

# METABOLIC SYNDROME

By:-

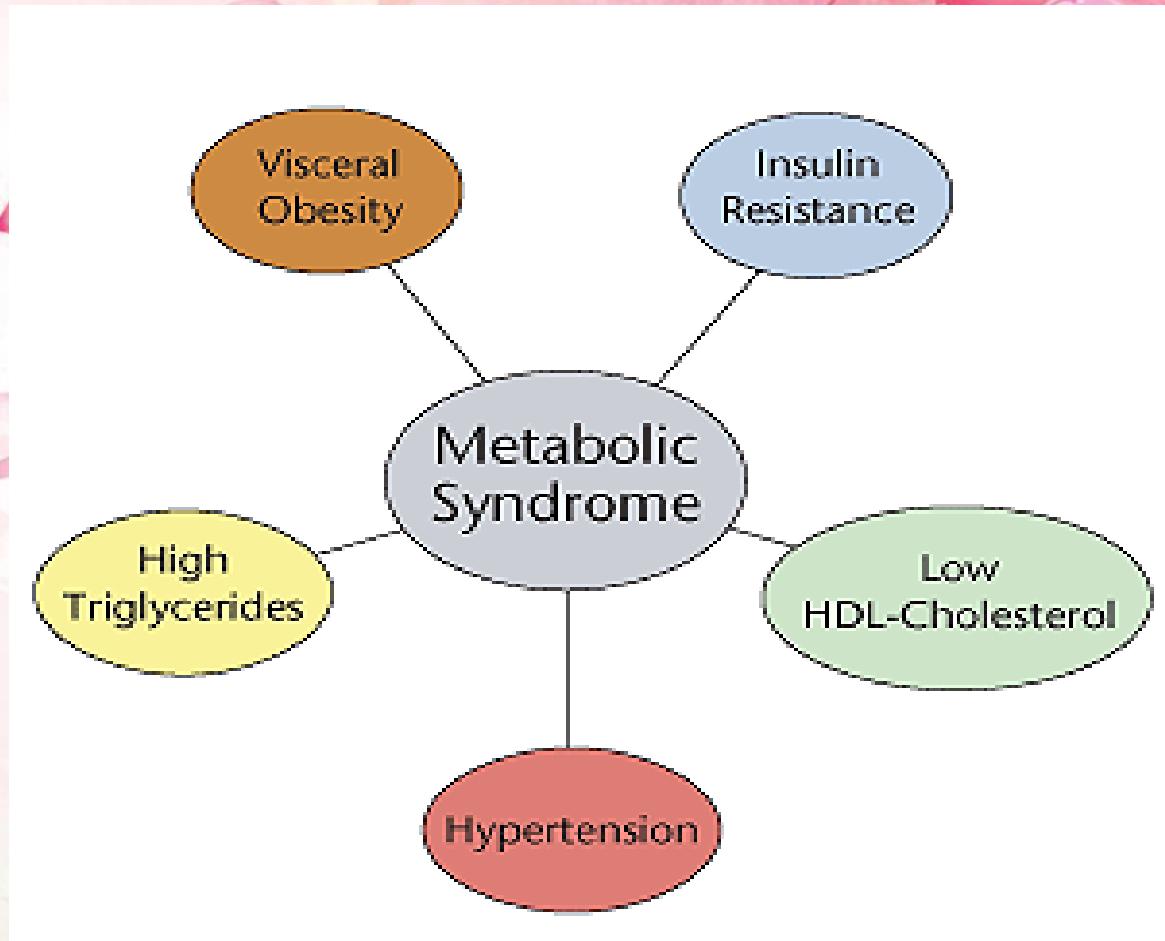
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## INTRODUCTION:-

