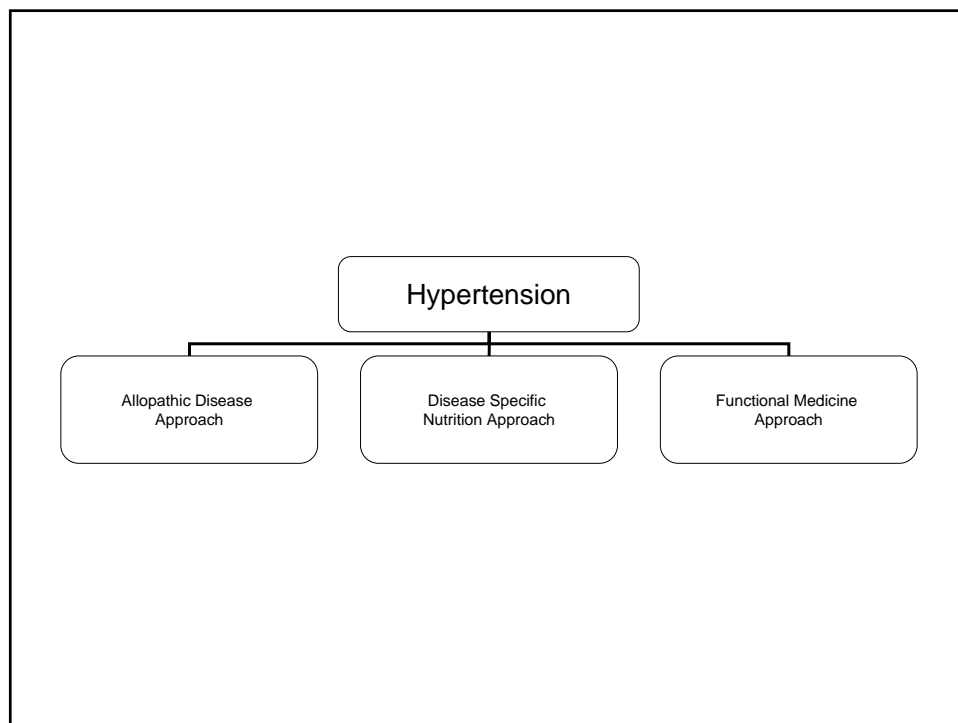


Hypertension: The Functional Medicine Approach

Three Different Cases
Three Different Causes



Disease Specific Approach

Allopathic Disease Approach

- Diuretics
- Central Alpha 2-agonists,
- Adrenergic inhibitors
- Beta-blockers
- ACE inhibitors
- Calcium channel blockers
- Vasodilators
- Postganglionic sympathetic inhibitors

Disease Specific Nutrition Approach

- Coenzyme Q10 (CO-Q10)
- Magnesium
- Potassium
- Omega-3 Fatty Acids
- Hawthorn
- Garlic

The Insanity of Disease Specific Management



The FDM Approach to Hypertension



The Logical Approach Patient Specific Medicine



Functional Diagnostic Medicine Thinking Process

Based on clinical decision making, the following should be considered as the possible cause(s) of hypertension

- Magnesium deficiency
- Depressed testosterone
- Bacterial Infections (Chlamydia pneumoniae, Strep A, H. pylori)
- Viral infections (CMV, Coxsackie virus)
- Cadmium, lead, mercury toxic exposure
- Detoxification compromise
- Taurine deficiency
- Fatty Acid Imbalance
- Kidney dysfunction
- Antioxidant insufficiency

Case 1

A 48 year old male with a two year history of hypertension

Step #1

Patient is sent medical questionnaire and asked to sign medical release to request medical records.

Step #2

- **Medical records** indicate that Joe was seen by two physicians prescribed medications included ACE inhibitors and calcium channel blockers.
- His average blood pressure with medications was **133/87**.
- Without medications his blood pressure increased to **157/91**.

Step #3 – Medical Questionnaire

- Review of medical questionnaire revealed the following important points:
 - Bloating after meals (+2)
 - Nausea after taking supplements (+3)
 - Coated tongue (+2)
 - Cramp in legs at rest (+3)
 - Crave chocolate (+2)
 - Feet have strong odor (+2)
 - Restless legs (+3)
 - Night sweats (+2)

Step #4 – Review of Blood Test

- Ordered the following:
 - Comprehensive blood chemistry panel including:
 - Lipid profile
 - Metabolic profile
 - CBC with differential
 - The following were added:
 - CRP
 - Homocysteine
 - Fibrinogen

Results of Blood Test

- Liver enzymes normal but low albumin suggestive of liver weakness/oxidative stress
- Blood glucose normal
- Cholesterol slightly elevated at 228
- Had hypochlorhydria pattern:
 - Increased globulins (2.9)
 - Increased BUN (19)
 - Decreased Calcium (9.0)
 - Decreased phosphorous (2.8)
 - Increased MCV (95)

