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The Orthomolecular Approach to Disease
Example: Diabetes Type II

February 17, 2005

a talk given for

Smart Life Forum
Palo Alto, CA

Watch the video here.

- **Alternative Medicine**
  - Medical therapies and procedures not taught in medicals schools or used in hospitals
- **Orthomolecular Medicine**
  - Use of substances that are common and essential to the body to engender health and prevent and treat disease
- **Xenobiotic**
  - A chemical compound that is foreign to life
- **Xenobiotic v. Orthomolecular**
  - Xenobiotic substances:
    - Blockers
    - Therapeutic and toxic levels are the same
  - Orthomolecular substances:
    - Facilitators

    - Therapeutic levels are much lower than toxic levels
- **Diabetes Mellitus**
    - Diabetes (Greek, “passing through”);
      mellitus (Greek, “honey”)


    - High levels of blood glucose act as an osmotic diuretic and overwhelm the kidneys’ ability to reabsorb water-soluble molecules.
    - Leads to frequent urination and substantial losses of water-soluble nutrients
- **Diabetes**
    - Type 1: Insulin insufficiency
        - Autoimmune destruction of insulin-producing beta cells in the pancreas
    - Type 2: Insulin resistance
        - 90+% of all cases are type 2 diabetes
        - Cells have lost sensitivity to insulin and are unable to utilize it properly
- **Causes of Insulin Resistance**
    - Obesity
    - Inadequate exercise
    - Genetic predisposition
    - Increased intake of refined carbohydrates
    - Increased intake of processed and *trans* fatty acids
- **Oral Medications: Dangerous Garbage**
    - [Discussion of CoQ10 and Merck]
        - Merck patent 4,933,165: Coenzyme Q.sub.10 with HMG-CoA reductase inhibitors
        - Merck patent 4,929,437: Coenzyme Q.sub.10 with HMG-CoA reductase inhibitors
- **Sulfonylureas**

- Increase risk of heart disease
  - Warning on label: *"…oral hypoglycemic drugs has been reported to be associated with increased cardiovascular mortality…"*

    Physicians' Desk Reference, Medical Economics, Montvale, NJ, 2004

- **Metformin**
  - DBI (same mechanism of action as metformin) found to increase risk of heart disease and death from heart disease by 300 percent; removed from the market in 1977
  - Metformin returned to market in 1994
- **Glitazones**
  - Rezulin was recalled by FDA after causing 61 deaths and 89 cases of liver failure
- **Glucosidase Inhibitors**
  - Very common side effects are gas, bloating, diarrhea, and abdominal pain
  - Also associated with changes in liver function tests
- **Dangerous Drugs**
  - Not one of the oral drugs has been shown in a controlled clinical trial to reduce long-term complications of diabetes
- **The Natural Approach**

  - Weight loss
  - Healthy nutrition
  - Regular physical activity
  - Targeted nutritional supplementation

- **Diet**

  - Healthful fats
    - Olive oil, fatty fish, unprocessed vegetable oils
    - Avoid saturated fat and trans fats in fried and processed foods
  - Adequate protein
    - Poultry, fish, beans, nonfat dairy
  - Unprocessed carbohydrates
    - Vegetables, beans, fruits (one per day) and whole grains
    - Fiber: the more the better
- **Exercise**

  - Lowers blood sugar
  - Improves insulin sensitivity
  - Is *essential* for weight loss
  - Protects the cardiovascular system and helps prevent diabetic complications
  - Walk ten minutes after meals
- **Nutrient Loss, the Real Problem**

- “Acute and chronic complications of diabetes may be associated with micronutrient imbalance or deficiency… Improving metabolic control alone may not achieve normal levels of nutrients in patients with multiple medical problems.”

  Mooradian, AD et al. Selected vitamins and minerals in diabetes. *Diabetes Care,* 1994 May;17(5):464-79.