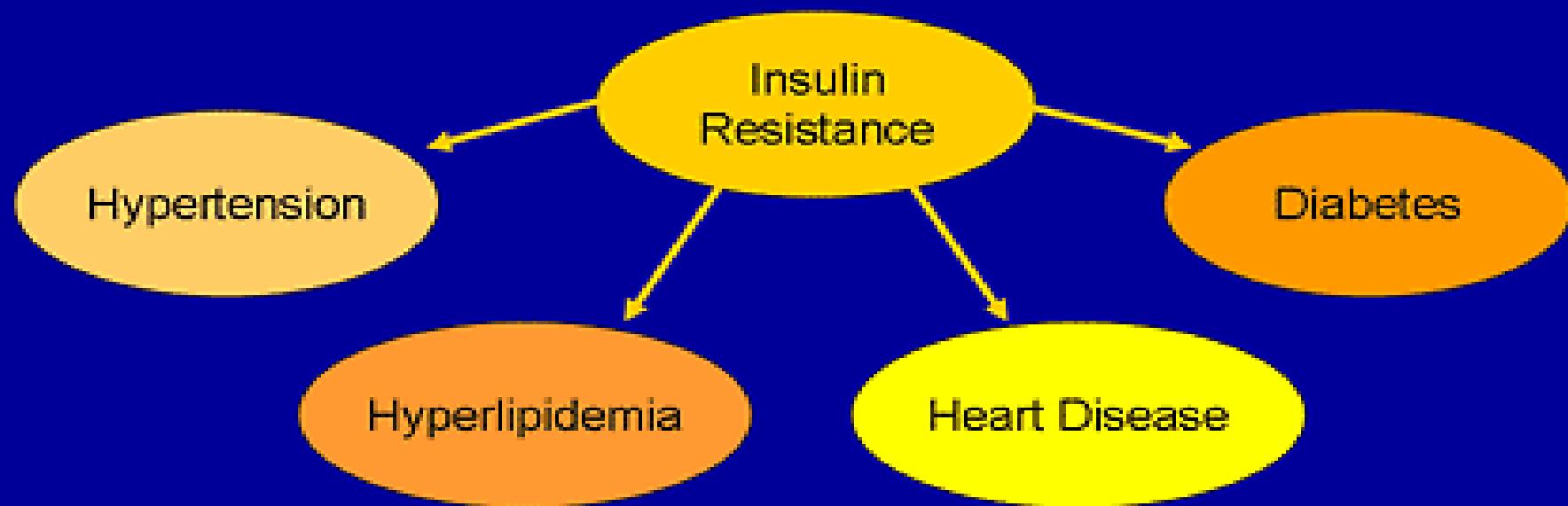
Metabolic syndrome is the name for a group of risk factors that raises the risk for heart disease and other