



# STAFF NURSE

MEDICAL AND HEALTH SERVICE DEPARTMENT,  
MEDICAL EDUCATION & TRAINING DEPARTMENT

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**VOLUME – 6**

**PART – III**

**MEDICAL SURGICAL NURSING  
(HUMAN BODY SYSTEM & DISORDERS)**



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# "HYPERTENSION"

Def: →

When there is <sup>(constant)</sup> persistent elevation of B.P more than 140/90 MMHg known as Hypertension

## Classification

### (1) Primary Hypertension

also k/as ⇒ Idiopathic / Essential Hypertension

due to some unknown cause

above 60 years in person  
elastic कम होने के कारण  
Atherosclerosis

### (2) Secondary Hypertension

Due to some known cause

Etiology ⇒ (A) C.V. Disorder ⇒ CAD

(B) Renal disorder

(C) Endocrine Disorder ⇒ Diabetes Mellitus

Hypo / Hyperthyroidism

BMR ↑ se

BP ↑ se

(D) Drugs ⇒ oral Contraceptive pills

Antidepressant drug  
Steroid  
NSAID

due to prolonged use  
persistently used

(3) Pre-Hypertension B.P. =  $\frac{120-139}{80-89}$

(4) Systolic Hypertension when rise only systolic B.P. more than 140 mmHg

(5) Diastolic Hypertension when rise only diastolic B.P. more than 90 mmHg

(6) Benign Hypertension  $\Rightarrow$  B.P.  $\Rightarrow$   $\frac{180}{100}$

Maximum  $\Rightarrow$  200/100 mm of Hg

(7) Malignant Hypertension  $\Rightarrow$  It is medical emergency condition.

$\Rightarrow$  when the B.P. of a person exceed more than 200/100 mm of Hg

$\Rightarrow$  It should treat immediately by the use of emergency Hypertensive drugs

Eg  $\rightarrow$

Laxis

Nitroglycerin

Hydralazine

Sodium Nitro-prusside

⇒ During the malignant Hypertension

Risk ⇒  $\Downarrow$  Damage the vital organ of the body

⇒ Malignant Hypertension also known as "Hypertensive Crisis"

\* Risk factor of HTN ⇒ same as CAD

\*  $P/P \Rightarrow$

$B.P. \Rightarrow \text{Cardiac output} \times \text{peripheral Resistance}$

⇒ Cardiac output ↑ ⇒ Systolic B.P. ↑

⇒ peripheral Resistance ↑ ⇒ diastolic B.P. ↑

\*  $C/M \Rightarrow$

(1) In Hypertension the pt. may be asymptomatic for prolonged time

(2) The some symptom which are present by pt are ⇒

\* Occipital Headache

\* Vertigo

\* Tachycardia

\* palpitation

\* Chest pain

\* Dyspnea

\* Epistaxis

\* sweating



⇒ The target organ HTN  
↓↓↓

- (1) Heart ⇒ CAD (MI, Angina pectoris)
- (2) Brain ⇒ stroke
- (3) Kidney ⇒ CRF [due to damage nephrons]

⇒ Diagnostic Measures  
↓↓↓

- (1) History collection and physical Examination
- (2) ECG
- (3) Lipid profile ⇒ (cholesterol level ↑)
- (4) Serum Electrolyte (Na ↑)
- (5) Blood Sugar, CBC.
- (6) RFT / LFT, USG
- (7) ECHO cardiography
- (8) Thyroid profile

⇒ Mat

- (1) Life & style Modification
- (2) Dietary Modification
- (3) Pharmacology

Rx ⇒ (1) Tab → Atenolol  
OR

Tab → Amlodipine  
OR

Tab → Laxis

(2) Tab → Atorvastatin / statin / Levastatin  
↓↓↓  
Anticholesterol drugs

Amloras AT  $\Rightarrow$  Amlodipine + Atenolol

Alpraxo  $\rightarrow$  0.5 Mg

$\Downarrow$   
Anti-anxiety, Sedative, muscle Relaxant

$\Downarrow$   
vasodilation (Use B.P.)

