Chapter (12)

Visceral Obesity: Clinical & Laboratory Workup

Authors

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- Weight history
- Dietary history
- Physical activity history
- Obesity related health risks: medical complications related to obesity
- Assessment of global cardiovascular risk
- Screening tools to identify high risk abdominally obese individuals
    - Waist circumference measurement as a screening tool
- Metabolically innocent obesity and metabolically obese normal weight
- Assessment of ability to loose weight

SUMMARY

- Clinical evaluation aims to identify both the presence and degree of visceral adiposity and the magnitude of associated cardiovascular risk.
- History taking should emphasize duration of obesity, global cardiovascular risk status, and previous trials to lose weight.
- Examination should focus on quantification of obesity and determination of the body mass index (BMI), measurement of waist circumference using standardized technique, as well as a systematic examination to assess global cardiovascular risk.
- There are no specific lab tests that are employed routinely in patients with visceral obesity, but estimation of fasting glucose and plasma lipids are necessary.

AIM OF CLINICAL & LABORATORY ASSESSMENT

- Identification of visceral obesity
- Identification of weight, diet and activity
- Identification of obesity related health risks
- Assessment of global CVS risk
- Waist circumference measurement
- Identification of metabolically innocent obesity
- Identification of metabolically obese normal weight
- Assessment of the ability to lose weight

HISTORY

1- *Identification of visceral obesity*: Many viscerally obese persons do not see themselves as such. Belt size is a poor measure of waist circumference. Most, however will respond to questions about weight added lately and change in clothing size. Many patients cite alternative explanations for a large belly; gas, weak muscles, repeated childbirth, and recent food intake are common examples.

2- *Assessment of global cardiovascular risk*: Overall cardiovascular risk is a major predictor of future events and of the cost-effectiveness of intervention. Both the number of components and the magnitude of each

component of the metabolic syndrome as well as other major CVD risk factors (which are not part of the metabolic syndrome) play a role in the overall risk.

3- *Weight and diet history:* most obese and overweight persons have a history of trials to lose weight, usually repeated, with variable rates of long and short term success. Many have used drugs (appropriate or inappropriate) to help dieting. Few will have resorted to gastric or fat removal surgery. Knowledge of past trials can help to guide decision about further action.

4- The following points need also to be clarified during history taking.

   a- Dieting episodes: type, number, duration, effects.
   b- Use of appetite control drugs
   c- Use of other drugs: Orlistat, metformin, diuretics, laxatives, thyroxin, and herbal preparations
   d- Use of exercise and other physical activity
   e- Use of gastric surgery, lipectomy, and liposuction
   f- Effect on weight: max weight loss, duration the loss was maintained
   g- Perceived causes of failure
   h- Habbits:
      - Binge and nocturnal eating
      - TV watching while eating
      - Snacks, sweets, salt, carbohydrates, carbonated drinks
      - Smoking
      - Alcohol
      - Physical activity

5- *Family history:*

   a- Obesity
   b- Diabetes
   c- Hypertension
   d- Premature CVD

6- *Drug history:* Several drugs may induce obesity or make weight loss difficult. Table (1)

Table 1: Drugs that cause weight gain and alternatives

Category	Drugs that cause weight gain	Possible alternatives
Neuroleptic drugs	Thioridazine; Olanzepine; Clozapine; Quetiapine; Risperidone	Molindone; Haloperidol; Ziprasodone; Aripiprazole
Anti-depressant drugs		
Tricyclics	Amitriptyline; Nortriptyline	Protriptyline
Alpha-2 antagonist	Imipramine	Bupropion; Nefazadone
	Mitrazapine	Fluoxetine; Sertraline
Selective serotonin reuptake inhibitors	Paroxetine	
Anti-convulsant drugs	Valproate; Carbamazepine; Gabapentin	Topiramate; Lamotrigine; Zonisamide
Anti-diabetic drugs	Insulin; Sulfonylureas; Metiglinide	Acarbose; Miglitol
	Thiazolidinediones	Metformin
Anti-serotonin drugs	Pizotifen	
Antihistamines drugs	Cyproheptidine	Inhalers; decongestants
Beta-adrenergic blockers	Propranolol	ACE Inhibitors;
Alpha-adrenergic blockers	Terazosin	Calcium channel blockers
Steroid hormones	Contraceptives	Barrier methods
	Glucocorticoids	Non-steroidal anti-inflammatory drugs
	Progestational steroids	

7- *Associated conditions*:

a- Depression:

- Major vs. minor
- Past vs. present
- Duration of therapy
- Basic screening questions :
  - Unexplained sadness lasting > 2w during the past 6M
  - Lack of pleasure from previously pleasurable activities
- Drug-related depression

b- Sleep apnea clues:

- Snoring
- Somnolence
- Witnessed interrupted breathing during sleep.

c- Polycystic ovary syndrome clues:

- Amenorrhea
- Hirsutism

EXAMINATION

1- Biometric (Anthropometric) measurements:

- Height and weight, BMI
- Waist circumference : The technique is illustrated in fig 1. Waist circumference particularly adds risk when the BMI is = 30 kg/m2

2- BP measurement using appropriate technique and repeated measurements.

