Managing Obesity and Related Syndromes, integrative approach

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Outline

- Science of nutrition & the evidence
- Statistics
- Politics, costs
- Mechanisms
- Nutrition, insulin, fat
- Diet
- Treatments: medical, pharmaceuticals, integrative
- Summary and action plan
Diabetes: A Twin Epidemic

- The spectrum of Insulin Resistance
Obesity Statistics

- 68% of adults overweight or obese BMI ≥ 25
- 34% of adults obese BMI ≥ 30
- 9% of adults diabetic
- 33% of children and adolescents overweight or obese
  - nearly triple the rate in 1963. *Childhood obesity is now the No. 1 health concern in the United States.*
- The progression of insulin resistance
  - 42% obese in 2030
  - 33% diabetic in 2050

Sources: TFAH, OECD, WHO, CDC, ADA
“Contrary to widespread opinion, too much sugar in your diet does not seem to cause diabetes... There is also no convincing evidence that sugar causes heart attacks or blood vessel diseases”

Phillip Handler : “A vast nutritional experiment”

President of the United States National Academy of Sciences for two terms from 1969 to 1981

- “Less saturated fats, less calories
- More poly-unsaturated Vegetable oils
- More carbohydrates, starches, sugars”
Does Saturated Fat Cause Heart Disease? Where’s the evidence?

- Outcomes looking at MI, death from MI and stroke
  - Observational - 16 studies - No!
  - Observational - 8 studies - Yes but problematic!
  - Observational - 2 meta analysis, 350,000 subjects - No!
  - RCT’s - Clinical trials - 2 well done - No!
  - RCT’s - Clinical trials - 3 meta analysis - No!
  - RCT’s - Clinical trials - 1 meta analysis - Yes but problematic!
Food Politics: Agriculture

- Industrial revolution and the food commodities
  - Corn, Wheat, Rice, Potatoes
  - Sugars: Cane, Beet, HFCS
  - Soybean and industrial Vegetable oils
- Whole foods expensive: Animals and other Plants
- Farming incentives, increase yields, GMO’s
Our Ancestors Before Agriculture

- Hunter gatherers and the Paleolithic era
  - Whole, clean, unprocessed foods, some carbs
    - Animals including Fish, seasonal wild greens, roots, Fruits and Nuts
  - Use of fire (1 million years ago—humans, calorie release!)

- Agriculture and the Neolithic era
  - Cultivate Grains and domesticate Animals for Dairy

- Modern civilization discovers food processing!
Evolution - are you kidding?

Nutrition changing humans in our lifetime!

The Food Revolution: Andreas Eenfeldt, M.D.
Food Politics: Manufacturing and Sales

- Inexpensive raw materials
  - Tasty, addicting and cost effective
  - Processed and refined, more profitable, shelf-stable
- Deceptive advertising: “healthy” foods-”natural”
- The government working for the food industry
- It’s clearly about profits, not health!
The Cost of Healthcare

- US healthcare spending
  - US almost twice per capita
  - US ~16% of the GDP vs. 8–10%
- US obesity and costs
  - Cornell: $190.2 billion, 20.6% of national health expenditures
  - Gross underestimation
    - Study design flawed
      - Overweight excluded
      - The cost of treating chronic disease

HBR, WHO, RTI, CDC, AHR, IASO
Fat Reform is Healthcare Reform

- Address obesity
- Tax sugar
  - Save billions on complications
- Food industry regulation!
- Healthcare delivery
  - Nutrition center stage
- Re-educate
  - The perils of dietary carbohydrates
  - In defense of dietary fat
Nutrition and Metabolism 101

- **Food metabolism**
  - All macronutrients are not created equal
    - Carbohydrates are fattening and inflammatory
    - Fats and proteins

- **Obesity is a chronic metabolic disease**
  - Insulin resistance
  - Inflammation
Insulin and Insulin Receptors

- One of several hormones
  - Regulate energy and energy storage
- Dietary carbohydrates, the primary fuel
  - Turns on the insulin switch
- Dietary proteins and fats, secondary fuels
  - Minimal effect on insulin, Essential
- Insulin receptors normal function
  - Cells, muscle, tissue absorb energy and nutrients
  - Excess food energy converted to fat and stored
  - Normally insulin will suppress appetite
  - ↓ insulin promotes the release of stored energy
Insulin Resistance

