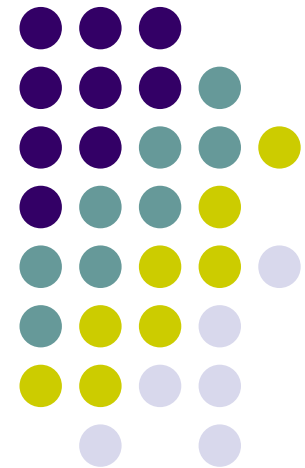


METABOLIC SYNDROME

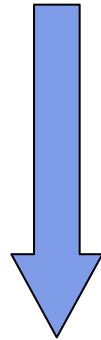
NEJIB BEN ABDALLAH

September 2005





Diabetes and Obesity were often associated to others clinical and biological abnormalities



METABOLIC SYNDROME

**METABOLIC SYNDROME SHOULD BE
SCREENED AND TREATED PRECOCIOUSLY
FOR 4 REASONS :**



- 1. ITS HIGH PREVALENCE**
- 2. INCREASE OF CVR THAT ENGENDER**
- 3. OFTEN UNRECOGNIZED BY PRACTITIONERS**
- 4. CAN BE PREVENTED AND TREATED**

EPIDEMIOLOGY

POSITIVE RELATION BETWEEN

CENTRAL OBESITY

HYPERINSULINEMIA

AND HYPERTENSION



WERE HIGHEST IN SUBJECTS WITH CHD

EPIDEMIOLOGY



MS PREVALENCE DEPENDS ON ETHNIC GROUPS AND DEFINITIONS

MS INCREASES WITH AGE AND IS MORE FREQUENT IN MEN THAN WOMEN

MS ACCOMPANIES T2 D IN MORE THAN 70% OF CASES

MS IS MORE FREQUENT IN URBAN THAN RURAL AREAS

CANADIANS SUGGEST 2 EASY PARAMETERS :