Common Nutritional Deficiencies in Diabetics

- Magnesium
- Zinc
- Vitamin A
- Carotenoids
- Vitamin C
- Vitamin D
- Vitamin E
- B-complex vitamins

Magnesium

- 25% of diabetics have low Mg levels
- Associated with insulin resistance, retinopathy (lower levels predict greater risk), hypertension, vasospasm, cardiovascular disease
- Supplementation improves insulin sensitivity and glucose control, and decreases oxidative stress

  Tosiello, L. Hypomagnesemia and diabetes mellitus. *Arch Intern Med;* 1996 June 10;156:1143-8.
- 63 type 2 diabetics were treated with oral magnesium or placebo for 16 weeks. Those who received magnesium supplementation had lower fasting glucose (8.0 vs. 10.3 mmol/l), HbA1C (8.0 vs. 10.1%), and homeostasis model for insulin resistance (3.6 vs. 5.0).

  Rodriguez-Moran, M et al. Oral magnesium supplementation improves insulin sensitivity and metabolic control in type 2 diabetic subjects. *Diabetes Care 2003;* 26:1147-52.

Vitamins A, E, and Carotenoids

- Elderly type 2 diabetics have much lower plasma levels of vitamins A, E, and carotenoids than average.
- “… age- and disease-related production of reactive oxygen species exert synergistic damaging effects on tissues and organs.”

  Polidori, MC et al. Plasma levels of lipophilic antioxidants in very old patients with type 2 diabetes. *Diabetes Metab Res Rev*, 2000 Jan-Feb;16(1):15-9.

- **Vitamin C**

  - 30 type 2 diabetics were randomly assigned to take 500 mg supplements of vitamin C or placebo for 4 weeks. The vitamin C group had significant reductions in arterial blood pressure and improvements in arterial stiffness.
  - Mullan, BA et al. Ascorbic acid reduces blood pressure and arterial stiffness in type 2 diabetes. *Hypertension*, 2002 Dec;40(6):789-91.
- **Multivitamins and Minerals**
  - 130 diabetics took a multinutrient supplement or a placebo for one year. 93% of patients taking placebo reported an infection during the year compared to 17% taking supplements. There was also more than twice as much infection-related absenteeism in the placebo group.
  - Barringer, TA et al. Effect of a multivitamin and mineral supplement on infection and quality of life. *Annals of Internal Medicine*. 4 Mar 2003;138(5):365-71.
- **Vanadyl Sulfate**
  - Eleven type 2 diabetics were given 150 mg of vanadyl sulfate daily for six weeks. Declines were noted in fasting glucose (average 194 to 155), HbA1c (8.1 to 7.6), fructosamine (348 to 293), total cholesterol (223 to 202) and LDL cholesterol (141 to 129). Endogenous glucose production fell by 20%.
  - Cusi, K et al. Vanadyl sulfate improves hepatic and muscle insulin sensitivity in type 2 diabetics. *J Clin Endocrinol Metab.* 2001 Mar;87(3)1410-7.
- **Chromium Picolinate**
  - 180 type 2 diabetics took 200 or 1000 mcg of chromium picolinate or placebo for 4 months
  - Drops in blood sugar, insulin, cholesterol and hemoglobin A1C with chromium (most dramatic with higher dose)

    Anderson, RA et al. Elevated intakes of supplemental chromium improve glucose and insulin variables in individuals with type 2 diabetes. *Diabetes,* 1997 Nov.;46(11):1786-91.
- **Cinnamon**

- Contains methylhydroxy chalcone polymer (MHCP), a potent antioxidant and insulin mimetic.
- Also helps prevent fructose-induced insulin resistance
- 60 type 2 diabetics took 1, 3, or 6 g cinnamon or placebo capsules for 40 days.
- Cinnamon lowered fasting blood glucose 18-29%, total cholesterol 12-26%, LDL cholesterol 7-27%, and triglycerides 23-30%.

  Diabetes Care. 2003;26:3215-8

Glucomannan

- Highest molecular weight and viscosity of any fiber
- Lowers blood glucose and insulin levels by delaying gastric emptying and slowing glucose delivery
- Also cuts appetite, relieves constipation, reduces cholesterol
- Three weeks of supplementation lowered AUC glucose 23% and insulin 45%; increased insulin sensitivity by 55.9%; body fat reduction of 2.8%; dramatic reductions in appetite.

