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Conventional Thoughts on AIT

- Don't take iodine
 - Will cause/worsen AIT
- Don't take desiccated thyroid
 - Will cause/worsen AIT

Conventional Thoughts on AIT

- Don't take iodine
 - Will cause/worsen AIT

AIT cannot be experimentally induced without using a goitrogen and ensuring iodine deficiency

- Don't take desiccated thyroid
 - Will cause/worsen AIT

Desiccated thyroid hormone has never been shown to cause AIT



"I know that most men, including those at ease with problems of the greatest complexity, can seldom accept even the simplest and most obvious truth if it would oblige them to admit to the falsity of conclusions they have delighted in explaining to their colleagues."





Autoimmune Disease | Cancer | Detoxification | Fatigue | Thyroid Disease

David Brownstein, M.D.



- Medical Iodophobia
- Medical Desiccated-thyroidophobia

How Much Iodine Stored In The Body?

- Approximately 1.5-2gm stored in body at sufficiency
 - Fat tissue: 700mg
 - Striated tissue: 650mg
 - Thyroid: 50mg

Every organ and all tissues contain iodine



To achieve the maximum transport of iodine ≈600µg/day across the cell membrane, there must be sufficient iodine in the serum:

≈10⁻⁵-10⁻⁶ M

These numbers are <u>impossible</u> to reach at the RDA (150µg/day) for iodine!

However, 50mg/day iodine/iodide can reach a 10⁻⁵ M!

How Much Iodine Stored In The Body?

- Thyroid: ≈50mg/day
- Breasts: Minimum of 5mg/day(50kg or 110# woman) for maintenance of normal breast tissue
 - Larger woman or woman with larger breasts will have increased requirement
 - Men have smaller breasts and a lower iodine requirement
- Other glandular tissue: Minimum of 2mg/day
 - Adrenals, thymus, ovaries, hypothalamus, pituitary and others.

Where is Iodine Found in the Body?

- Every cell in the body contains and utilizes iodine
 - WBC's cannot effectively guard against infection without adequate amounts of iodine
- Concentrated in the glandular system
 - Thyroid gland contains the largest amount of iodine
 - Breasts, ovaries, salivary glands, parotid glands, pancreas, cerebrospinal fluid, brain, stomach, skin, lacrimal glands, etc.

Transport of Iodine (1)

- Iodine present in every cell in the body
- Many different glands and cells concentrate iodine against gradient
- Na/I symporter
 - Transports iodide at a concentration gradient 20-50 times that of plasma

One iodine atom is transferred into cell with two atoms of sodium transported inside of cell.

Angewandte Chm

In Thyroid, What Happens to Iodine After Absorption?



However, organification of lipids will only occur with iodine intake in excess of the RDA.



δ-iodolactone is a key regulator of apoptosis and cellular proliferation in the thyroid. It inhibits Epidermal Growth Factor from thyroid follicles. δ-iodolactone is not detected in human tissue when iodine deficiency is present, but is present with iodine administration at 100x the RDA.

> Eur. J. of Endocrin. 132. 735-43, 1995 Horm. Metab. Res. 26. 465-69. 1994 Hormnes. 2010. 9(1) 60-66



Iodine + DHA (C22:6, ω-3)
$$\xrightarrow{LPO+H202}$$
 5-iodo-γ-lactone (DHA-γ-IL)
Iodine + EPA (C20:5, ω-3) $\xrightarrow{LPO+H202}$ EPA-δ-IL

Without adequate iodine levels, it is impossible for EPA/DHA to be converted into IL. LP is expressed in breast cancer cells.

Hormones. 2010. 9(1):60-66 J. Mammory Gland Biol. Neoplasia. 10. 189-96. 2005 Mol. Cell. Endocrinol. 31:49-57. 2005

Low Iodine and δ-Iodolactone

- Methyl-nitrosourea (MNU) induced tumors contain <u>4x more AA than normal mammary</u> glands
 - <u>I₂ supplementation is accompanied by a 10x higher</u> δ-iodolactone content in tumors
 - Same research shows that δ-iodolactone and iodine have antiproliferative and apoptotic properties.



• Regulates the cell cycle in thyroid gland by inducing apoptosis



In Thyroid, What Happens to Iodine After Absorption?(2)



Basolateral membrane

In Thyroid, What May Happen If Iodine Levels Are Too Low? AIT

Early



Apical membrane

Treatment: Iodine, Magnesium, B2 and B3, Selenium, Vitamin C, as well as Antioxidants

H₂O₂ Control: Selenium

- Glutathione Peroxidase
 - High expression in the thyroid gland
 - Produced and secreted by thyrocytes

$$H_2O_2 \longrightarrow 2H_2O$$

GPx3

How Much Iodine Should You Take?

 When there is iodine sufficiency, there is little (or no) radioactive iodine uptake by the thyroid gland

How much iodine is required to achieve sufficiency?

How Much Iodine Should You Take?

- Thyroid
 - 3-5mg I/day decreased absorption of radioactive iodine by thyroid below 5%

How Much Iodine Should You Take?