- TG Level
- Waist circumference

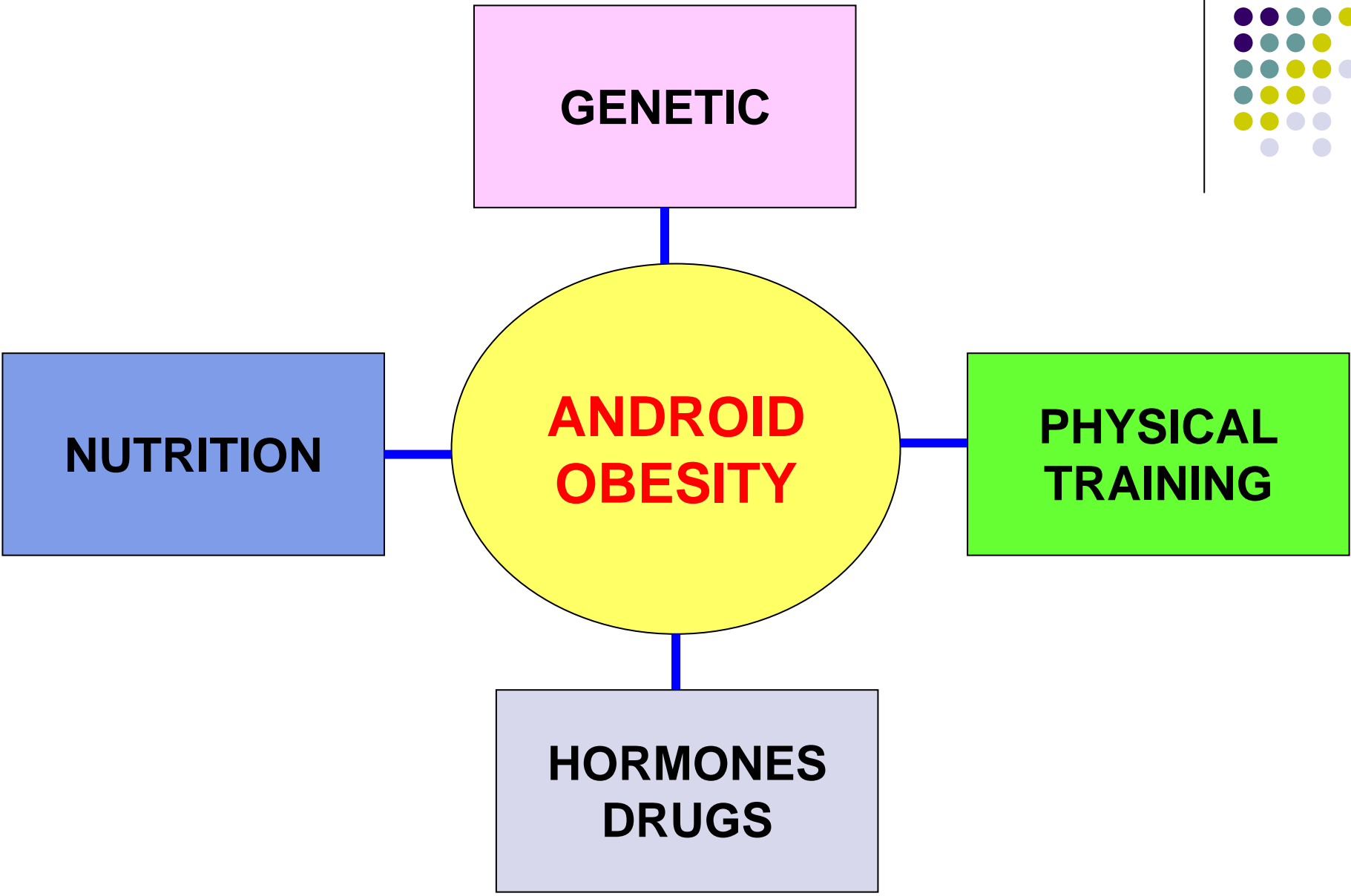


165 voluntary men : **80 %** of those
with TG > 1,8 g/l and wc > 90 cm
had 3 CVRF

