Assessment and Diagnostic Testing for cardiovascular Diseases

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Assessment For cardiovascular Diseases

- The initial step in evaluating for heart disease :

1- History

2- Physical examination

Both of them will help focus the assessment and guide selection of appropriate testing, if .indicated

Diagnostic Testing For cardiovascular Diseases

- Diagnostic Testing for Structural Heart Disease
- Diagnostic Testing for Atherosclerotic Coronary Disease
- Diagnostic Testing for Cardiac Arrhythmias

Diagnostic Testing in Cardiology

- **Diagnostic Testing for Structural Heart Disease:**

Transthoracic echocardiography - 1

Transesophageal echocardiography - 2

Three dimensional echocardiography **– 3**

Radionuclide angiography **– 4**

CMR imaging **- 5**

Chest CT **- 6**

Coronary CT angiography –7

Cardiac catheterization (left and right) – 8

- **Diagnostic Testing for Atherosclerotic Coronary Disease :**

1 - Cardiac biomarkers: **CK-MB , CKP**

2 – Visualization of the Coronary Anatomy:

- Coronary angiography

- Coronary CT angiography

- CMR imaging

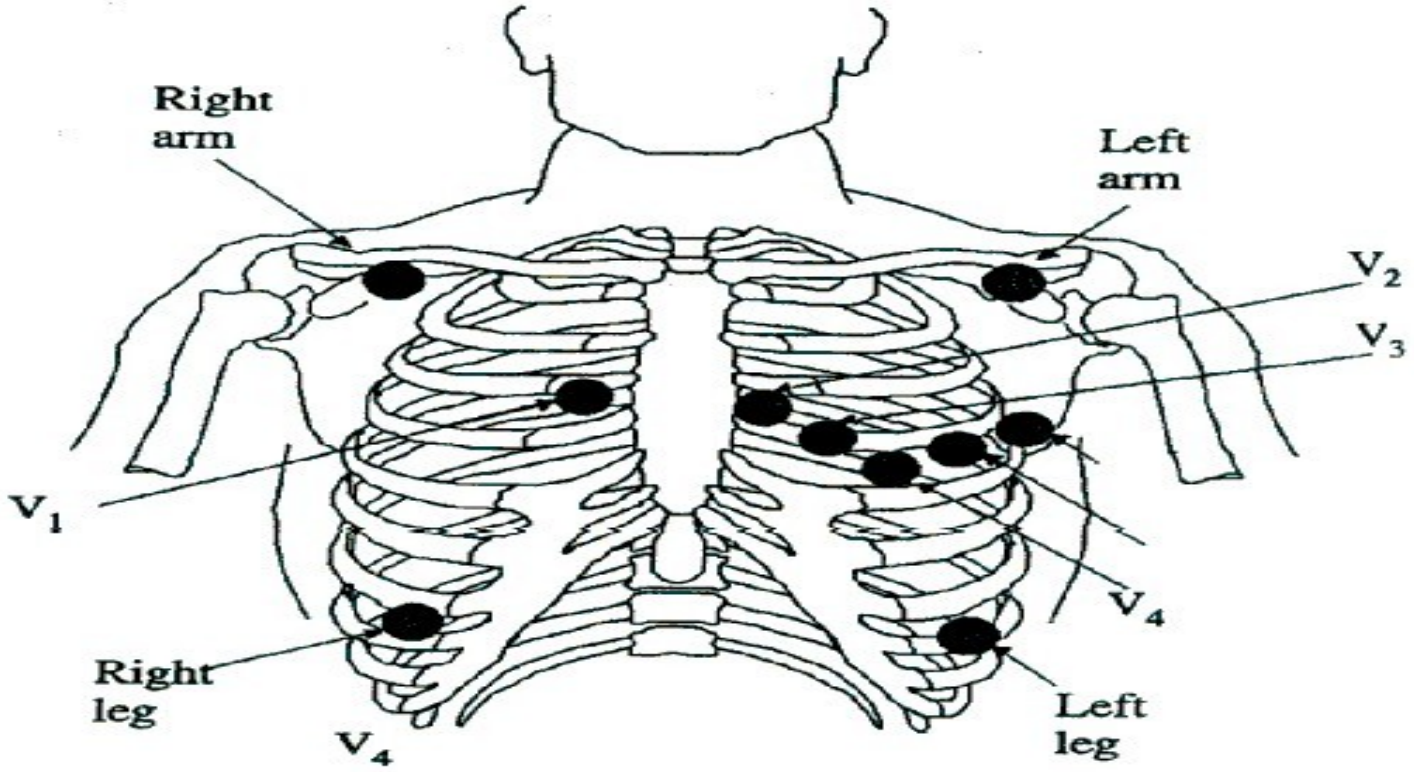
3 - Coronary Artery Calcium Scoring

ECG



Echo





Electrode position for V leads:
V_1: 4th ICS, right sternal border
V_2: 4th ICS, left sternal border
V_3: halfway between V_2 and V_4
V_4: 5th ICS, left medclavicular line
V_5: 5th ICS, anterior axillary line
V_6: 5th ICS, medaxillary line

ICS indicates intercostal space.

Figure 3. Appropriate electrode placement for continuous 12-lead ST-segment monitoring.

- **Diagnostic Testing for Cardiac Arrhythmias:**

1- Resting ECG Initial

Ambulatory ECG (Holter monitor) -2

Looping event recorder (wearable) **-3**

Implantable loop Recorder **-4**

Mobile cardiac outpatient telemetry **-5**

Electrophysiology study -6

Rheumatic Heart Disease



It is cardiac inflammation and scaring triggered by
. autoimmune reaction to infection with group A streptococci
In chronic disease is manifested by valvular fibrosis,
. resulting in stenosis or regurgitation