FAN

Amt. Iodide Ingested (12 days)	% Uptake Radioactive Iodide by Thyroid
10mg	4%
15mg	1.9%
30mg	1.6%
50mg	1.2%
100mg	0.6%



Fig. 2 - Percent 24hr uptake of radioiodide and computed uptake of I/24hr by the thyroid gland, following intake of increasing amount of I.

–Iodine Dosage Guidelines

- RDA is 150µg/day
- RDA is inadequate to supply the body's need
- Dosage must be individualized
- Use a combination of iodine and iodide
- Appropriate pre and post testing
- For AIT: Doses generally range from 6-50mg/day

Medical Iodophobia

"Medical iodophobia is the unwarranted fear of using and recommending inorganic, nonradioactive iodine/iodide within the range known from the collective experience of three generations of clinicians to be the safest and most effective amounts for treating symptoms and signs of iodine/iodide deficiency (12.5-50mg/day)."

Iodine and the Thyroid Gland

- Iodine essential ingredient in thyroid hormones
 - T4 contains 4 iodine atoms
 - T3 contains 3 iodine atoms
- Without sufficient iodine, thyroid unable to make thyroid hormones
 - Thyroid tissue will become hyperplastic in a state of iodine deficiency
 - Precursor to autoimmune thyroid illnesses

Autoimmune Thyroid Illness

- Graves' disease
- Hashimoto's disease
- Chronic thyroiditis
- Toxic multinodular goiter
- Subacute thyroiditis

Medical Desiccated-Thyroidophobia

 Unwarranted fear of using a medication that has been around for over 100 years in treating thyroid disorders

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TSH: 5.1 Tx: Nt 1/2gn Iodine 25mg/d

Tx: Nt 1gn lodine 37.5mg/d

Quest Điagnostics	Quest Diagnostic	es incorporated			
	PATIENT INFORMATION BROWNSTEIN, HAILEY		REPORT STATUS Final		
WEST DIAGNOSTICS INCORPORATED LLENT SERVICE 248.373.9120 PECIMEN INFORMATION SPECIMEN: AH110259U REQUISITION: 0005834 LAB REF NO:	DOB: 04/1 GENDER: F ID: 04191 PHONE: 24	3/1994 Age: 15 994 188515435	ORDERING PHYSICIAN BROWNSTEIN, DAVID CLIENT INFORMATION 22467049 DAVID BROWNSTEIN MD CENTER FOR HOLISTIC MED 5821 W MAPLE RD STE 192 WEST BLOOMFIELD, MI 48322-227		
COLLECTED: 06/24/2009 12:12 RECEIVED: 06/24/2009 19:35 REPORTED: 06/25/2009 15:09					
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Test Name	In Range	out of Range			
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BH Quest Diagnostics Inc-Auburn Hills 4444 Giddings Rd Auburn Hills MI 48326 Laboratory Director: Dr. Nadia Metwalli, MD

Quest Diagnostics Incorporated

Report Status: Final

BROWNSTEIN, HAILEY

Patient Information	Specimen Information	Client Information	
BROWNSTEIN, HAILEY DOB: 04/13/1994 AGE: 16 Gender: F Patient ID: 04131994HB	Specimen: AH588615Y Collected: 10/13/2010 / 16:39 EDT Received: 10/14/2010 / 02:05 EDT Reported: 10/16/2010 / 14:37 EDT	Client #: 22467049 BROWNSTEIN, DAVID	
Test Name TSH, 3RD GENERATION	In Range Out Of Range 0.67 Reference Range	Reference Range mIU/L	Lab BH
	1-19 Years 0.50-4.30 Pregnancy Ranges		
T4, FREE T3, FREE T3, REVERSE	First trimester 0.20-4.70 Second trimester 0.30-4.10 Third trimester 0.40-2.70 0.9 3.9 18 Reference Range: 11-32	0.9-1.4 ng/dL 2.9-4.6 pg/mL ng/dL	BH BH EZ
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Tx: Nt 1gn lodine 37.5mg/d

PERFORMING SITE:

Quest Diagnostics

AMD QUEST DIAGNOSTICS/CHANTILLY, 14225 NEWBROOK DRIVE, CHANTILLY, VA 20151-2228 Laboratory Director: KENNETH L. SISCO, MD, CLIA: 49D0221801 QUEST DIAGNOSTICSACHANTILLT, 1422) NEW BROOK DRIVE, CHARTILLT, YA 2013-1226 Laboratory Director: NADIA METVALLI, MO, CLIA: 92D064147 QUEST DIAGNOSTICS INC AUBURN HILLS, 4444 GIDDINGS ROAD, AUBURN HILLS, MI 48326 Laboratory Director: NADIA METVALLI, MO, CLIA: 92D066147 QUEST DIAGNOSTICSXIC: 33608 ORTEGA HWY, SAN JUAN CAPISTRANO, CA 92675-2042 Laboratory Director; JON NAKAMOTO, MD PHD, CLIA: 92D0643352 SPECIALTY LABORATORIES INC, 27027 TOURNEY ROAD, VALENCIA, CA 91355-5386 Laboratory Director; BASEL KASHLAN, MD, FCAP, CLIA: 05D0550302 BH EZ SLI

Tx: Nt 1.5gn lodoral 50mg/d

PATIENT INFORM BROWNSTEI	PATIENT INFORMATION BROWNSTEIN, HAILEY DOB: 04/13/1994 Age: 16 GENDER: F TD: 04/13/1994 B		REPORT STATUS Final ORDERING PHYSICIAN BROWNSTEIN, DAVID		
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227		140-400	Thousand/uL		
8.6		7.5-11.5	fL		
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Printed by Care360 AutoReceive on 08/21/10 at 07:00am.