- hyperinsulinemia
- hyper Apo B
- small - dense LDL

vs

10% of men with normal TG and wc





**ANDROID
OBESITY**



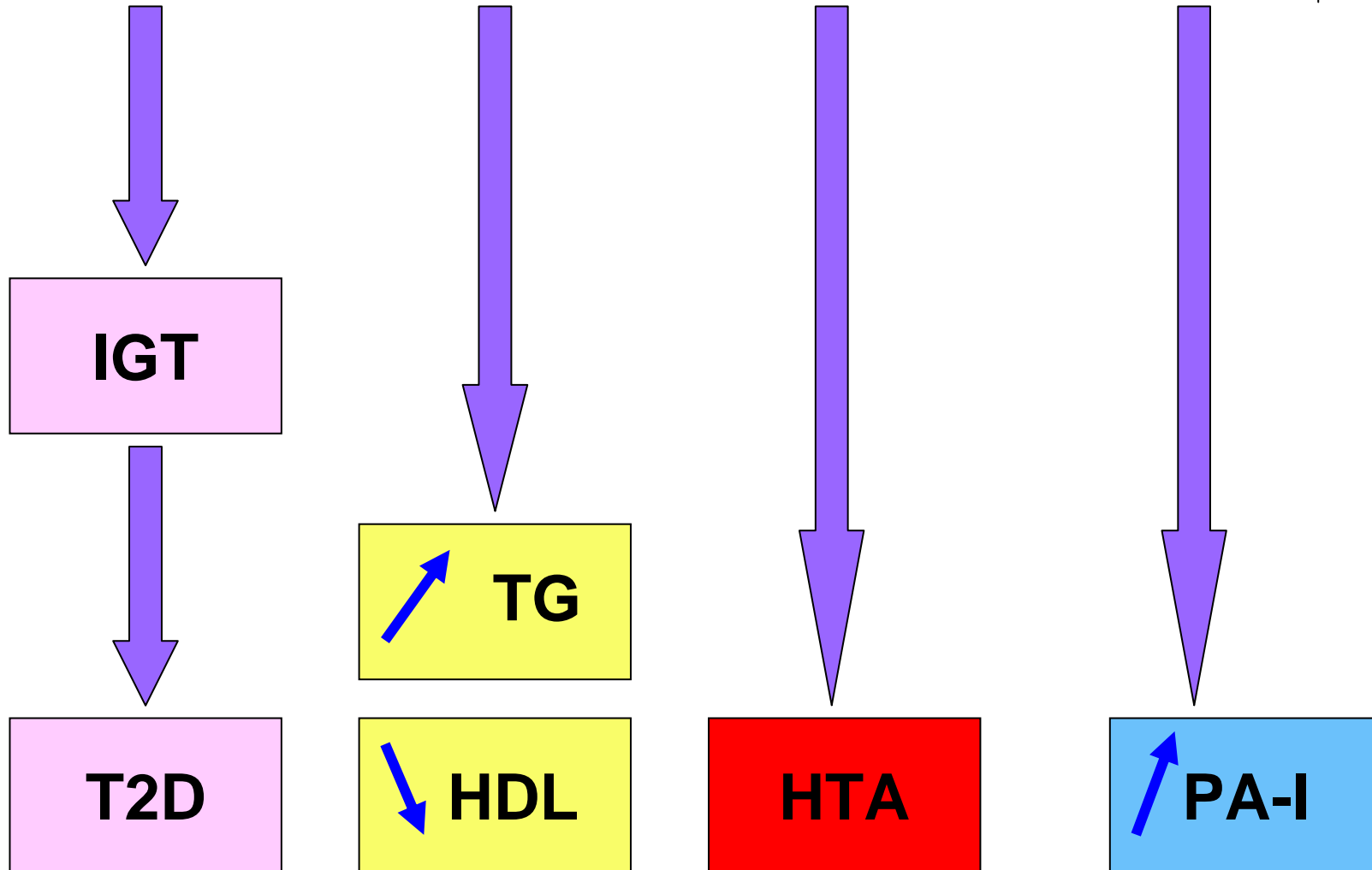
**INSULIN
RESISTANCE**



**HYPER
INSULINEMIA**

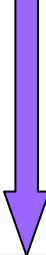


HYPERINSULINEMIA

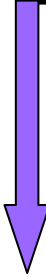




VISCERAL FAT
↑
LIPOLYSYS

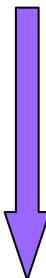


↑
FFA



LIVER

↑
TG



LIVER

↑
**NEO
GLUCOG**



PANCREAS

LPOTOXICITY

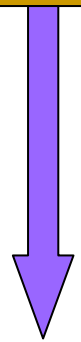


MUSCLE

↓
**GLUCOSE
UPTAKE**



LIVER

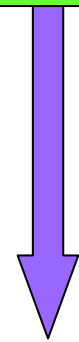


**STEATOSE
(NASH)**

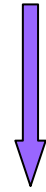


**transaminases
and GGT**

MUSCLE

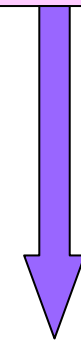


**INFLOW
FFA**



I R

PANCREAS



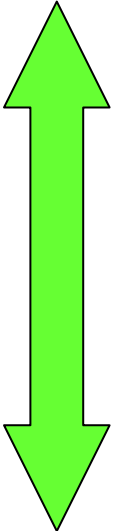
**INFLOW
FFA**



**INSULIN
SECRETION
IMPAIRMENT**



PREVENTION +++



**LIFESTYLE
PROMOTION**



**LIFESTYLE
PROMOTION**



**WEIGHT
REDUCTION**



**INSULIN RESISTANCE
REGRESSION**



TREATMENT

1st STAGE :

Evaluation of MS components
and global risk :

- **Smoking**
- **LDLc > 1,90 g/l**
- **BP > 14/9**
- **BMI \geq 30**



TREATMENT

SECOND STAGE :

1. **Stop smoking**
2. **Change nutritional habits directed for reduction of global caloric intake**
3. **Practise regular physical training**