: Types of valve lesion

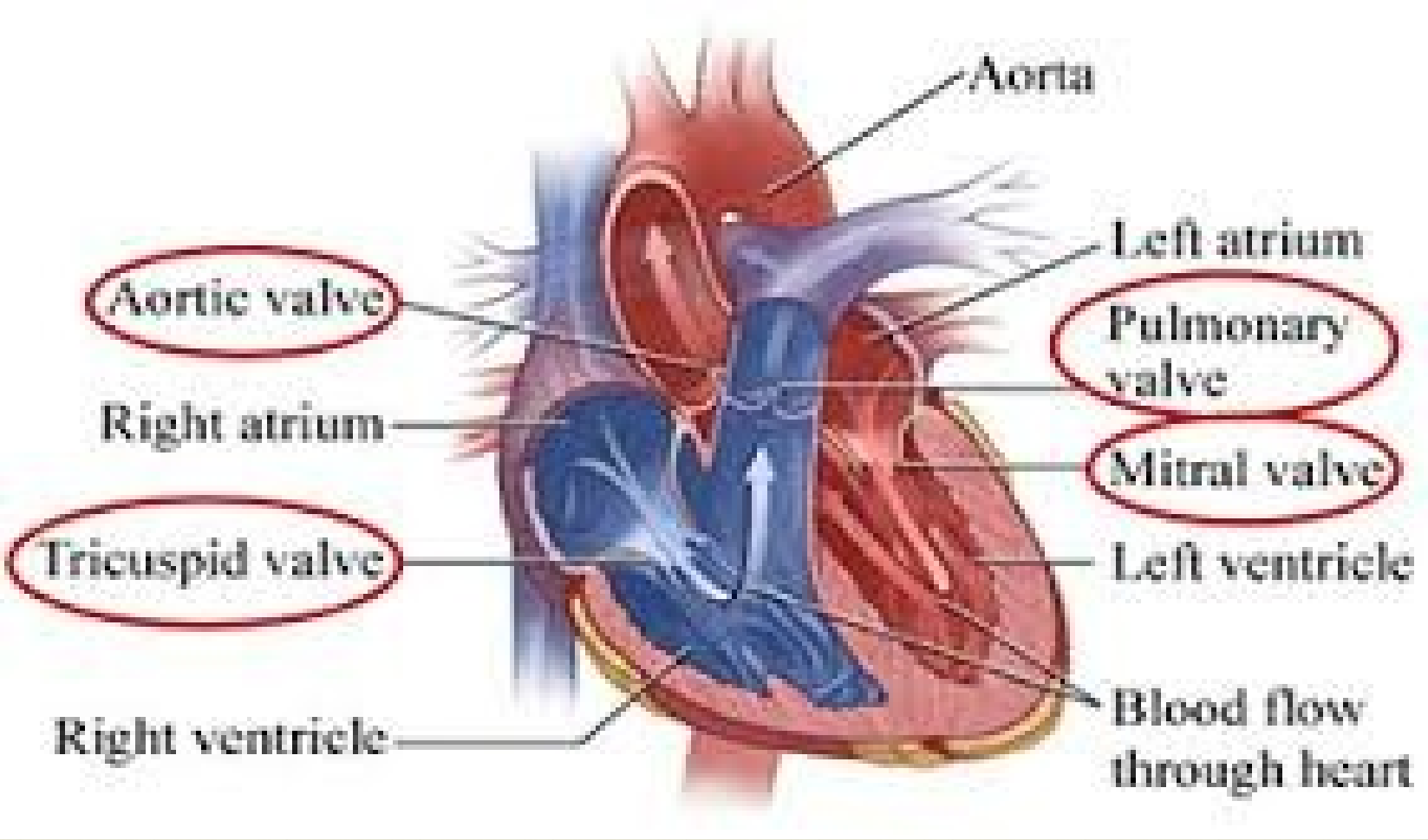
Mitral stenosis & regurgitation -

Aortic stenosis & regurgitation -

Tricusps stenosis & regurgitation -

Pulmonary stenosis & regurgitation -

Heart Valves



Mitral Stenosis & Regurgitation

- **Mitral Stenosis :**

Decrease normal orifice size less than 4 – 6 cm

Common cause: Rheumatic fever

- **Mitral Regurgitation :**

Abnormal reversal of blood flow from left ventricle to left atrium.

Common cause : Rheumatic fever

Aortic Stenosis & Regurgitation

- **Aortic Stenosis :**

Obstruction of blood flow across the aortic valve.

Common causes : Congenital & calcification

- **Aortic Regurgitation :**

Flow of blood from aorta into the left ventricle.

Common cause : Congenital anomaly & rheumatic fever

Laboratory and Imaging Tests

Chest radiography **- 1**

Electrocardiography (ECG) **- 2**

Echocardiography **- 3**

Cardiac catheterization **- 4**

General Principles of Management of Rheumatic Heart Disease

The most common indication for treatment is symptoms

The goals of treatment are both to improve symptoms

and reduce the risk of complications

: Treatment

Medical -

Surgical -

Angina

Definition



Fixed coronary stenosis and limitation of blood -
,flow

leading to an imbalance between myocardial
oxygen

.supply and demand

It characterized by exertional chest pain which -