health problems, such as diabetes and stroke.



## ETIOLOGY:-

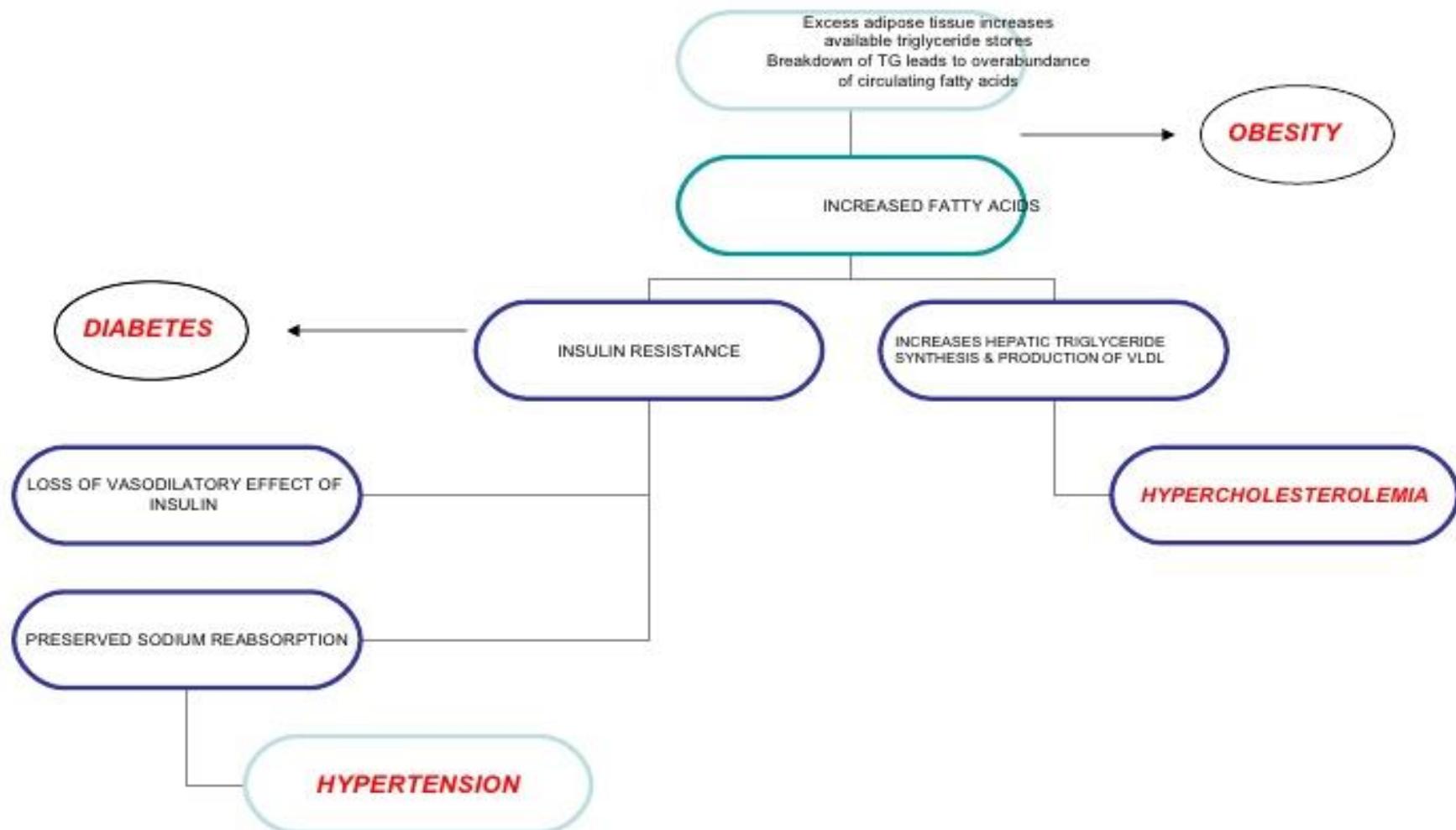
### What Causes the Metabolic Syndrome?

