**U need to study slide and read these notes that dr mentioned it .**

**Obesity**

**slide 2 :**

Obesity: Fat ratio in the body exceeds its limit, it also defined as disorder defect body weight regulatory system, and many of causes lead to it.

Obesity: have excessive accumulation of body fat.

What the causes that leads to obesity nowadays?

1. Change of life style (technology effect).
2. Change type of food (food more available).
3. No physical effort.
So it need for store energy in fat form.

What the benefit of fat tissue in our body? For energy and metabolic rate and other causes.

Obesity increase with age which can lead to increase probability to have cardiovascular disease

Childhood obesity: increase dramatically in the past 20 years.

Obese people more than malnutrition people.

**Slide 3 :**

 What the criteria of obesity?

1. **BMI**: general in males and females >> check the slide
2. **Waste- hip ratio:**
 it considers better indication for obesity because:
1- it takes consideration about the difference between males and females in the fat around the waste.
2- The muscular people have a heavy weight.

**Slide 4**So according to waste – hip ratio, the obesity divide into:

1. Upper body obesity: android, fat in abdominal region, distribute in males more than females, associated with many disease. it called obesity when waste – hip ratio more than .8 for female and 1 for males
2. Lower body obesity: pear shape: the waste – hip ratio less than .8 for women and less than 1 for men, accumulates fat in gluteal region, not associated with disease, safe.

 **3- Biochemical differences in regional fat depots : Slide 5**

Abdominal fat : cell is bigger , turnover of the cell more than gluteal region and hips so this tell why men when go on diet their weight decrease faster than women , because turnover of fat cell in abdominal region is much higher .

hormonally , it is more responsive ; effect by hormone more because it located beside portal vein which facilities the entrance of fat to portal vein then to liver where the fatty acid convert and may give cholesterol and triacylglycerol and then carried by blood , the excess will transport in LDL protein which associated with a lot of disease .

The mobilization of fat in the gluteal region is low, it will go to systemic circulation and distribute equally in the body, So less disease.

**slide 6 :**

Number of fat cell: when it reach Specified level, it will divide more and give another cells.

 once it form it will stay for all life.

the division rate for children is more than adult .

the problem that face people who is obese , they have a lot cells more than normal people so when they go to diet , the fat cell will decrease its size but its quantity will be same , so when they become lean , they easily comeback to be fat .

**Regulation of obesity :
slide 8 :**

1. **Genetic contributions to obesity: -**Obesity not just related to food intake or life style , it also related to genetic reason over long period of time .

-How to be sure that genetic can cause obesity?

-There are more than observation:

1. If the parents was obese then their offspring will be obese in 80% percentage
2. If the parent was lean and their children becomes obese >> low percent around 9%

-Heritance of obesity controlled by more than one gene . !! مو متاكدة من هاي الجملة

-Adopted children (الاطفال المتبنيين ) like original parent according to obesity

-Identical twins have more or less similar BMI .

**slide 9 :**

**B. Environmental & behavioral Contributions:**

Drift over the past 20 years not enough to change the obesity gene, so there is another reason, which contribute to obesity, which is environment.

Portion size: u eat more when u eat with people .

Japanese people who travel to California, their BMI become 24.

**Hormones of adipose tissue: slide 11**

-**Leptin**; produced by fat cell itself to decrease its size.

-Proportional to adipose mass > when the fat cell increase or its size increase, the Leptin secretion will increase and when the fat cell size decrease Leptin will also decrease .

When Leptin decrease >> give message to hypothalamus to increase food intake and decrease energy expenditure and vice versa.

When they discover Leptin, they found it in mice and called it “ob” gene, and make this experiment; they remove ob gene - which form Leptin- from one mice, and then found that it become bigger and more obese, then they give daily Leptin injection and found that the mice come back to its normal weight

They found amount of Leptin in the obese plasma is more or less normal and correlate with their body weight this lead them to think there is Leptin receptor resistance as what happen in diabetic patient .

**Metabolic Changes Observed in Obesity: Slide 12**

1. **Metabolic syndrome** : more than one factor that collect to each other , it is syndrome that effect metabolism there will be Glucose intolerance, Insulin resistance, Hyperinsulinemia.
-Increase VLDL : because the excess of fatty acid and cholesterol and triacyl glycerol quantity which collect by liver and so increase VLDL .
2. **Dyslipidemia** : Increase of glucose in blood and inability to control its level normal, so insulin resistance then cell will not response insulin this lead to increase plasma insulin which lead to increase hormone sensitive lipase, which break triacylglycerol to glycerol and fatty acid that accumulate in liver form VLDL which associated with all bad disease such as cardiovascular diabetes
3. U can notice from the graph that HDL decrease when the BMI increase and this correlate with increase of triacylglycerol and cholesterol.

**Slide 13 :**

-To be function well in old age, the body mass should be less.

-The relationship between mortality and BMI stronger for <55 years.

-MI is dangerous to children, it is fatal , but with elder people it is less dangerous .

- After age 74, there is no association between increased BMI & mortality , because the metabolism become very low .

**Weight Reduction**: **slide 14**

1. **Physical activity** :
2. **Caloric restriction** : it is difficult ,
when u go on diet , u do physical activity , ur weight will decrease from 5- 10 % u need 4- 6 month
3. **C. Pharmacologic & surgical treatment** :

Orlistat : decrease digestion of fat , so decrease absorption so decrease body weight

1. **Surgical procedures** **: slide 15**
* Fewer amounts will eat
* There will be complication >> if the food don’t go to stomach then will be an adherence between GI >> and any injury to GI that difficult to heal it .
* Bypass procedure from neck to intestine directly or ربط عنق للمعدة
* Injection for hormone not as much as effective .

كن جميلا وابتسم .. انها المحاضرة الأخيرة ، بتمنى انها تكون مفيدة وما يكون فيها اخطاء .

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