.relieved with rest

Laboratory and Imaging Tests

: Screen for – 1

Factors contributing to ischemia e.g : anemia **-**

Risk factors that may increase the probability **-** of heart disease e.g : Hyperlipidemia

Diabetes mellitus

ECG - 2

. . .Cont

Exercise ECG - 3

Myocardial Stress Imaging - 4

,scintigraphy -

Echocardiography -

MRI -

Ambulatory ECG Monitoring - 5

Coronary Angiography - 6

Treatment



:Cardioprotective Medications - 1

Antiplatelet **:** Aspirin **-**

Platelet P2Y12 receptor inhibitors: clopidogrel, **-** prasugrel

β-blockers**:** Atenolol & Metoprolol **-**

ACE inhibitors **:** Lisinopril &ramipril **-**

Angiotensin receptor blockers**: -** Losartan,valsartan

Atorvastatin , Rosuvastatin: **-** Statins

. . .Cont

:Antianginal Medications - 2

Medications to reduce the frequency and severity of angina :

β-blockers -

Nitrates: Isosorbide dinitrate -

Isosorbide mononitrate

Diltiazem , amlodipine : - Calcium channel blockers

sodium channel inhibitor: Ranolazine -

. . .Cont

: Coronary Revascularization - 3

In patients with stable angina whose symptoms are : not improved with optimal medical therapy via

Percutaneous Coronary Intervention (PCI) -

coronary artery bypass graft surgery (CABG -)

Myocardial Infarction (MI)



Definition

Is irreversible necrosis of heart muscle secondary to - prolong lack of oxygen supply (ischemia)