- Desiccated thyroid replacement
- Iodine

Both claims are examples of medical iodo- and desiccated thryoidophobia



"It's easier to fool people than to convince them that they are fooled."




Are Autoimmune Thyroid Illnesses Caused by Iodine Deficiency?

- Two areas of Denmark studied due to difference in iodine intake
- 4649 Participants
- Ages: 18-65
- Median Iodine excretion:
 - Aalborg: 53µg/L
 - Copenhagen: 68µg/L





Minor differences in l excretion produces large increases in thyroid disorders! Eur. J. Endocr. 2000 Oct; 143(4):485-991

Are Autoimmune Thyroid Illnesses Caused by Iodine Deficiency?

- X-ray fluorescence scanning can measure the stable iodine content of the thyroid gland
 - Mean value of **10mg** iodine/thyroid in normal population
 - 56 subjects with autoimmune thyroiditis (normal thyroid levels) had a mean value of <u>4.7mg</u> iodine/thyroid
 - 13 subjects with autoimmune thyroiditis and hypothyroidism had a mean value of 2.3mg iodine/thyroid

If iodine were the cause of autoimmune thyroid disorders, you would expect more iodine in an affected gland!



 Lowest concentration of iodine in thyroid found in thyroid cancer—75% of patients studied had <20ug/g on scanning.

- Results of study:
 - KI in solution of 30mM and higher found to inhibit the normal growth curve of thyroid cells
 - Arrested cell cycle at G0/G1 and G2/M after 72 hours of treatment
 - Did not induce apoptosis or necrosis of thyroid cells

"This study showed that iodine excess inhibited human primary thyroid proliferation...in the presence of low dose IFN, Kl...could induce lymphocytic infiltration in the thyroid gland and secretion of proinflammatory cytokines. ...{This} could explain the development of hypothyroidism after adding iodide in a diet of persons that already have lymphocytic infiltration and/or mild inflammation of the thyroid gland."

- What amount of KI do you need to ingest to achieve a serum level of:
- 10uM KI:
- 100uM KI:
- 10mM KI:
- 30mM KI:
- 100mM KI:

- 1mM of KI = 127mg/L
- The renal clearance of I is approx. 42.5L/day
- So:
 - 1mM of KI=127mg/L x 42.5L/day =5,398mg/day

- What amount of KI do you need to ingest to achieve a serum level of:
- 10uM KI: 54mg/day
- 100uM KI: 539mg/day
- 10mM KI: 54000mg/day
- 30mM KI: 161,000mg/day
- 100mM KI: 540,000mg/day

Conclusions of article: "Normal human thyroid cell proliferation is problement of the property of the proper

- Real conclusion:
- Iodine doses up to 161gm/day did not cause changes in normal human thyroid cell proliferation. Iodine is not associated with autoimmune thyroid illness unless it was given in large doses <u>along with a goitrogen such as</u> <u>IFN.</u>

 In vitro studies with purified fractions of calf thyroid glands showed 10⁻⁵ molar I protects TPO against oxidative damage

To achieve 10⁻⁵ molar iodide, a human adult needs to take in <u>50-100mg I per day.</u>

Does Iodine Prevent Autoimmune Thyroid Disorders?

- In-Vitro study of thyroid cells containing TSH receptor mutation
- Different amounts of NaI:
 - Control
 - 1mM NaI (5.4g/day)
 - 10mM NaI (54g/day)
 - 50mM NaI (270g/day)

Does Iodine Prevent Autoimmune Thyroid Disorders?

- 1mM NaI (5.4g/day) inhibited cell proliferation from 43-83%
- Iodine promoted apoptosis of mutant cells

"Importantly, despite a constitutive TSHR activation, iodide still causes down regulation of proliferation and function in early stage autonomy."



- Goiter for three years
- Hashimoto's disease
- Recommended to have irradiation by endocrinologist
- Original iodine levels:
 - Below detectable levels of spot urinary iodine
 - Iodine-loading test 20% excretion
 - Euthyroid upon initial testing



- Treated with:
 - Unrefined salt >1tsp/day
 - Vitamin C 2gm/day
 - Iodine 50mg/day
 - Magnesium 200mg/day
 - Multi-vitamin/mineral product



- Autoimmune illness
- Enlarged thyroid gland and thyroid antibodies
- Protruding eyes
- More common in women
 - 5 out of 10,000 people
 - Between ages of 20 and 40 years old
 - Women who have just given birth.