It had been proposed that insulin resistance might not only be a part of the syndrome but might actually be the cause of the entire syndrome.



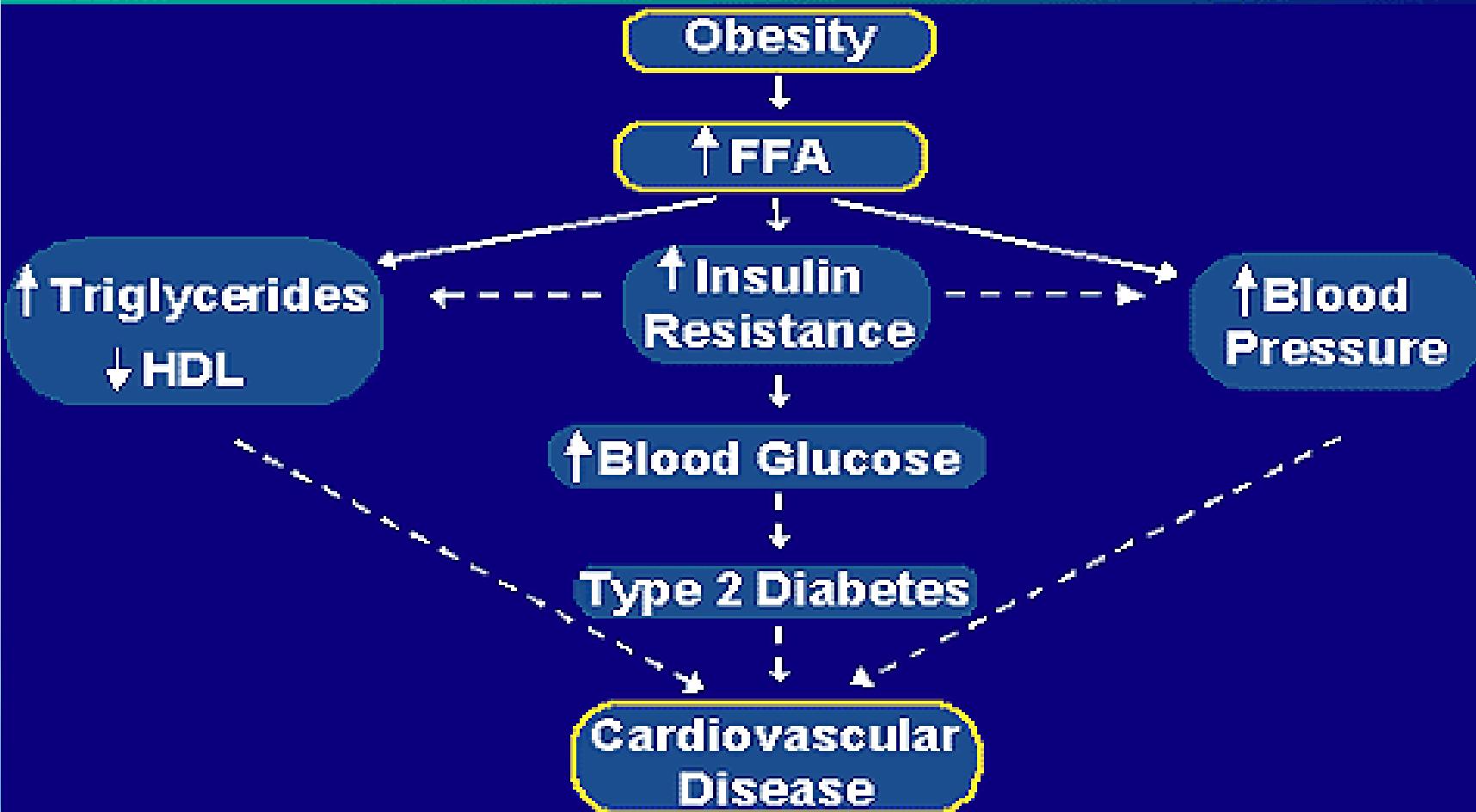
# PATHOPHYSIOLOGY:-

## PATHOPHYSIOLOGY

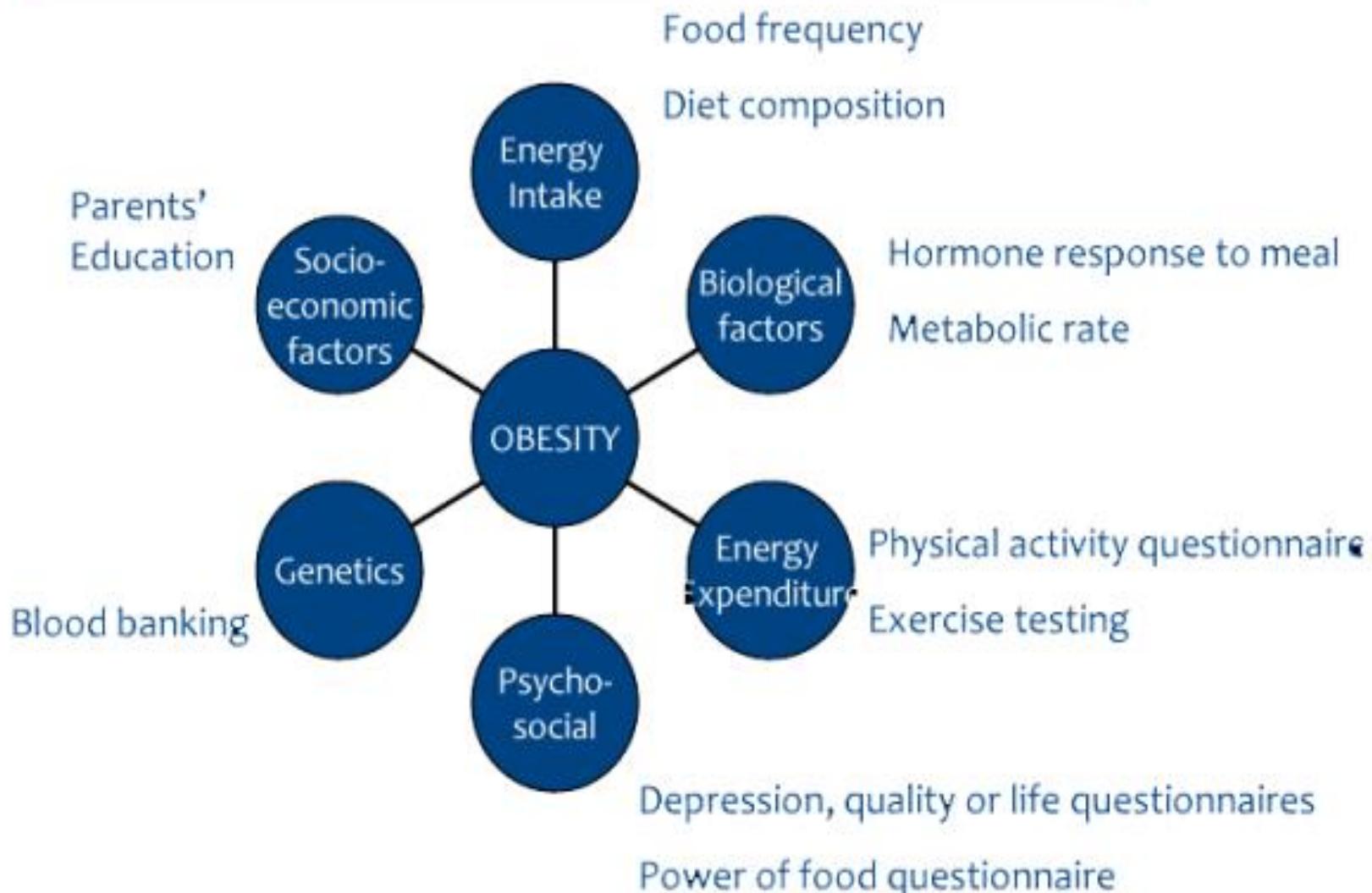


# *Obesity is the major factor causing Obesity*

## Metabolic Syndrome: The Role of Obesity

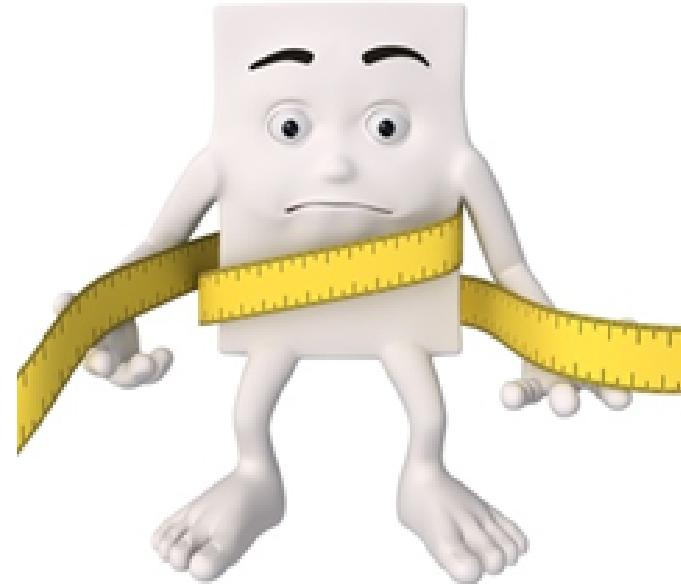


## Factors contributing to obesity



## Risk Factors of Metabolic Syndrome and Type 2 Diabetes:

1. Obesity with waistlines over 40 inches for males and over 35 inches for females
2. High or low blood sugar
3. Elevated BMI (body mass index) greater than 30
4. Elevated triglycerides
5. Low levels of “good” cholesterol – HDL
6. High blood pressure/hypertension



# Metabolic Syndrome: Cluster of Metabolic Risk Factors

## Definition

- Atherogenic dyslipidemia ( $\uparrow$ TG,  $\uparrow$ apo B,  $\downarrow$ HDL)
- Elevated BP
- Elevated glucose
- Prothrombotic state
- Proinflammatory state

## Diagnosis (3 of 5)

- Waist circumference ( $\geq 102$  cm, M;  $\geq 85$  cm, F)
- TG  $\geq 150$  mg/dL
- HDL-C  $<40$  mg/dL, M  
 $<50$  mg/dL, F
- BP  $\geq 130$ /or  $\geq 85$  mm Hg
- Glucose  $\geq 100$  mg/dL

- ❖ There is no singular therapy for treating metabolic syndrome.
- ❖ Therapy is given according to patients condition and compatibility.

### **For *HYPERTENSION*:-**

High blood pressure medicines like

- ACE inhibitors(Captopril and enalpril)
- Angiotensin 2receptor blockers(Losartan and Valsartan)
- Diuretics(Thiazides,Furosemide)
- Beta blockers(Atenolol,Propranolol) are widely used.