Step #5 – Advanced Testing

- Rule out bacterial pathogen
- Rule out heavy metal toxicity
- Evaluate nutrient deficiencies
- Evaluate Fatty Acid balance
- Evaluate Sex Hormones
- Evaluate total load on liver
- Evaluate antioxidant status



Cardio ION Test

MetaMetrix

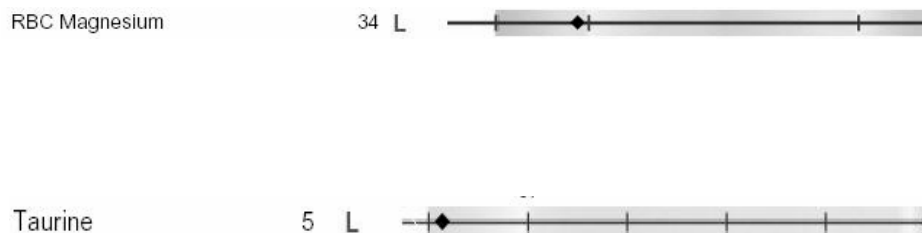
“ . . . Order your Cardio/ION and usher yourself . . . into the era of molecular medicine, where symptoms are no longer merely drugged or cut-out and thrown away, but actually cured.”

Sherry Rogers, MD, DABFP, FACAI, DAAEM1

Cardio ION Test

- Lipoprotein Factors
- Lipoprotein Ratios
- Chronic Inflammatory Markers
- Ferritin
- Fibrinogen
- c-Reactive Protein (HS)
- Insulin
- Testosterone
- Sex Hormone Binding Globulin
- Free Androgen Index
- Magnesium
- Oxidant Stress Factors
- Homocysteine
- Coenzyme Q10
- Vitamin E
- Lipid Peroxides
- Essential Amino Acids
- Element - Erythrocyte (RBC)
- Toxic Elements
- Fatty Acids – Plasma
- Organix Comprehensive – Urine
- Compounds of bacterial or yeast/fungal origin

Step #6- Results of Advance FM Testing



A deficiency of Taurine plays an important role not only in hypertension but also in atherogenesis as well.

Step #7 – Initial Tx. Protocol

Case 2

A 57 year old male with a three year history of hypertension

Step #1

Patient is sent medical questionnaire and asked to sign medical release to request medical records.

Step #2

- **Medical records** indicate that Peter was seen by his primary physician and a cardiologist
- He was prescribed diuretics, a beta blocker, and an ACE inhibitor.
- Peter went to his local health food shop and was told that garlic and Hawthorne would help lower his BP.

Step #3 – Medical Questionnaire

- Review of medical questionnaire revealed the following important points:
 - Night sweats (+3)
 - Dry skin, itchy feet (+2)
 - Headaches over the eyes (+2)
 - Recovering alcoholic
 - Sensitive to chemicals and car exhaust (+3)
 - Chronic hemorrhoids (+3)
 - Bizzare, vivid dreams (+2)
 - Dark circles under the eyes (+3)

Step #4- Blood Test

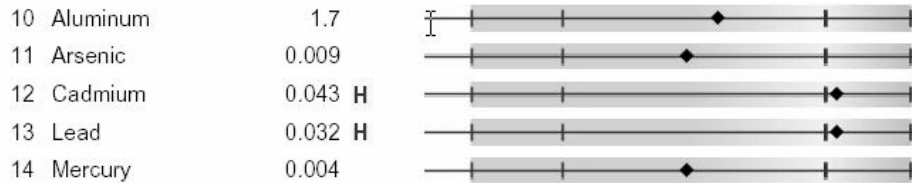
- SGPT/ALT (45)
- Uric acid (6.4)
- Calcium (10.3)
- Phosphorous (2.8)
- BUN (19)
- Blood glucose (75)
- LDH (134)

Step #5 – Advanced Testing

- Rule out bacterial pathogen
- Rule out heavy metal toxicity
- Evaluate nutrient deficiencies
- Evaluate Fatty Acid balance
- Evaluate Sex Hormones
- Evaluate total load on liver
- Evaluate antioxidant status

The FDM Approach to Hypertension

Step #6- Results of Advance FM Testing



Vanderbilt University School of Medicine

Heavy metal toxicity, especially mercury and cadmium, should be evaluated in any patient with hypertension, CHD, or other vascular disease.

**Department of Molecular
Biomedicine, México**

Low levels of chronic lead exposure can produce hypertension and endothelial dysfunction.

**School of Medicine, University of
California at San Francisco**

Higher levels of lead accumulation have been shown to predict elevated risks of chronic disease such as hypertension

Vanderbilt University School of Medicine

The clinical consequences of mercury toxicity include hypertension, CHD, MI, increased carotid IMT and obstruction, CVA, generalized atherosclerosis, and renal dysfunction with proteinuria

University of Kuopio, Finland

High intake of mercury from non-fatty freshwater fish and the consequent accumulation of mercury in the body are associated with an excess risk of acute myocardial infarction as well as death from CHD.