Fig. 1 Serum profile of inorganic iodide levels following the iodine/iodide load (50 mg) in 6 normal female subjects; and in a patient with iodide transport defect. Patient excreted 90% of the iodine load, but her basal serum inorganic iodide level was very low at 0.016 m/L. This pattern suggests a defect in the iodine retention mechanism.





Time Post ingestion of Iodoral[®] 50 mg load

Fig. 2 Serum profile of inorganic iodide levels following the iodine/iodide load (50 mg) in 6 normal female subjects; and in a patient with iodide transport defect following 5 years of intervention with a sustained release Vitamin C at 3 gm/day. Her serum level was 0.42 mg/L, evidence of improved function of the iodine cellular transport mechanism.

Denni: 5 Years Later

- Feeling better with unrefined salt and vitamin C
- Euthyroid
- **TPO titers: WNL**
- Agreed to do another loading test (7.26.11)



Fig. 1 Serum profile of inorganic iodide levels following the iodine/iodide load (50 mg) in 6 normal female subjects; and in a patient with iodide transport defect. Patient excreted 90% of the iodine load, but her basal serum inorganic iodide level was very low at 0.016 m/L. This pattern suggests a defect in the iodine retention mechanism.

Denni: 5 Years Later





- Feeling well for six months
- No Antithyroid medications
- Agreed to do another loading test



Fig. 1 Serum profile of inorganic iodide levels following the iodine/iodide load (50 mg) in 6 normal female subjects; and in a patient with iodide transport defect. Patient excreted 90% of the iodine load, but her basal serum inorganic iodide level was very low at 0.016 m/L. This pattern suggests a defect in the iodine retention mechanism.

Denni: 2014



Time Post Ingestion of Iodoral® 50mg Load

—Iodine Transport Problems

- When problems develop with iodine use, think detoxification
 - Vitamin C
 - Salt
 - Water
 - Liver and kidney support
 - Exercise
 - Clean Diet

MINDLIN-KOH CENTER FOR OPHTHALMIC MEDICINE AND SURGERY PC Alan M. Mindlin MD FACS · John Y. Koh MD FACS · Stephen E. Solomon DO

Tear Duct & Orbital Surgery · Thyroid Eye Disease · Eyelid Cancers · Dry Eyes · Tearing Emergencies · Eyelid Trauma · Reconstructive and Cosmetic Eyelid Surgery

Neuro-Ophthalmology

Adults and Children

August 06, 2007

David Brownstein M.D. 5821 W. Maple Rd West Bloomfield, MI 48322

RE: Joy

Dear Dr. Brownstein:

This is a little note a follow-up on her mutual patient. I saw Joy today for follow-up. She is doing incredibly better. All of these subtle changes related to Graves' disease in the periorbital area are continuing to diminish. In fact, the lower lids are tightening beautifully and the bulging that is present that she thought was familial may in fact only have a partial familial component. I am going to reevaluate her after the Jewish holidays but to hold her that if she continues to improve surgery is not warranted and in fact could be contraindicated. I hope that all of this will help in her ongoing medical care. If there are any questions in regards to any of these findings, please do not hesitate to contact my office.

Warmest personal regards,

Alan M. Mindlin M.D. F. A. C. S

- Thyrotoxicosis occurs in ~0.2% of all pregnancies
 - Graves' disease is the most common cause
- Hyperthyroidism in pregnancy can lead to serious complications in fetus and mother
 - Intrauterine growth restriction
 - Miscarriage
 - Preeclampsia
 - Prematurity, preterm birth, and low birth weight



- Conventional approach to hyperthyroidism during pregnancy
- Class D drug: Positive evidence of human fetal risk
 - Propylthiouracil (PTU) is first-line tx during first trimester
 - PTU: hepatotoxic—fulminant liver failure
 - Can cause congenital anomalies including face and neck anomalies and urinary system anomalies
 - Agranulocytosis and thrombocytopenia
 - Switch to MMI (Tapazole) in second trimester



- PTU and MMI
 - PTU poisons the enzyme TPO which blocks the oxidation of iodide to iodine.
- PTU (but not MMZ) also:
 - Poisons the 5'deiodinase enzyme
 - Blocks conversion of T4 into T3

• Tx of Graves' disease with KI is widely used in Japan and its efficacy is acknowledged

- 283 Women with Graves' disease
 - Switched from MMI to I in first trimester
 - Compared to 1,333 subjects with Graves' disease tx with MMI alone, incidence of major anomalies nearly 3x lower:
 - 1.53% Iodine group
 - 4.14% in MMI group

- Findings:
 - Incidence of major congenital anomalies in iodine group was nearly <u>3x higher</u> in MMI group
 - <u>1.53%</u> as compared to <u>4.14%</u> in MMI group
 - None of infants in KI group had thyroid dysfunction or goiter
 - Severe neonatal hypothyroidism was detected only in neonates who had been exposed to ATDs in third trimester

First Double-Blind Cohort Study in Graves' Disease (1863)



- Dr Armand Trousseau in 1863 accidentally treated Graves' disease patient (exopthalmic goiter) with iodine instead of digitalis
 - Patient improved
 - Upon realizing his mistake, stopped iodine and gave him digitalis
 - Patient worsened

He used 75-100mg of tincture of Lugol's iodine!