### ***CHOLESTEROL Medicines***

#### **❖ *Statins***

(Rosuvastatin,Fluvastatin,Atorvastatin,Lovastatin,Pravastatin and Simvastatin)

Cotd....

- ❖ **Niacin**(Niacor,Niaspan and Nicolar)
- ❖ **Bile Acid resins**(Colestyramine and Cholestipol)
- ❖ **Diabetes medicines**:-include Glucophage, Pioglitazone and Avandia.
- ❖ Low dose aspirin may reduce the risks of heart attacks and stroke.
- ❖ Healthy diet
- ❖ Exercise

# CASE PRESENTATION



## Subjective data:-

- ❖ A 32 year old obese(89kgs) female patient presented with complaints of fever, chills, rigour and nausea since 5 days
- ❖ She has a h/o *HYPERTENSION* since 3 years and is on **Tab.Amlokind-5mg**, *DIABETES MELLITUS*(type 2) since a year on **Tab.Glycomet-500mg**.
- ❖ Patient is a chronic alcoholic since 5 years.

## Objective Data:-

❖ When the physician examined the patient:-

Temperature:-102°F

B.P:-130/80 mmHg

Pulse Rate:-68bpm

The patient was ordered to undergo:-

### ➤ Complete blood picture

Peripheral smear showed the evidence of Thrombocytopenia.

### ➤ Blood sugar levels showed:-

Glucometer measured blood sugar levels were:-

➤ RBS(Random blood sugar level):-**246mg/dl**

➤ FBS(Fasting blood sugar level):-**203mg/dl**

Contd...

**Complete Urine Examination:-**It revealed  
colour:-Yellow

Appearance:-**Hazy**

Albumin:- **++**

### **Lipid Profile(DAY 3)**

Total Cholesterol :-241

**HDL**:-**38(↓)mg/dl**

LDL:-137mg/dl

VLDL:-**66mg/dl**

TG:-**333mg/dl**

ESR:-**62mm/hr**

### **Clinical Biochemistry:-**

**HbA1C:-13.5%**

**Cotd.....**

## Day wise Assessment:-

### Day 1

- Patient was conscious.
- B.P:-130/80 mmHg
- Pulse Rate:-66bpm

### Complaints & Observation:-

- ❖ Slurring of speech
- ❖ Weakness,dizziness.
- ❖ GRBS:-588mg/dl

### MEDICATIONS:-

Tab.Dolo(650mg),BD

Tab.Pan(40mg),OD

Inj.Optineuron with 100ml Ns

Inj.H.mixtard

Tab.Caripill,TID

## Tab.Dolo-650mg,OD

❖ It is an anti-pyretic drug

Possible ADR`S:-

Thrombocytopenia, leucopenia, pancytopenia, neutropenia.



Inj.Optineuron:-

It is a complex of VitB+Vit C

It is the source of vitamins to the body.

## Tab.Pan-40mg,OD

Inhibits gastric acid secretion.

❖ Possible ADR`S:-

Headache, dizziness, nausea, vomiting, abdominal pain



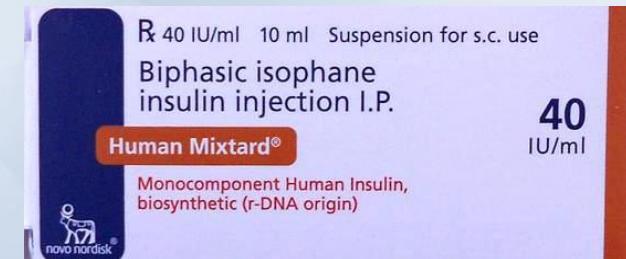
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## Inj.H.Mixtard:-

❖ Insulin lowers blood glucose levels.

### Possible ADR's:-

Hypoglycaemia, insulin resistance



## IV FLUIDS-(normal saline):-

It is important in electrolyte and fluid balance.

Contd....

