Weight Control, Diets and Metabolic Syndrome

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Meet George
The Curious Case of George

• 45 yo WM DOS Employee x 18 years

• Comes with a variety of nonspecific complaints, but his wife says the following:
  - Eats too much and gets too little exercise
  - Complains of constipation
  - He snores really loudly and then seems to stop
  - Family history of heart problems and father had Colon Cancer diagnosed when he was 54 years old

Do Not Confuse With…
**George’s Physical Exam**

- Height 5’10”  Weight 250 lbs  Waist 44 in
- BP 160/100  P 90  R 18
- CBC  WBC = 5,000;  H/H = 12/36;  MCV 78
- Comprehensive Metabolic Panel  
  - Normal except ALT 60 and AST 70
- Labs  T Chol 300, HDL 35, Trig 200 (all mg/dL)
- Glucose  Fasting 135mg/dL

**What are George’s Diagnoses?**

- Hypertension
- Hyperlipidemia and low HDL - ?CAD
- Mild LFT elevations
- Fasting hyperglycemia
- New constipation with family history of colon cancer
- Snoring and possible sleep apnea
- OBESITY
- and Metabolic Syndrome !!!!
**Metabolic Syndrome**

- **Always Present:**
  - Excess abdominal fat (Note change!)
    - Waist circumference
      - > 37 inches in men
      - > 31 inches in women
  - And 2 or more of the following:
    - Hypertriglyceridemia > 150mg/dl
    - Low HDL cholesterol
      - < 40mg/dl men
      - < 50mg/dl in women
    - High blood pressure > 130/85mmHg
    - High fasting glucose
      - >100mg/dl* or a diagnosis of Type 2 Diabetes

*Note: ADA definition is now a fasting blood sugar of 100mg/dl
International Diabetes Federation. April 2005

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**Metabolic Syndrome - 2**

- The roots of the Metabolic Syndrome in the U.S. for the majority of patients are improper nutrition and inadequate physical activity.

- Less than 27% of all American adults are physically active enough to gain health benefits of an active lifestyle!

- >250,000 deaths from lack of activity
Treating Metabolic Syndrome

- Lose weight if you’re overweight
- Choose healthy carbohydrates
- Cut down on sodium
- Limit alcohol
- Regular exercise – KEY – even if it does not cause weight loss, it can increase insulin sensitivity and will have cardiovascular benefits

A Weighty Problem

- 64% of Americans are now either overweight or obese
- Obesity-associated mortality is second only to smoking as a preventable cause of death
- The cost of medical care for obese patients is about 38% higher than normal weight persons
**Fact #1**

*Obesity Comes From Excess Calories*

- Genetic factors responsible for 40% of variance in body mass
- Decreases in energy expenditure with increased caloric intake are responsible for the epidemic
Role of Genetics

• Genetics does play a role, but environment is more important for most people.

Lavoisier 1780

\[ \Delta E = Q - W \]

Change in Energy = Intake - Work
Weapons of (Body) Mass Destruction

Fact #2

Obesity is a Chronic Disease

• Determine BMI (Body Mass Index)

• BMI = kg/m²
  – Use tables, PDAs, etc.

• BMI is highly correlated with body fat

• Obesity needs treatment like diabetes, hypertension and hyperlipidemia – lifelong attention
Body Mass Index - BMI

• Should be determined on every patient seen in the office or hospital

• Patients will listen to their physicians if they bring up the subject of obesity

• Patients with heart disease pre and post MI may be emotionally ready to hear that they need to change their lifestyle

BMI = Weight (kg) / height (m²)

- Overweight 25 - 29.9
- Obese ≥ 30
- Morbidly obese ≥ 40

Waist Circumference* - High risk

- Men > 102cm (40 in)
- Women > 88cm (35 in)

* May need to be lowered for groups or individuals (e.g., Asian-Americans) who are known to have a higher incidence of insulin resistance
Fact #3
Obesity Treatment is Difficult!

• Set reasonable goals
  – 5 - 10% of starting weight does have beneficial medical consequences

• Set a weight that patients can obtain and MAINTAIN

Where is the Rocket Science??
Losing 1 Pound

• To lose one pound of excess body fat
  – 3,500 Kcal must be used

• This can be from a decrease in intake of calories, an increase in expenditure of calories or combination of both!