<sup>(Pain)</sup>  
\* "ANGINA PECTORIS" \*

Angina pectoris is referred to Chest pain due to Ischemia of Heart Muscle (Myocardium)

Etiology

So The most common ~~cause~~ Cause Angina pectoris

$\Downarrow$   
Atherosclerosis

Risk factor  $\Rightarrow$  same as CAD

P/P  $\Rightarrow$

O<sub>2</sub> demand  
of Myocardium

O<sub>2</sub> supply  
to Myocardium

Imbalance

O<sub>2</sub> supply ~~use~~ use  
O<sub>2</sub> demand  $\uparrow$  use

$\Downarrow$   
Ischemia to Myocardium



↓  
Anaerobic Respiration of some myocardial fibers

↓  
Formation of Lactic Acid

↓  
**Pain** ⇒ Manage

↓  
**O<sub>2</sub> ↑ se. supply**  
**O<sub>2</sub> ↓ se. demand**

### \* Pattern/Classification/Type of angina pectoris

(1) Stable angina ⇒

↓  
also k/as ⇒ Exercitional angina

⇒ There is a predictable pattern of angina pt. complained of Ischemic Chest pain

↓  
during exercise or exertion or during cold environment, after meal and during stress

⇒ The chest pain has been relieved by Rest or nitroglycerine.

(2) Unstable Angina ⇒

↓  
also k/as → pre-infarction angina

⇒ There is a no predictable pattern of ischemic chest pain, The chest pain may occur at rest & may or may not be relieved by Rest or nitroglycerin

(3) Variant Angina ⇒

⇒ There is variable pattern of Chest pain

⇒ The pain occurs

⇓⇓⇓  
Due to the Coronary artery spasm

(4) Silent Angina ⇒

This type of angina the pt. does not present any clinical presentation clinical symptom of angina pectoris ~~but the~~

⇓⇓⇓  
But The ECG show pattern of ischemic

(5) Micro-angina

⇓⇓⇓  
also-k/as → Refractory Angina

⇒ It is the Chronic pattern of ischemic pain which does not respond ~~to~~ medical intervention

⇓⇓⇓  
ischemic pain ⇒ due to micro-circulation in formation of clots.

C/M ⇒

- Tachycardia
- Chest pain
- Palpitation
- Sweating
- Dyspnea
- A → Anorexia
- N → Nausea
- V → Vomiting
- F → Fatigue

### Diagnostic Measures

- Main
- (1) History or physical Examination
  - (2) ECG
  - (3) TMT
  - (4) Angiography [Coronary angiography]
  - (5) Blood sugar,
  - (6) Lipid profile
  - (7) Electrolyte (Serum), CBC
  - (8) ECHO Cardiology

Mgt ⇒

- ① Life style Modification
- ② Dietary Modification

③ ~~Pharmacological~~ Treatment ⇒ Rest

Tab. NTG 200

Tab. Amlodipine Ac  
OR

Tab. Nitemolol Ac

Tab. - Atorvastatin 10mg (1 pc)

(4) Invasive procedure / surgical

- \* PTCA
- \* Atherectomy
- \* Stent
- \* CABG

(5) In Case of unstable angina  $\bar{c}$  3 tab. NTG

Emergency care  $\Rightarrow$  \* O<sub>2</sub> Administration  
\* Obtain ECG

If wave abnormal than  
\* give / Administer streptokinase,  
urokinase

## \* MYOCARDIAL INFARCTION \*

- Q Which is the most common cause of MI
- (A) Coronary artery Embolism
  - (B) Coronary Artery Spasm
  - (C) Coronary artery thrombus
  - (D) Severe Anaemia
- (C)
- Q Which the priority of nsg action perform by the nurse in emergency department  $\bar{c}$  the pt of MI

MI pain  $\rightarrow$  More than 15 Min

Blood # troponine Level rise  $\Rightarrow$  confirm indicate MI

- (A) Administer Aspirin
- (B) O<sub>2</sub> inhalation
- (C) Administer streptokinase (B)
- (D) Administer  $\beta$ -Blocker

Q3. Which is the most ~~to~~ important and specific Cardiac marker for myo-cardial damage

- (A) Myoglobin
- (B) Troponine
- (C) CK-MB
- (D) Lactate dehydrogenase (LDH) (B)

Q4. Which is the most common complication of MI

- (A) Cardiogenic shock
- (B) Heart failure
- (C) dysrhythmia
- (D) Recurrent MI (C)

Def. of MI

It is the infraction to the myocardium

Due to complete blockage of coronary artery

$\Rightarrow$  It is life threatening condition which require immediate intervention

$\Rightarrow$  MI also klas  $\Rightarrow$  Heart Attack / Coronary Occlusion  
 $\hookrightarrow$  (Acute condition)



⇒ It also includes under "Acute Coronary Syndrome" (ACS)

ACS include ⇒ unstable angina, MI

⇒ Most common site of MI are ⇒ Anterior wall of Lt ventricle.