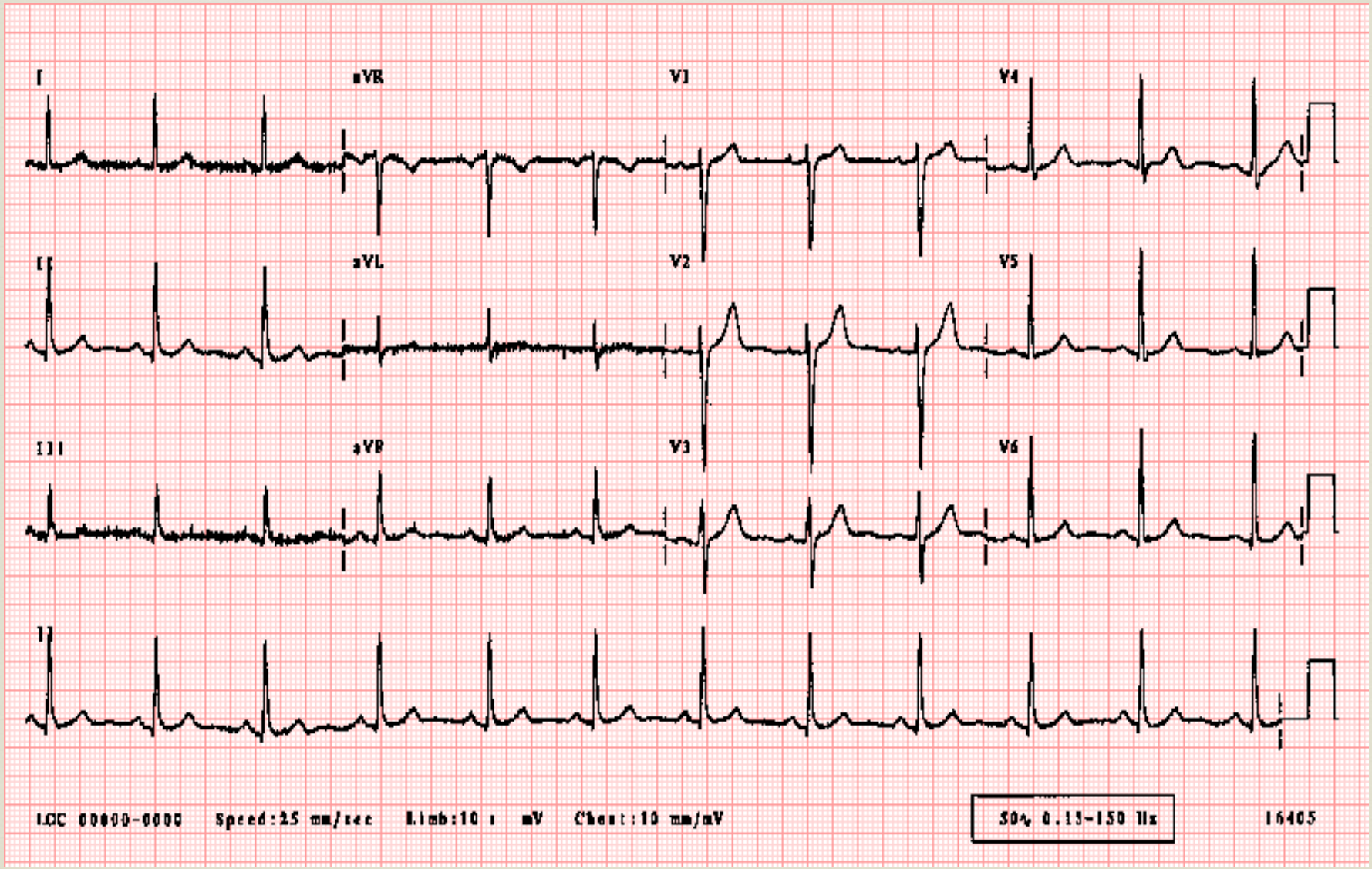
It characterized by retrosternal chest pain which - .radiates to neck , jaw , shoulder , and left arm