Step #7 – Initial Tx. Protocol

Case 3

A 62 year old female with a five year history of hypertension

Step #1

Patient is sent medical questionnaire and asked to sign medical release to request medical records.

Step #2

- **Medical records** indicate that Susan was seen by an internist, her family doctor as well as a cardiologist
- Over 5 years she was prescribed multiple anti-hypertensives including diuretics, calcium channel blockers, post-ganglionic sympathetic inhibitors etc.
- Her blood pressure was not stabilized.

Step #3 – Medical Questionnaire

- Review of medical questionnaire revealed the following heavy symptom burdens:
 - Heavy symptom burden in the immune system
 - Heavy body burden in the female hormone section
 - Liver/gallbladder problems
 - Blood sugar dysregulation issues
 - Multiple GI issues in stomach, small intestine and large intestine
 - Nutrient deficiencies
 - History of dental problems
- PE confirmed a number of these issues

Step #4- Blood Test

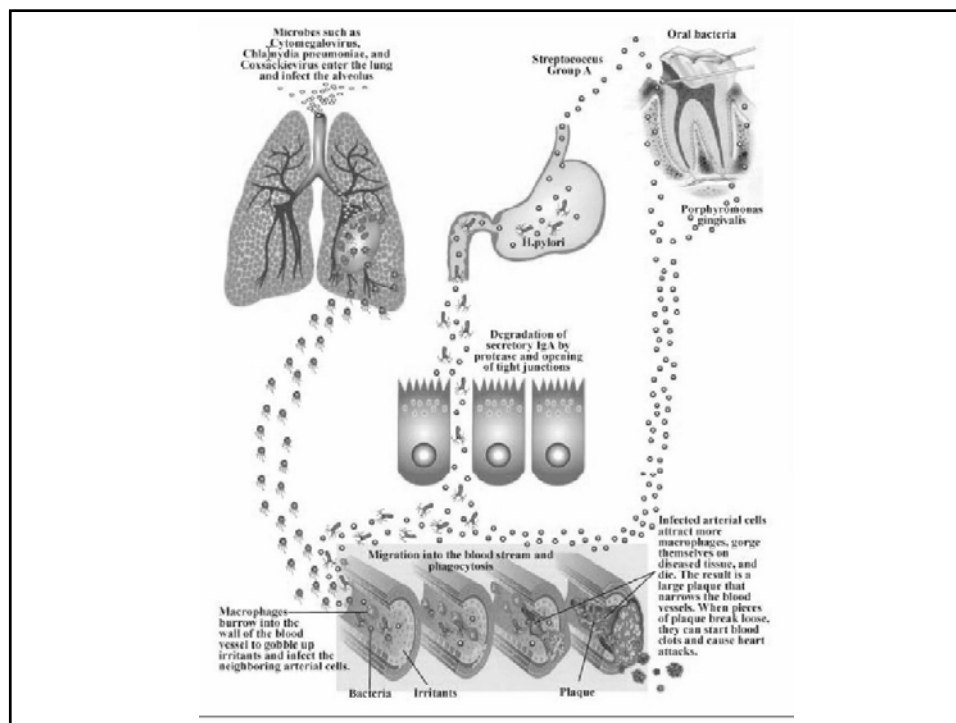
- Blood test showed the following patterns:
 - Compromised immune function
 - Liver issues
 - Gallbladder dysfunction
 - Blood fat dysregulation
 - Hypochlorhydria pattern
- In-Office Urinalysis
 - High indican and sediment test
 - Mild UTI on dipstick

Step #5 – Advanced Testing

- Rule out bacterial pathogen
- Rule out heavy metal toxicity
- Evaluate nutrient deficiencies
- Evaluate Fatty Acid balance
- Evaluate Sex Hormones
- Evaluate total load on liver
- Evaluate antioxidant status

Step #6- Results of Advanced FM Testing

- Positive C. pneumonia



Johannes Gutenberg University Mainz, Germany

- Our results support the hypothesis that infectious agents are involved in the development of atherosclerosis. We showed a significant association between infectious burden and the extent of atherosclerosis. Moreover, the risk for future death was increased by the number of infectious pathogens, especially in patients with advanced atherosclerosis.

School of Pharmacy, University of Missouri-Kansas City, USA.

- C pneumoniae antibodies are found in approximately 50% of middle-aged adults world-wide. These antibodies have been detected in atherosclerotic tissue and have been linked to increased risk of cardiovascular events

**“Both H pylori and C pneumoniae
infections are associated with
coronary heart disease.”**

Patel P, Mendall MA, et al. Association of Helicobacter pylori and Chlamydia pneumoniae infections with coronary heart disease and cardiovascular risk factors. BMJ. 1995 Sep 16;311(7007):711-4. Erratum in: BMJ 1995 Oct 14;311(7011):985.

Step #7 – Initial Tx. Protocol



Summary