3- Evaluation of closely related associated conditions:

a- Sleep apnea

b- Osteoarthritis

c- Non-alcoholic steatohepatosis (NASH)

d- Acanthosis negricans

e- Polycystic ovary syndrome

f- Other endocrinal causes e.g. Cushing syndrome, myxedema.

A simplified form (Fig 2) can be used for recording the important findings in the history and examination.

LABORATORY WORKUP

1- Fasting plasma glucose

2- Lipid levels

3- Creatinine

4- *If diabetic*: HbA_1C and urine for microproteinuria.

5- *ECG*: If hypertensive, diabetic, or above 40 years or whenever indicated.

6- *Not required for routine evaluation, done only when there is clear indication*:

   a- Echocardiography [unless for a specific indication]

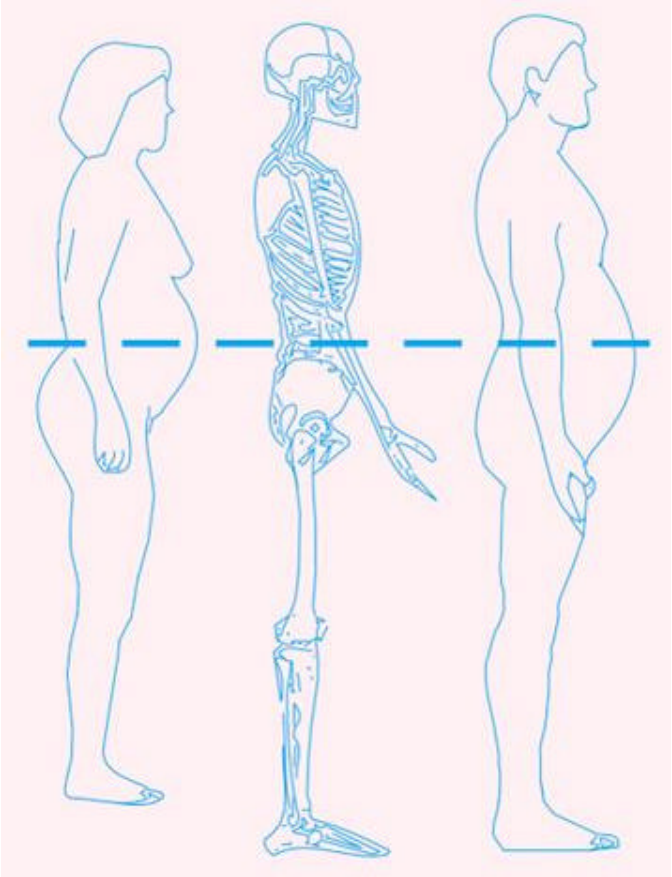
   b- Abdominal imaging [unless for a specific indication]

   c- Emerging risk factors, adipokines and inflammation markers

   d- Carotid IMT (intima-media thickness)

   e- Microalbuminuria

Fig 1 : Waist circumference measurement



Measuring-tape position for waist circumference in adults. Locate the upper hip bone and the top of the right iliac crest. Place a measuring tape in a horizontal plane around the abdomen at the level midway between tip of the iliac crest and lower costal rib margin. Before reading the tape measure, ensure that the tape is snug, but does not compress the skin, and is parallel to the floor. The measurement is made at the end of a normal expiration.

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Fig 2 : Clinical and laboratory data for evaluation of overweight patients

Height, in or cm _____

Weight, lb or kg _____

BMI, kg/m2 _____

Waist circumference, in or cm _____

Weight at age 18-20 _____

Weight gain since 18-20 _____

Blood pressure SBP/DBP, mm Hg _____

Serum trigclyceride, mg/dL or mmol/L _____

Serum Hdl-cholesterol, mg/dL or mmol/L _____

Fasting blood glucose, mg/dL _____

Are there symptoms of sleep apnea? _____

Are there medication(s) that increase body weight? _____

Is there regular physical activity? _____

Are there other etiologic factors? _____

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