First Studies on Graves' Disease and Iodine: 1923 Dr. Plummer



Hypothesis: Hyperthyroidism of Graves' disease was due to iodine deficiency

- Before surgery, iodine was used to control the high mortality of surgery for Graves' disease
 - Thyroid storm
- Plummer administered 20-30 drops Lugol's (130-195mg I) pre-op and 10 drops (62.5mg I) post-op

Mortality declined from 'high' to zero.

First Studies on Graves' Disease and Iodine: 1923 Dr. Plummer

- Hypothesis: Hyperthyroidism of Graves' disease was due to iodine deficiency
- Before surgery, iodine was used to control the high mortality of surgery for Graves' disease
 - Thyroid storm
- Plummer administered 20-30 drops Lugol's (130-195mg I) pre-op and 10 drops (62.5mg I) post-op

Mortality declined from 'high' to zero.
Neonatal Hyperthryoidism Caused by Maternal Graves' Disease

- Female 39 wks gestational age born to mother with Graves'
 - Mother treated with PTU
 - Fetal goiter detected on US
 - Newborn had hyperthyroid sx's from 2nd-3rd day of life
 - Treated with KI 8mg t.i.d.
 - At 13 weeks, after normalization of TFT's, iodide discontinued.

Hashimoto's Disease

- Autoimmune illness
- Lymphocytes attack the thyroid gland
 - Antithyroid antibodies
 - Antimicrosomal antibodies
- Goiter
- 2% of the population
 - More common in women (30's and 40's).

Hashimoto's Disease and Pregnancy

- TPO antibodies found in 10% of women in early pregnancy
 - Associated with decreased thyroid functional reserve during gestation and associated with hypothyroidism
 - TPO Ab's also associated with a 50% risk of postpartum thyroiditis

The presence of TPO antibodies at 32 weeks gestation has resulted in a significant IQ decrease in children even when mothers were euthyroid.

Thyroid Antibody in First Trimester and Negative Outcomes

- 14 women with TPO+ and TSH >2.5mIU/l v.
 245 euthyroid women who were TPO-
- Results of women who were TPO+:
 - 2.5 x increase in preterm delivery (<34 weeks gestation)
 - 2.8x increase in respiratory distress.



• Will only be formed when there is oxidative damage to the thyroid

Infectious Etiology of Hashimoto's?

 Parvovirus B19 detected in 29/32 (91%) Hashimoto's subjects by PCR testing compared with 7/16 (44%) normal thyroid tissue.



Parvo B19 EM in blood

Parvo B19, Hashimoto's, PTC and ATC

- 30 thyroid tissue samples assayed
- Positive for Parvo B19 in:
 - 21/24 (88%) of PTC
 - 3/3 (100%) ATC
 - 3/3 (100%) in HT

Hashimoto's and Risk of Thyroid Cancer

 802 patients undergoing thyroid surgery. Patients with Hashimoto's thyroiditis had a 3x increase risk of having a well-differentiated thyroid cancer as compared to those without Hashimoto's.



• Hashimoto's associated with a 30% increase risk of thyroid cancer.



- Pathologist
- 1912 Dr. Hashimoto reported histological changes in 4 thyroid glands
 - Numerous lymphoid follicles, extensive connective tissue formation, diffuse round cell infiltration and significant changes of the acinar epithelium

"Struma Lymphomatosa"

Not observed in the U.S. at that time!



• Before iodized salt, Dr. Hashimoto's findings were not seen in the U.S.

Hashimoto's Disease: Michigan Studies Revisited

"The salient histopathological feature of the thyroid glands, removed at operation in a five-year period before iodine prophylaxis (1915-1920—before iodized salt), was the paucity of lymphocytes in their parenchyma, and, more importantly, the absence of thyroiditis in any form. It should be emphasized that the thyroid glands prior to the use of iodized salt were devoid of lymphocytes and nodular colloid goiters with dense lymphocytic infiltrates were found after the introduction of iodized salt in 1924."



- Mayo Clinic
- 3 Time Periods Studies
 - 1935-1944
 - 1945-1954
 - 1955-1967





Why Does Hashimoto's Form?

- Is it iodine?
 - NHANES
- Is it salt?
- Is it a goitrogen?
 - Bromine, Chlorine, Fluoride

Or, is it a combination of iodized salt and goitrogens?

National Health and Nutrition Survey

 1971-2000 NHANES showed iodine levels declined 50% in the United States

It can't be iodine!



Why Does Hashimoto's Form?

- Is it iodine?
 - NHANES
- Is it salt and/or goitrogen?
 - Bromine, Chlorine, Fluoride



- Impossible to experimentally induce Hashimoto's disease in laboratory animals by administering iodine
- Only by the use of anti-thyroid drugs (i.e., goitrogens) can you induce Hashimoto's disease in laboratory animals

Goitrogens induce not only hyperplasia they cause iodine deficiency!