- **Years of carbohydrate overload**
  - More insulin is required
  - Excess energy, stored as body fat
  - Insulin receptors become strained and resistant
  - Beta cells strained, abnormal response

- **Vicious insulin resistance cycle**
  - Hunger an important component
  - Insulin overload
Hunger And Appetite

- Insulin resistance makes us hungry
  - Fat cells literally starve lean body tissues
  - Central hunger and reward centers of the brain
    - Hypothalamus, Nucleus Accumbens
    - Fluctuating blood sugars and hormones stimulate appetite
    - Resistance directly or by Leptin or other hormones
      - Eventual loss of central signals
        - Only peripheral signals: swollen stomach
  - Blame metabolism not behavior for obesity!
Regulation of Food Intake - Interactions

- Leptin – Insulin – Amylin - Ghrelin - PYY - GLP-1
  - Resistance changes signaling
- Leptin: Thermogenesis, immune system, premature ageing, chronic disease, dementia, cancer, libido and fertility
- Insulin and IGF-1 (Insulin like growth factor): Premature ageing, cancer
Inflammatory Disease

- Adipocyte, fat cell toxicity
  - Releases toxic substances as we gain weight
    - Inflammatory protein signals: Hormones, cytokines
    - FFA’s, lipid and cholesterol oxidation, Atherogenic
    - Fuels insulin resistance and beta cell dysfunction
  - Energy storage disease and energy overload
    - Inflammation and metabolic derangement
    - Dietary carb’s the trigger, not dietary fats
    - A Chronic metabolic disease
Obesity: A Chronic Metabolic disease

Dyslipidemia
- ↑ IL-6
- ↑ Adipsin (Complement D)
- ↑ Lipoprotein lipase

Hypertension
- ↑ Angiotensinogen
- ↑ FFA
- ↑ IGF-1
- ↑ Insulin
- ↑ Leptin
- ↑ Resistin

Inflammation
- ↑ CRP
- ↑ IL-6
- ↑ TNFα
- ↑ Adiponectin

Cancer
- ↑ TNFα
- ↑ Adipsin (Complement D)

Atherosclerosis
- ↓ Adiponectin
- ↓ Plasminogen activator inhibitor-1

Metabolic Syndrome
- ↑ Insulin Resistance
- ↑ Lactate
- ↑ Type 2 diabetes

Thrombosis
- ↑ CRP
- ↑ Inflammation
- ↑ Cancer

Insulin Resistance

Type 2 diabetes

Medical Treatment of Obesity

- Diet (typically calorie management)
- Exercise (newer studies show little benefit)
- Prescription drugs
  - Orlistat, lorcaserin, phentermine-topiramate, phentermine
- Weight-loss surgery
  - Gastric bypass (sometimes curative for diabetes)
  - Laparoscopic adjustable gastric banding
  - Gastric sleeve
Pharmaceuticals

- **Orlistat (Xenical; OTC, Alli)**
  - Lipase inhibitor-prevents fat absorption
  - Modest benefit
  - lose about 2–3 kilograms (4.4–6.6 lb) over 1 year
  - Side effects-loose, oily stools; nutritional, kidney toxicity

- **Lorcaserin**
  - treatment of obesity for adults with a BMI equal to or greater than 30
  - serotonergic properties and acts as an anorectic
  - Headache (18%), psychototropic, schedule IV drug
Pharmaceuticals 2

- Phentermine-topiramate (Qsymia)
  - initial body mass index (BMI) of: $\geq 30 \text{ kg/m}^2$ or $\geq 27 \text{ kg/m}^2$ (overweight) in the presence of at least one weight-related comorbidity such as hypertension, type 2 diabetes mellitus, or dyslipidemia
  - sympathomimetic amine which acts as an appetite suppressant and stimulant
  - Paraesthesia (tingling in fingers/toes), dizziness, dysgeusia, insomnia, constipation, and dry mouth; contraindicated in pregnancy
Pharmaceuticals 3: Phentermine