## Day 2:-

- ❖ Patient was conscious and weak.
- ❖ B.P:-130/80 mmHg
- ❖ Temperature:-Normal

### Complaints:-

- Tremors

### Medication:-

- Inj.H.Actrapid
- Inj.Neurobin-1amp,OD
- Inj.Taxim-1gm,BD
- Inj.Pan-40mg,OD
- Tab.Dolo-650mg,sos
- Tab.Amlokind-5mg,OD
- Tab.Caripill,TID

## Inj.H.Actrapid(Insulin):-

❖ Insulin lowers blood glucose levels.

❖ Possible ADR's:-

Hypoglycaemia, insulin resistance.



## Inj.Neurobin(Mecobalamin ):-

❖ Mecobalamin is the neurologically active form of vitamin B12 and occurs as a water-soluble vitamin in the body.

Possible ADRs:-

❖ Anorexia, nausea, vomiting and diarrhoea.



Contd....

## Inj.Taxim:-

❖ Cefotaxime is an Antibiotic

❖ Possible ADR`s:-

Hypersensitivity reactions, rash, pruritus; diarrhoea, nausea, vomiting.

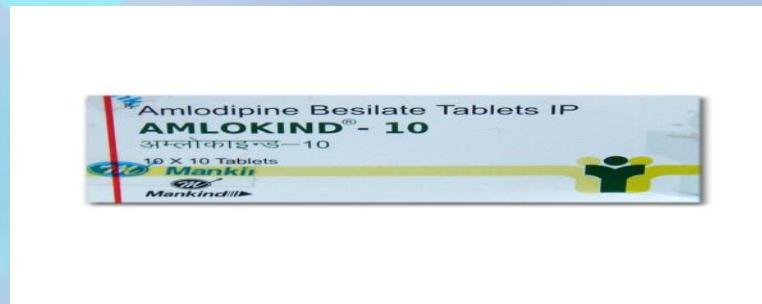


## Tab.Amlokind:-

Amlodipine relaxes peripheral and coronary vascular smooth muscle

Possible ADR`s:-

❖ headache, ankle swelling, oedema



Contd....

## Day 3:-

- ❖ No fresh complaints.
- ❖ B.P:-130/80mmHg

## Medication:-

- ❖ Inj.Neurobin-1amp,OD
- ❖ Inj.Taxim-1gm, BD
- ❖ Inj.Pan-40mg,OD
- ❖ Tab.Amlokind-5mg,OD
- ❖ Inj.H.Actrapid
- ❖ Tab.Rosuvas 1tab, BD

## Day 4

No fresh complaints.

### Medication:-

- ❖ Tab.Amlokind-5mg,OD
- ❖ Tab.Rosuvas-100mg,OD
- ❖ Tab.Glycomet-TID
- ❖ Tab.Pan-40mg,OD
- ❖ Tab.Neurobin-100mg,BD
- ❖ Inj.H.Mixtard
- ❖ Tab.Caripill,TID

## Day 5:-

Complete blood picture was done.

Thrombocytopenia was identified.

Glucometer measured GRBS-194mg/ml

## Medication:-

- ❖ Tab.Caripill-TID
- ❖ Tab.Amlodipine-5mg,OD
- ❖ Tab.Rosuvastatin-100mg,OD
- ❖ Tab.Glycomet-TID
- ❖ Tab.Pan-40mg,OD
- ❖ Tab.Neurobin-100mg,BD
- ❖ Inj.H.Mixtard

## Day 6:-

- ❖ Complete blood picture was done.
- ❖ Thrombocytopenia was found to be recovered.
- ❖ Glucometer measured GRBS value was 161mg/dl

## Observation:-

- ❖ Platelet count was stabilised.
- ❖ Blood sugar levels were stabilised too.

## Day of Discharge:-

### Observation:-

Patient`s platelet count and blood glucose levels were stabilised.

Patient was feeling better.

### Medication:-

Inj.H.Mixtard-12U s/c

Tab.Glycomet-500mg,TID

Tab.Amlokind-5mg,OD

Tab.Rosuvas-1tab,OD

Tab.Neurokind-10mg, BD

Tab.Pan-40mg,OD

## **ROLE OF PAHARMACIST:-**

- ❖ Patient was monitored regularly and all the data related to case was noted.
- ❖ Patient Counselling was done.
- ❖ She was given instructions:-
  - Related to diet
  - Physical activity
  - Frequency of drugs
  - Do not miss the dose, if missed do not double it the next tyme.
  - Consult the physician if necessary.

THANK YOU ☺