MS TREATMENT

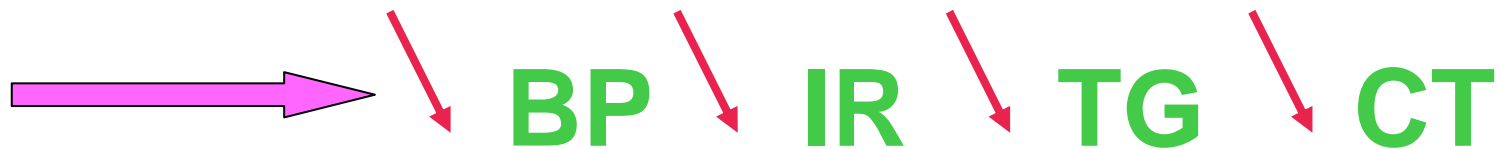
NUTRITIONAL CHANGES

- eat 5 times/d vegetables and fresh fruits**
- Fiber consumption : 30 gr / d**

NUTRITIONAL CHANGES



**Weight reduction
improves insulin
sensitivity**



**Recommend low glycemic
index foods**

M S TREATMENT



NUTRITIONAL CHANGES :

Reduction of global

energetic intake : 1800 kc/j

Carbohydrates : 40 - 50%

Fats : mono insat 15 %

poly insat 8 %

saturated 7 %

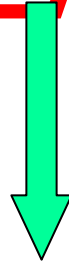
NUTRITIONAL CHANGES



- Eat fish 2/3 times / w
- Reduce intake of red meats
- use olive oil and avoid salted foods



MS TREATMENT



REGULAR PHYSICAL ACTIVITY

Improves Insulin sensitivity

MS TREATMENT



REGULAR PHYSICAL ACTIVITY

- Physical activity adapted for age and CV state.
- 30 to 60 mn walking /d or cycle ...
- Don't take elevator

IT IS ESSENTIAL TO MOVE

MS TREATMENT DRUGS



METFORMINE

FIBRATES

GLITAZONES

STATINES

ORLISTAT

ACE inhib

ACARBOSE

ASPIRINE

ANTI-OXYDANTS

Gastric ring

Gastric by pass

NEW DRUG



Rimonabant (5 mg – 20 mg)

→ ↓ wc ↓ weight

→ Improves lipid parameters
independently of weight loss

Lancet 2005, 365 ,1389 – 1397

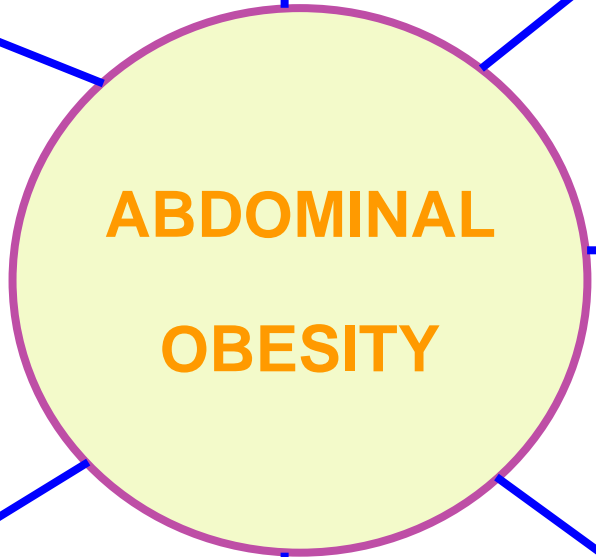


**TG,HDL
SMALL D LDL**

HTA

**LEFT VENTRICULAR
HYPERTROPHY**

**ENDOTHELIAL
DYSFONCTION**



**I R, IGT
DIABETES**

**PROTHROMBOSIS
STATE**

**INFLAMM
RESPONSE**

**HYPER
FILTRATION**

**ABDOMINAL
OBESITY**

**WE MUST THINK ABOUT MS
AT EVERY :**



- SEDENTARY PERSON**
- WITH ANDROID OBESITY**
- CVRF**

MS SCREENING IS EASY :
WC + TG LEVEL

**WC IS A GOOD SURROGATE
MEASURE OF VISCERAL FAT**



**THE BEST WAY OF PREVENTION
AND TREATMENT.**

IS

**NUTRITIONAL CHANGES AND
PROMOTION OF HEALTHY L.S**