Hashimoto's and Thyroid Cancer

- 1579 patients studied retrospectively
- Patients had undergone thyroid resection over a 14.5 yr period
- 253 (16%) had pathological diagnosis of Hashimoto's
 - 4.5% of patients had both differentiated thyroid cancer and Hashimoto's

"Strikingly one-third of the euthyroid Hashimoto's...cases had differentiated thyroid cancer."

-Mechanism for Thyroiditis

- Oxidative damage of the thyroglobulin molecule caused by low levels of iodide combined with goitrogens
 - Salt: Chlorine
 - Toxins: Bromide, Fluoride, etc.
- Activates thyroid peroxidase (TPO) system and causes the histopathological signs of Hashimoto's
 - High cytosolic free calcium and elevated levels of H2O2

Only magnesium, iodine, vitamin C, and selenium can reverse this mechanism!



- Selenium-deficient area of Bavaria
- All patients received T4 and 200ug/d of sodium selenite or placebo
- 36% reduction in TPO titers in treatment group
- Those with very high TPO titers (>1,200IU/ml) had a 60% reduction in titers



- Randomized, placebo controlled study
 - Athens, Greece
 - AIT given 200ug/d of SeMet
 - Results:
 - Anti TPO declined up to 55% at six months



- PBDE's >95th percentile found to have a 6.1x increase risk of developing thyroglobulin antibodies
- What is the treatment for PBDE?

Competitive Inhibition with I and salt!

Treatment of Autoimmune Thyroid Conditions: Conventional Approach

- Drugs to relieve hyperthyroid symptoms
 - Beta blockers, PTU, etc.
- Radioactive Iodine
 - Iodine taken up by thyroid gland, radioactivity destroys thyroid cells.



"Give no deadly medicine to anyone."



- Half-life of ¹³¹I:
 - Graves' disease: 5.4 days
 - Nontoxic goiter: 6.4 days
 - Uninodular adenoma: 5.7 days

Where Does Radioactive Iodine Go?

10-32% Thyroid

68-90% Extra-Thyroidal

- Ovaries
- Testicles
- Parathyroids
- Adrenals
- Breasts
- Eyes
- Intestine

- Salivary glands
- Pituitary glands
- Muscles
- Bones
- Skin
- Gallbladder
- Kidneys.



"Radioactive iodine is effective, safe and relatively inexpensive."

Radioactive Iodine: Effective?

- If the goal is to destroy the thyroid, then it is effective
 - Only if the cause of autoimmune thyroid disorders is too much thyroid tissue that needs to be destroyed

HOWEVER: Excess thyroid tissue is not the cause; it is the consequence of the illness.

Radioactive I is Overused

 Radioactive iodine has not improved the outcome in patients with papillary carcinoma managed by near-total thyroidectomy and conservative nodal excision.

Radioactive Iodine: Safe?

- Radioactive iodine will bind to all tissues where iodine is bound
 - Glands
 - Breasts, prostate, ovaries, etc

All tissues of the body utilize iodine.

Radioactive Iodine: Safe?

- 6,841 patients with thyroid cancer
- Received an average dose of 162mCi of *I
- Dose dependant increase in cancer of:
 - Salivary gland, bone, soft tissue and colorectum
- Increased risk of primary malignancy of 27%

Radioactive Iodine: Safe?

- 2,793 Patients who received RAI from 1965-2002
 - Median 9 yr. follow-up
 - Treatment with thyroidectomy decreased mortality.

56% increase in mortality for RAI treated hyperthyroidism 40% increase in CVA 29% increase in mortality from cancer



74- year old Caucasian man with papillary ca treated with *I---14 days previously

Radioactive Iodine: Inexpensive?

- Cost of radioactive iodine treatment can vary from \$3,000-6,000 per treatment
- Iodine costs less than \$.50 per day.



- Only works in an iodine deficient state
 - Ineffective in an iodine sufficient state
 - ? Why iodine removed from bakery products
- Does not treat the underlying cause of any illness

If it does not treat the underlying cause of the illness, then why should it be the primary treatment modality used?
How Do You Prevent Radioactive Iodine from Damaging the Thyroid?

Ingest enough iodine to maintain iodine sufficiency and therefore maintain maximal suppression of radioactive I uptake by the thyroid gland.

How much iodine is necessary to achieve this?



Treatment of Autoimmune Thyroid Conditions: Holistic Approach

- Dietary changes
 - Gluten-free, aspartame, no trans fats, whole foods, etc.
- Vitamins and Minerals
 - Magnesium, selenium, Vitamin C
- Natural Hormones
 - Desiccated thyroid hormone
- Treat Underlying Infections
- Rectify an underlying iodine deficiency
- **Detoxify**

Amalgam and TPO, TG

- 39 patients with AIT tested for hypersensitivity to inorganic mercury (MELISA)
 - Expose lymphocytes to inorganic mercury
 - 12 had no sensitivity
 - 27 + MELISA testing for sensitivity to mercury

The group with sensitivity to mercury who had amalgams removed showed significant reduction in TPO (200%) and TG (30%) antibody.

