and after bypass surgery.

- In a Swedish trial Pts with Ch stable angina, 75 mg of aspirin in conjunction with beta blocker conferred a 34% reduction in AMI and sudden death.
Incidence of Ischemic Events

Incidence of death and MI

- No aspirin (early 1980s): 16%
- Aspirin: 12%
- Aspirin + Heparin: 9%
BETA BLOCKERS

- The value of B-blockers in reducing death and recurrent MI in Pts who have experienced MI is well established. as is their usefulness in treatment of angina.

- Whether these drugs are also of value in preventing MI& sudden death in Pts with Ch stable angina without previous infarctions uncertain.
CANDIDATES FOR USE OF B-BLOCKERS FOR ANGINA

- 1-Prominent relationship of physical activity to attacks of angina.
- 2-Coexistant hypertension.
- 3-History of SVT or ventricular arrhythmia.
- 4-Previous MI.
- 5-LV systolic dysfunction
- 6-Mild to moderate HF.
ACE INHIBITORS

- Although ACE inhibitors are not indicated for the treatment of angina, these drugs appear to have important benefit in reducing the risk of future ischemic events.
- Data from 4 trials including 11,000 Pts demonstrated a significant reduction in MI of 21% and in subsequent UA of 15%.
The potentially beneficial effect of ACE-I includes a reduction in:

- In LVH.
- In vascular hypertrophy.
- Progression of atherosclerosis.
- Plaque rupture and thrombosis.
- In sympathetic activity.
In the 2002 AHA/ACC guidelines update for management of Pts with Ch stable angina ACE-I are recommended for all Pts with CAD in conjunction with diabetes/and or LV dysfunction
The clinical effectiveness of amyl nitrates in angina was first described in 1876 by Brunton, but still the most commonly used in treatment of Pts with this condition.

The action of these agents is to relax vascular smooth muscle, this vasodilator effect is evident in both systemic (including coronary) arteries and veins in normal subjects and in Pts with CAD.
NITRATES

- So action of nitrates in reducing both preload and after load makes them useful in the treatment of heart failure as well as angina pectoris.

- Nitrates improves exercise tolerance and time to ST segment depression during treadmill exercise test.
CALCIUM ANTAGONISTS

- Its efficacy in Pts with angina is related to the reduction in myocardial O2 demand and increase in O2 supply that they induce.
- This effect is particularly important in Pts with prominent vasospastic or vasoconstrictor component may be present, such as Prinzmetal angina, variable threshold angina and angina related to impaired vasodilator reserve of small coronary arteries.
CONCLUSION

Approach To Patients With Chronic Stable Angina:

- 1-Identify and treat precipitating factors.
- 2-Initiate risk factor modification.
- 3-Initiate pharmacotherapy with aspirin B-blocker and strongly consider ACE-I as first line therapy.
- 4-If angina occurs more than 2-3 times/week, the next step is addition of a Ca antagonist or long acting nitrates.
CONCLUSION

6- If angina is persistent despite two anti-anginal agents, add a third antianginal agent.

7- Coronary Angiography with a view to considering revascularization, is indicated in Pts with refractory symptoms or ischemia despite optimal treatment.