  Unpublished study

Lipoic Acid

- Type 2 diabetics with pain, burning, and numbness in feet took 600 mg lipoic acid or placebo daily for 3 weeks
- Significant improvements in symptoms of neuropathy in those receiving lipoic acid

  Ruhnau, KJ et al. Effects of 3-week oral treatment with the antioxidant alpha-lipoic acid in symptomatic diabetic polyneuropathy. *Diabetic Medicine,* 1999 Dec;16(2):1040-3.

Benfotiamine

- A fat-soluble form of vitamin B1 (thiamine)
- Used in Germany to treat diabetic neuropathy and retinopathy

- Blocks three pathways causing blood vessel damage; also inhibits inflammation
- "… clinically useful in preventing the development and progression of diabetic complications."

  Hammes, HP et al. Benfotiamine blocks three major pathways of hyperglycemic damage and prevents experimental diabetic retinopathy.*Nat Med.* 2003 Mar;9(3):294-9.

Therapies for Diabetic Complications


- EDTA chelation therapy
- IV nutrients
- Enhanced External Counterpulsation (EECP)
- Hyperbaric oxygen therapy
- Anodyne

Hyperbaric Oxygen Therapy

- Delivers oxygen via plasma to oxygen-starved tissues
- Promotes the growth of new blood vessels
- Kills anaerobic bacteria and enhances wound healing
- Especially effective for diabetic ulcers, neuropathy, and retinopathy
- Supported by over 30,000 scientific studies

- **Anodyne**

  - Infrared lights that increase nitric oxide production
  - Enhances circulation, reduces pain, inflammation and edema, increases sensation, improves balance
  - 8 clinical trials: Anodyne restored sensation in 93% of affected limbs and reduced risk of amputation.
- **Patient Success Stories**
  - **Roxanne - Diabetes**
    - 64-year-old with diabetes for 30+ years (insulin for 16 years), retinopathy (laser surgery), angina, hypertension, two heart attacks (recommended for bypass), diabetic ulcer, neuropathy (no sensation in feet, difficulty walking, pain), psoriasis.
    - Treated with diet, modest exercise, nutritional supplements, EECP, HBOT.
    - Return of sensation in feet, reduction of pain in legs. (After 2 weeks, walked around Disneyland for seven hours.) Vision and psoriasis much improved, blood pressure normal, angina gone, insulin dose halved, other drugs discontinued.
  - **Jerome – Diabetic Ulcer**
    - 53-year-old high school teacher with diabetes for 13 years, persistent non-healing diabetic ulcer, despite several courses of IV antibiotics (scheduled for amputation).
    - Heard about EDTA chelation therapy on morning of surgery, checked out of hospital against physician's advice, came to clinic.
    - Treated with diet, modest exercise, nutritional supplements, sugar dressings, chelation.
    - Wound healed, diabetes better controlled, fully functional 10 years later.
  - **Viola – Diabetes**
    - 78-year-old with diabetes for 19 years (on insulin for 10 years), retinopathy (treated with laser), severe right foot neuropathy, hyper-cholesterolemia, hypertension, on 6 drugs.
    - Placed on diet, exercise, supplement program, HBOT, EECP, IV nutrients.

- Within 2 months off all drugs except for thyroid. Glucose, blood pressure within normal limits. Feels great.

William – Diabetic Neuropathy

- Diabetes for 15 years, neuropathy in both legs, no sensation in feet, lots of pain, problems walking, depressed. Told to “live with it.”
- Treated with Anodyne, HBOT.
- After 1 week had sensation returned, less pain, walked with a cane; after 3 weeks walked on his own; now is playing is golf regularly, depression resolved.

Vic – Diabetic Retinopathy

- Type 1 diabetic with rapidly progressing retinopathy, requiring 5 laser treatments within 18 months of diagnosis; was told he would be blind within five years
- Treated with diet, exercise, and IV nutrients
- Today 20/20 vision left eye, 20/25 right eye

Vito

- 82-year-old with a 22-year history of diabetes and severe diabetic neuropathy with burning, shooting pain from the toes up to the thighs and difficulty walking.
- After 3 weeks of treatment with diet, exercise, and targeted nutritional supplements, HBOT and EDTA chelation therapy, his neuropathy was almost completely resolved, with only some numbness in his feet.