		PATIENT INFO	DRMATION	REPORT STATUS Final	
QUEST DIAGNOSTICS INCORPORATED CLIENT SERVICE 248.373.9120 SPECIMEN INFORMATION SPECIMEN: AH907527X REQUISITION: 0001260 LAB REF NO:		DOB: 01/23/1957 Age: 53 GENDER: M ID: 01231957GT PHONE: 6163994701		ORDERING PHYSICIAN BROWNSTEIN, DAVID CLIENT INFORMATION 23200118 CHM/CASH PAY ACCOUNT CENTER FOR HOLISTIC MED 5821 W MAPLE RD STE 192 WEST BLOOMFIELD, MI 48322-2275	
COLLECTED: 08/03/2010 RECEIVED: 08/04/2010 REPORTED: 08/04/2010	14:37 03:46 08:14				
Test Name		In Range	Out of Range	Reference Range	Lab
TSH, 3RD GENERATION		3.40		0.40-4.50 mIU/L	BH
T4, FREE			0.7 L	0.8-1.8 ng/dL	вн
T3, FREE		253		230-420 pg/dL	ВН

Performing Laboratory Information:

BH Quest Diagnostics Inc-Auburn Hills 4444 Giddings Rd Auburn Hills MI 48326 Laboratory Director: Dr. Nadia Metwalli, MD

P

Iodine Deficiency and The Thyroid Gland

• Goiter

- Over 100 years ago
- Hypothyroidism
- Autoimmune thyroid illness
 - Graves'
 - Hashimoto's
- Thyroid cancer
 - There is a reduced iodine accumulation detected in the majority of thyroid cancers

ALL OF THESE CONDITIONS HAVE BEEN RISING OVER THE LAST 30 YEARS WHILE IODINE LEVELS HAVE BEEN FALLING!!

Conventional Approaches to Autoimmune Thyroid Disease

- Treats symptoms only
- Does not address the underlying cause of illness
- Utilizes drugs that block the absorption of iodine
 - PTU
 - Tapazole
- Surgery
- Radioactive iodine.

Treatment of Autoimmune Thyroid Conditions: Holistic Approach

- Dietary changes
 - Gluten-free, dairy-free, aspartame, no trans fats, whole foods, etc.
- Vitamins and Minerals
 - Magnesium, selenium
- Natural Hormones
- Desiccated thyroid hormone
 - Nature-Throid
- Treat Underlying Infections
- Rectify an underlying iodine deficiency.



- 64 year old executive
- Initial (2012) visit was for fatigue
- Full work up:
 - Hashimoto's
 - Low iodine
 - Low vitamins C, D and B1, B12
 - Low minerals

Treated with a holistic treatment plan of diet, water, salt, and nutrient repletion. Was treated with 25 mg/day of tableted Lugol's. Within a few months, was feeling "great".



- Did well for the next four years
- Only seen once per year
- Minor adjustments in his program
- October, 2015
 - Nervous, jittery, weight loss, insomnia
 - Exam: Hyper-reflexic, puffy thyroid, tremors

Quest Elegaustics	Quest Diag	nostics Incorporated	Report Status FRA
Patient Information	Specimen I	nformation	Client Information
FRANK E	Specimen: Collected:	WX594974Q 10/26/2015 / 07:56 CDT	Client #: 22467049 BROWNSTEIN, DAVID
DOB: 03/30/1954 AGE: 61	Received:	10/26/2015 / 21:15 CD1	
Gender: M	Reported.	10/31/2013 / 10.44 CD1	
Patient ID: 03301954FK			
Health ID: 85/300436214/4/4			
Test Name	In Ran	ige Out Of Range	Reference Range
ALKALINE PHOSPHATASE	98		40-115 U/L
AST	24		10-35 U/L
ALT	30		9-46 U/L
HEMOGLOBIN Alc	homogle	6.4 H	<5.7 % of total Hgb
represents optimal control patients. Different metrics patient populations. Stand	in non-pi s may appl ards of Me	regnant diabetic ly to specific edical Care in	
Diabetes-2013 Diabetes Car	re. 2013;3	36:s11-s66	
For the purpose of screenin diabetes	ng for the	e presence of	
5.7-6.4% Consistent with (prediabetes)	n increase	ed risk for diabetes	
>or=6.5% Consistent with	n diabetes	3	
This assay result is consis of diabetes.	stent with	n a higher risk	
Currently, no consensus ex Alc for diagnosis of diabe	ists for a tes for cl	use of hemoglobin hildren.	
MAGNESIUM, RBC	5.0		4.0-6.4 mg/dL
URIC ACID	7 1		4.0-8.0 mg/dL
Therapeutic target for gou	t patient:	s: <6.0 mg/dL	
TD	144		120 250 11/1
TSH	144	0.02 L	0.40-4.50 mIU/L
T4, FREE		3.3 H	0.8-1.8 ng/dL
T3, FREE		8.6 H	2.3-4.2 pg/mL
T3 REVERSE, LC/MS/MS	1	47 H	8-25 ng/dL
THYROGLOBULIN ANTIBODIES	<1		< OF = 1 10/11L
ANTIBODIES	<1		<9 IU/mL
VITAMIN B1 (THIAMINE),			
LC/MS/MS	9		8-30 nmol/L
PREGNENOLONE, LC/MS/MS	<5	Reference Range.	ng/dL
		18-58 YEARS: 13-2	08
FIBRINOGEN ACTIVITY,			
CLAUSS		426 H	175-425 mg/dL
CBC (INCLUDES DIFF/PLT)	6.1		3 8-10 8 Thousand/ul
RED BLOOD CELL COUNT	4.69		4.20-5.80 Million/uL
HEMOGLOBIN	14 1		13.2-17 1 g/dL
HEMATOCRIT	43 3		38.5-50.0 %
MCV	92.5		27 0-33 0 pg
MCHC	32.6		32.0-36.0 g/dL
RDW	13.1		11.0-15.0 %
PLATELET COUNT	239		140-400 Thousand/uL
MPV	9.2		7.5-11.5 fL
ABSOLUTE LYMPHOCYTES	4269		850-3900 cells/uL