• A decrease of 500 Kcal per day
  – Yields a 1 lb weight loss per week
Treatment Modalities for Obesity

- Acupuncture
- Exercise
- Behavior Modification
- Herbals
- Intragastric Balloons
- Quick Fixes
- Diet
- Drugs
- Hypnosis
- Jaw Wiring
- Liposuction
- Surgery

Methods of Obesity Management

- Diet
- Exercise
- Behavior Modification
- Pharmacologic Interventions
- Surgery
Fact #4
No Single Diet Regimen is Best

• Diet – Cornerstone of obesity management
• The true key is the number of calories consumed in relation to the amount of energy expended
• High carbohydrate vs low carbohydrate?
• Consider having a Registered Dietitian available to your patients or for Diabetic patients have a Diabetes Educator
• More diet details shortly

Fact #5
Exercise – Best Predictor

• Exercise is the best predictor of the long-term ability to keep weight off
• Compliance – largest obstacle in increasing long-term physical activity
• More concepts in a later lecture
Behavior Modification

- To be successful, behavior must change long term

- Individual therapy, group therapy, etc

- For inspiration - Good and Bad – I suggest
  - Watch the movie “Supersize Me”
  - Watch the TV Series “The Biggest Loser”

Fact #6
We need more and safer Rx

- After Fen/Phen, it is clear that the risks and benefits of pharmacotherapy must be carefully evaluated for each patient

- Just because an ingredient is OTC does not necessarily mean that it is safe
  - e.g. ephedra and phenylpropanolamine (PPA)

- Many issues need to be considered …
Medication Considerations

• Limited options!

• Side effect profiles

• Length of Rx – FDA...

• Cost of treatment
  – covered by insurance?

• What to do with non-responders?

• How to maximize success

Is Natural Safe??

• Let the buyer BEWARE!!

• Ephedra and PPA have been taken off the market
  – But still can be found

• Weight Loss dietary supplement found in Stacker 2
  Ephedra-Free contains the stimulant Bitter Orange
  – Also known as synephrine has been linked to stroke
Current Pharmacologic Options

• OTC – with and without ephedra
• Phentermines  CIV
• Phendimetrazine  CIII
• Diethylproprion  CIV
• Sibutramine  CIV
• Orlistat (Xenical)
  – Not restricted ? liver issues
• Alli
  – OTC orlistat
• Rimonabant (Acomplia)
  – NDA withdrawn 10/08

Fact #7
Surgery Not As “Bad” As You Think

• BMI > 40

• BMI 35 - 39.9 with one or more obesity-related complications

• Choose your surgeon carefully!!
Surgical Spin

- At present, no therapy other than surgical intervention offers obese humans successful treatment on a reliable basis

- Only bariatric surgery provides substantial long term weight reduction

Co-Morbidity Reduction After Bariatric Surgery

- Headaches 57% resolved
- Paresthesia control 50% resolved
- Dyslipidemia, hypercholesterolemia 65% resolved
- Non-alcoholic fatty liver disease 10% improved or resolved
- 25% resolution of inflammation
- 25% resolution of fibrosis
- Metabolic syndrome 60% resolved
- Type II diabetes mellitus 65% resolved
- Polycystic ovarian syndrome 71% resolution of hirsutism
- 100% resolution of menstrual dysfunction
- Venous stasis disease 19% resolved
- Gastroparesis 57% resolved
- Depression 10% resolved
- Obstructive sleep apnea 14-55% resolved
- Asthma 83% improved or resolved
- Cardiovascular disease 82% risk reduction
- Hypertension 50-70% resolved
- GERD 72-99% resolved
- Stress urinary incontinence 44-59% resolved
- Degenerative joint disease 41-53% resolved

Quality of life improved in 55% of patients
Mortality 85% reduction in 5-year mortality
Weightloss.ClevelandClinic.org
Obesity

original meaning...