- Pharmacology similar to amphetamine
- Psychostimulant drug of the phenethylamine class, with pharmacology similar to amphetamine
- Many side effects noted
- Contraindicated, hyperthyroidism, glaucoma, peptic ulcer, prostatic hypertrophy, epilepsy
Insulin Resistance Medical Treatment

- **Medication**
  - **Physiologic drugs**
    - Metformin, Byetta, Victoza, Symlin, Bydureon
  - Rx appetite suppressants
  - New and future drugs
  - OTC market

- **Treat co-morbidities**
  - Nutrition center stage

- **Gastric bypass surgery**

http://peaceloveandlowcarb.blogspot.com
Insulin Resistance Treatment

- The food is the medicine
- Remove the fuel, dietary carbohydrates
  - Turn off the insulin switch
  - Control hunger and appetite
  - Carbs are non-essential, optional
Insulin Resistance Treatment
Ketogenic Diet

- Dietary proteins
  - Essential, healthy

- Dietary fats and cholesterol
  - Essential, healthy
  - Caloric dense and filling
  - NOT inflammatory or atherogenic
  - One exception
    - Carbs and fats together
      - Standard American diet (SAD)
      - Carbs are the catalyst
Food Prescription for Insulin Resistance

- Modified ketogenic diet, fasting
- Eliminate all foods with added sugar
- Reduce or eliminate fruit juice, dried fruit
- Reduce starchy veggies like yams, potatoes
- Sprouted whole grains (oats). Gluten?
- 50% non-starchy vegetables esp. greens
- Fish (sardines), chicken, turkey
- Fresh whole fruit in season, bioregional, especially berries
- Nuts, seeds (raw, unprocessed, unsalted)
Eat Real foods
(if it has a label, it’s not real food!)

- Focus on the carbohydrate content of food
  - Glycemic index, carbohydrate gram counting
- Avoid high glycemic foods, processed foods
  - Sugars, “healthy” no grains (Corn, Wheat, Rice), Potatoes
  - Beans and other Legumes have carbs, but also fiber superfoods
- Eat low glycemic foods, whole and unprocessed
  - Beef, Chicken, Fish, Pork, Eggs
  - Green leafy Vegetables, fibrous Fruits, Nuts
  - Low glycemic dairy like Cheese, unsweetened yogurt, raw, organic
Eat More Real Foods

- Natural healthy fats
  - Low Glycemic, not fattening and not inflammatory
  - Saturated, Mono, Omega 3’s, Vitamins A, D, E, K, B₁₂
  - Coconut oil, Olive oil, Avocado, Butter, Animal fat, Fish oil
  - Caloric dense, promotes satiety
  - Avoid industrial Vegetable oils, Margarine, Trans-fats, Omega 6’s

- Low-Carb High Fat diet (LCHF)
  - Control of appetite and promote weight loss
  - Enhanced fat burning during exercise
Herbal Protocols for Obesity

- Aquaretics (dandelion leaf extract)
- Bowel regulation
  - Anthraquinone-containing herbs
    - Rhubarb, aloe, cascara, buckthorn bark, senna
  - Liver regulators (dandelion root, burdock, bupleurum, boldo)
- Stimulants
  - Ephedra, green tea extract, chocolate,
Herbal Protocols 2

- Adaptogens to relieve stress
  - Eleuthero, schisandra, rhodiola, reishi, etc.
- Anti-anxiety herbs
  - Kava
- Sleep-promoting herbs
  - Valerian, lavender (high linalool)
- Chlorogenic acid (green coffee berry)
- Splenda (potato extract)
Other Dietary Supplements

- Chromium Picolinate (recent meta-analysis, probably no benefits)
- Conjugated Linoleic Acid (CLA) (mixed results)
- Glucomannan (Insufficient evidence)
- Guar gum (and other soluble fibers--no substantial evidence)
- Hoodia (in vivo studies only, no credible human studies)
- Senna (no solid studies in humans to demonstrate weight-loss benefits)
- Ephendra (no doubt effective, but many problems)
- Bitter organge (synephrine)
- Garcinia fruit rind (no strong evidence for weight loss; satiety results inconclusive)
Good Food is Good Medicine!

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