⇒ There are 2 type of presentation of "MI"

(i) Non-ST-segment elevation MI (NSTEMI)

Commonly present in Female

⇒ Common Cause of NSTEMI is

platelet aggregation

Rx ⇒ Aspirin or Heparin

(ii) ST-segment elevation MI

Common cause ⇒ Thrombus

Treated by ⇒ Streptokinase

Etiology of MI ⇒

① Coronary artery thrombus



The factors precipitated the ~~&~~ Thrombus formation are :->

- (A) Atherosclerosis in Coronary Artery
- (B) Rupture of Atheroma
- (C) Injury to the inner wall of Coronary artery
- (D) Coronary artery inflammation

(2) Coronary artery Embolism

(3) Coronary artery Spasm

(4) Severe anemia

(5) Hypoxia -> (due to fire)

\* Risk Factor of MI  $\Rightarrow$  same as CAD

\* C/M  $\Rightarrow$

(1) Effect on CVS  $\Rightarrow$

(A) Chest pain

$\Downarrow$

\* It persist more than 15 min

\* Can not be relived by NTG or Rest

\* Require Morphine Sulphate

\* There is numbness to the left shoulder

- (B) Hypertension or Hypotension
- (C) Tachycardia or Bradycardia
- (D) palpitation may be present

## ② Effect on Respiratory

- \* Dyspnea, Tachypnea
- \* Coughing, wheezing

## ③ Effect on Renal ⇒ \* Oliguria

## ④ Effect on Digestive ⇒ \* Anorexia

- \* N/V
- \* Fatigue
- \* Constipation

## ⑤ Effect on Nervous and psychological

- \* Altered LOC
- \* Anxiety, ~~Fear~~
- \* Fear

## ⑥ Effect on skin ⇒

- \* Cool & diaphoretic skin

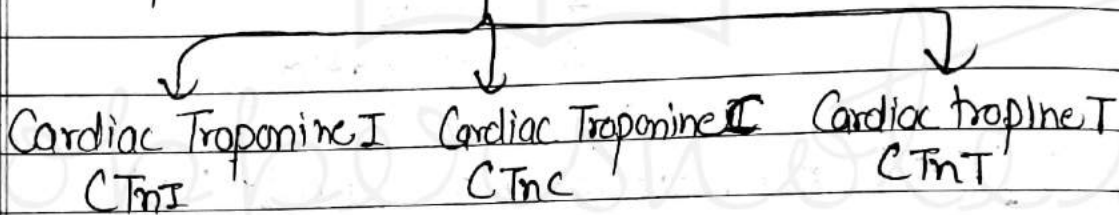
## \* Diagnostic Measure

- main
- (1) History OR Physical Examination
  - (2) ECG ⇒ Abnormal Q wave
  - (3) Coronary Angiography
  - (4) ECHO- Cardiography

- (5) Blood sugar
- (6) Lipid profile
- (7) X-Ray
- (8) Serum Electrolyte
- (9) LFT, RFT
- ~~IMP~~ (10) Cardiac Marker  $\Rightarrow$  (Cardiac Enzyme)

(1) Troponin  $\Rightarrow$  Troponin is a protein found in Heart Muscle  
(Prolonged time)

Troponin has 3 Iso-markers



✓ CTnI and CTnT Most specific and Most sensitive Marker

Their level has  $\uparrow$  rise for 4-6 Hours after MI

$\Rightarrow$  Reaches to peak  $\rightarrow$  24 Hours and remain in blood for about ~~7-14~~ 14 days

$\rightarrow$  (Myocardial Band)  
(2) CK-MB / CPK-MB  $\Rightarrow$  II<sup>nd</sup> important marker for Myocardial damage

Creatinine kinase      Creatinine phospho-kinase

CK-MB  $\rightarrow$  Heart Muscle

CK-MM  $\rightarrow$  Skeletal

CK-BB  $\rightarrow$  Brain

### (3) Myoglobin $\Rightarrow$

\* It is the oxygen binding protein present in Heart Muscle.

\* The Level of Myoglobin  $\Rightarrow$   $\uparrow$ se quickly just after 2-3 Hour of Myocardial damage.

$\Rightarrow$  declines quickly when the blood supply of myocardium has restored.

$\Rightarrow$  This Cardiac Marker has also used to know the effectiveness of thrombolytic therapy

### (4) Lactate Dehydrogenase

It is a enzyme responsible for conversion of Lactic acid into pyruvic acid

$\Rightarrow$  It has 2 Isomers  $\Rightarrow$

(1) LDH<sub>1</sub>

(2) LDH<sub>2</sub>

$$\boxed{LDH_1 < LDH_2}$$

$$\boxed{\text{In Normal person } \Rightarrow \frac{LDH_1}{LDH_2} < 1}$$

$$\boxed{\text{In pt. of MI } \Rightarrow \frac{LDH_1}{LDH_2} > 1}$$