“to overeat”

Bariatric Surgery Options

- Restrictive procedures
  - Gastroplasty (vertical banded)
  - Lap-Band

- Malabsorptive procedures
  - Distal bypass
  - Biliopancreatic diversion
  - Duodenal switch

- Combination restriction/malabsorption
  - Roux-en-y proximal gastric bypass
Laparoscopic Adjustable Gastric Band

Roux-en-Y Gastric Bypass
Biliopancreatic Diversion with Duodenal Switch

BPD
Based upon Scopinaro Procedure (Italy)

DS
Based upon Demeester's antireflux procedure

Malabsorptive Procedure common channel length is the KEY

Surgical Conclusions

• Laparoscopic access for bariatric surgery provides benefit to patients and is here to stay

• We must continue to collect data and analyze outcomes to refine what we do and how we do it

• Choose Your surgeon and hospital carefully
An Overview of Weight Loss Strategies

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Nutrition Interventions for George

• George is referred to Nutrition Therapy for counseling on weight loss/metabolic syndrome …

• During nutrition education session RD to focus on:
  • Dietary changes to promote weight loss, improve lipid profile
  • Mediterranean diet
  • Lifestyle change (not dieting)
  • Increased physical activity
  • Goal setting for success

  • Details to follow in later presentations

Million Dollar Questions

• How can I lose weight ??

• So many diets, where do I start ??
Facts

• There is no ONE way to lose weight

• Losing weight = change in behavior

• One of the largest hurdles is keeping the weight off once it is lost

National Weight Control Registry (NWCR)

• Largest prospective investigation of long-term successful weight loss maintenance

• Currently tracking over 10,000 individuals who have lost 30-300 pounds

• Surveys used to examine behavioral and psychological characteristics and strategies that are used to maintain weight loss
Based on NWCR

• 80% of registered persons are female
• The “average” woman  45 yo  145 #
• The “average” man  49 yo  190 #
• Overall average of lost weight = 66# over 5.5 years

Food Intake Modification

• 98% of registered persons report that they made modifications to their food consumption

• Low fat diet has shown to be a successful method of weight loss

• Along with food group variety
  — Raynor, H, et al
  Obesity Research 2005
Variety of Weight Loss Programs

- Cost varies
- Some supply food selections, meals, liquid supplements, counseling support
- Strictness varies
- If food/supplements not supplied, there is usually criteria for food choices provided
- Review of a few of the most common programs utilized in US

Nutrisystem

- Provides shelf-stable or frozen meals and snacks that are home delivered
- Offers printed or online tools and mobile phone apps for assistance
- Participants are to supplement with vegetable, fruits, and low-fat dairy to provide appropriate nutrition
- Low calorie, low glycemic index foods
Jenny Craig

- In-person at the center OR at home on-line
- Meetings weekly in person or on-line on “food, body, or mind” topics
- Three Jenny Craig cuisine meals + one snack per day
- Vegetable and fruits are supplemented

Weight Watchers

- Goals of program
- On-line or group meetings
- Theory: A holistic way to lose weight
- Participants make their own choices based on a points system
In General

- Weight loss programs teach portion control
- Behavior changes leading to long term lifestyle changes
- Educate on reading food labels if food / supplements not supplied
  - Forces participants to learn how to make healthy choices when purchasing food

Too Good To Be True?

- Often, those who follow a very strict weight loss program, struggle as they transition from the program to more of a variety of foods
- Often, those who reach some weight loss goals, are happy and off of their “diet” and consume excessive energy from unhealthy food choices or large portions
**NWCR Reports**

- 45% participants accomplished weight loss on their own
- 55% lost weight with assistance from weight loss program

**Need to Move!!**

- Successful weight loss must incorporate physical activity
- 94% of NWCR persons reported increasing physical activity
- WALKING was most popular activity listed
- Physical activity expedites weight loss
Keys to Long-term Weight Maintenance

• Based on NWCR

• Low calorie, low fat diet

• High levels of activity
  – 78% eat breakfast daily
  – 75% weigh themselves minimum 1x / week
  – 62% watch < 10 hours TV / week
  – 90% exercise ~1 hour / day
5 Popular Weight Loss Supplements

• Sensa® - lack of peer reviewed data
• hCG – no peer reviewed data/restrictive diet
• Xanthigen – Promising – Research preliminary
• Green Tea Extract – no miracle
• Stimulant Laxatives – do not produce long term weight loss