: Types

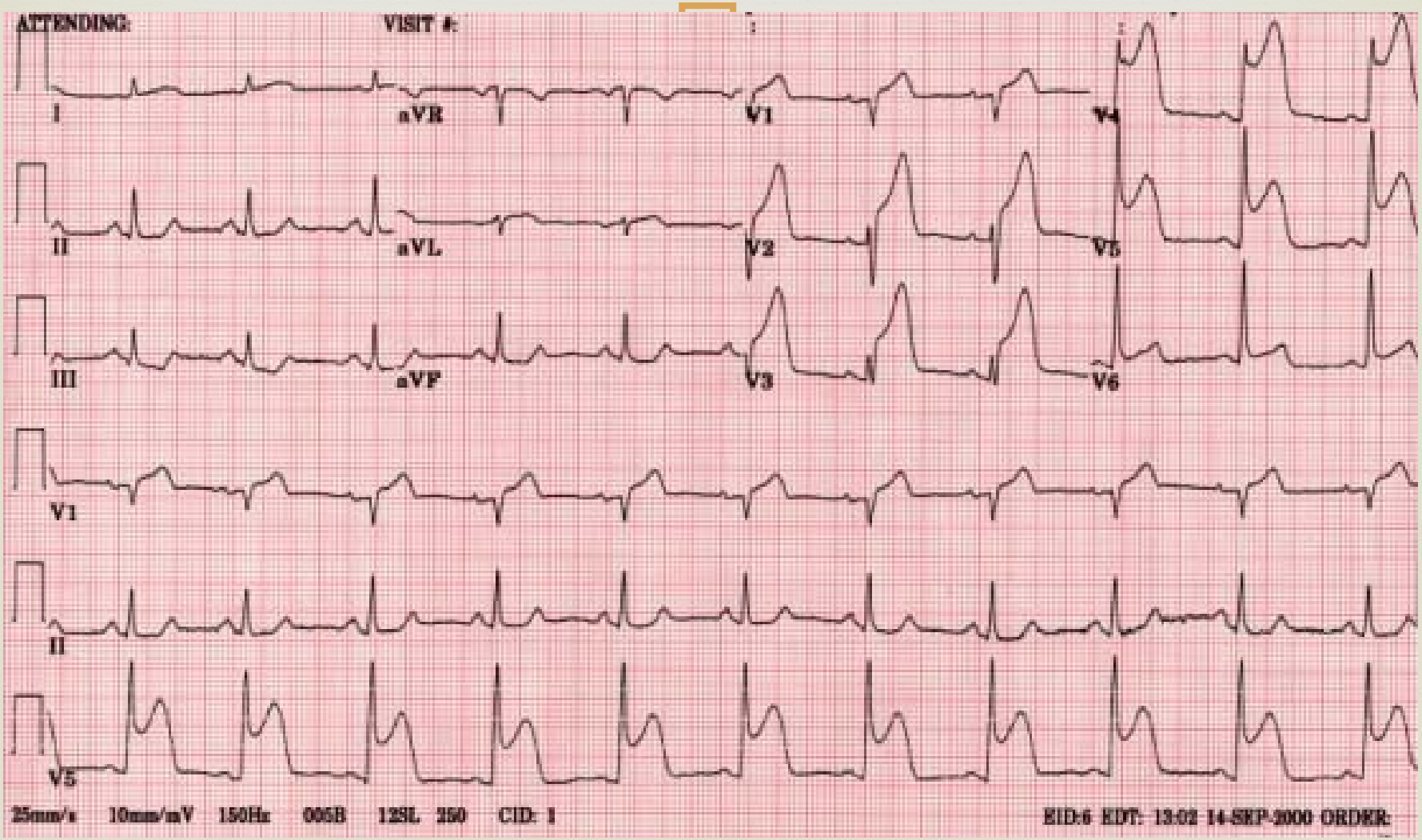
ST-elevation Myocardial Infarction (STEMI) –

Non-ST-elevation Myocardial Infarction (NSTEMI) –

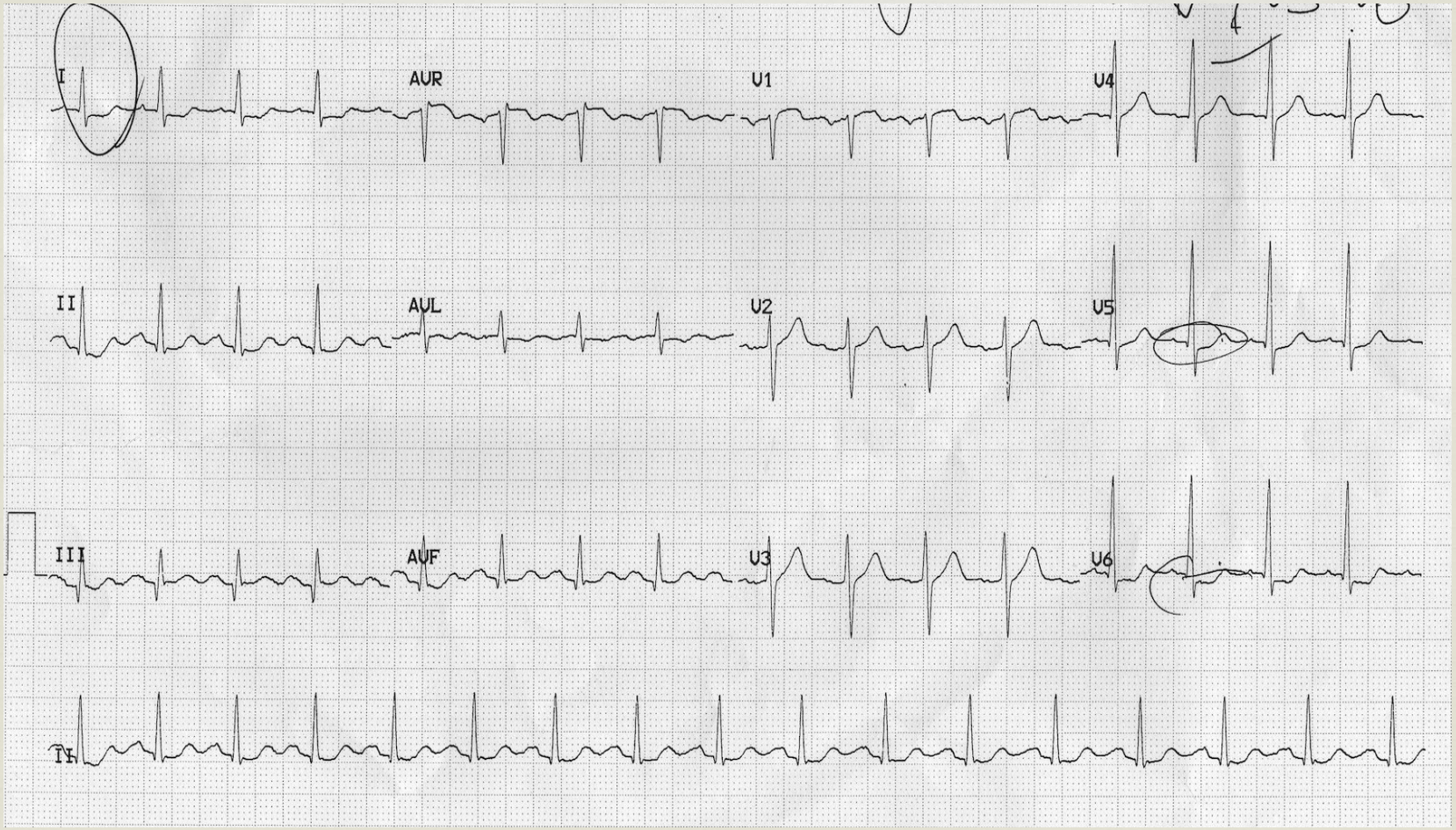
Normal ECG


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
LOC 00000-0000
Speed:25 mm/sec
Limb:10 mV
Chest:10 mm/mV
50% 0.15-150 Hz
16405

STEMI


ATTENDING:
VISIT #:
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5
25mm/s 10mm/mV 150Hz 006B 12SL 250 CID: 1
EID:6 EDT: 13:02 14-SEP-2000 ORDER:

NSTEMI



Laboratory and Imaging Tests

ECG **- 1**

CK-MB & CPK: **2 -** Cardiac biomarkers

Cardiac troponin **- 3**

Echocardiography **- 4**

General Principles of Management of Myocardial Infarction

Nitroglycerin **- 1**

Platelet P2Y12 receptor inhibitors: clopidogrel , **- 2**
prasugrel

Antiplatelet agents : Aspirin **- 3**

Supplemental oxygen **- 4**

Morphine **- 5**

Anticoagulants : Heparin **– 6**

Metoprolol in NSTEMI: **7 -** β-blockers **-**

- Carvidolol in STEMI

ACE inhibitors or ARBS : in case of STEMI **- 8**

Thrombolysis or primary PCI **- 9**

THE END