- Diagnosed with thyroiditis/hyperthyroidism
- Treated with:
 - Iodine 50 mg/day
 - Lithium 60 mg/day
 - Vitamin A: 100,000 U/day
 - Thymus glandular
 - Magnesium (200 mg/day)
 - Vitamin C 10,000 mg/day

FRANK E		tion	Chent Information
DOB: 03/30/1954 AGE: 61 jender: M whone: 313.655.1862 vatient ID: 03301954FK lealth ID: 8573004362147474	Specimen: WX084572R Requisition: 0045917 Collected: 11/10/2015 / 08:21 CST Received: 11/10/2015 / 20:21 CST Reported: 11/19/2015 / 00:25 CST		Client #: 22467049 AH0100 BROWNSTEIN, DAVID DAVID BROWNSTEIN MD Attn: CENTER FOR HOLISTIC 5821 W MAPLE RD STE 192 WEST BLOOMFIELD, MI 4832
OMMENTS: FASTING:UNKNOWN		14	
Test Name TSH T4, FREE T3, FREE T3 REVERSE, LC/MS/MS TSI (THYROID STIMULATING IMMUNOGLOBULIN)	In Range	Out Of Range 0.01 L 4.2 H 13.8 H 77 H	Reference Range 0.40-4.50 mIU/L 0.8-1.8 ng/dL 2.3-4.2 pg/mL 8-25 ng/dL
TSI	<89		<140 % baseline
Peference Control are co	nsidered positiv	e.	
NOTE: A serum TSH level Units/mL can interfere w	greater than 350 ith the TSI bioa	micro-Internat: ssay and potent:	ional ially
NOTE: A serum TSH level Units/mL can interfere w give false positive resu	greater than 350 ith the TSI bioa lts.	micro-Internat: ssay and potent:	ional ially
NOTE: A serum TSH level Units/mL can interfere w give false positive resu Patients who are pregnan hyperthyroidism should h Gonadotropin (hCG) tests than 40,625 mIU/mL can i may give false negative recommended that a secon concentration falls belo approximately 20-weeks g	greater than 350 ith the TSI bioa lts. t and are suspec ave both a TSI a measured. A ser nterfere with th results. In thes d TSI is obtaine w 40,625 mIU/mL estation)	micro-Internat: ssay and potent: ted of having nd human Chorion um hCG level gr e TSI bioassay : e patients it i: d when the hCG (usually after	ional ially nic eater and s
NOTE: A serum TSH level Units/mL can interfere w give false positive resu Patients who are pregnam hyperthyroidism should h Gonadotropin (hCG) tests than 40,625 mIU/mL can i may give false negative recommended that a secon concentration falls belo approximately 20-weeks g ERFORMING SITE: QUEST DIAGNOSTICS INC AUBURN HILLS, 4444 GIDDI QUEST DIAGNOSTICS INC AUBURN HILLS, 4444 GIDDI	greater than 350 ith the TSI bioa lts. t and are suspec ave both a TSI a measured. A ser nterfere with th results. In thes d TSI is obtaine w 40,625 mIU/mL estation)	micro-Internat: ssay and potent: ted of having nd human Choriou um hCG level gr e TSI bioassay a e patients it i: d when the hCG (usually after 48326 Laboratory Director: STEVI 92675-2042 Laboratory Director:	ional ially nic eater and s SNH MANDELLMD. CLIA: 23D0664147 ION NAKAMOTO, MD PHD, CLIA: 05D0643352
NOTE: A serum TSH level Units/mL can interfere w give false positive resu Patients who are pregnan hyperthyroidism should h Gonadotropin (hCG) tests than 40,625 mIU/mL can i may give false negative recommended that a secon concentration falls belo approximately 20-weeks g ERFORMING SITE: 4 OUEST DIAGNOSTICS INC AUBURN HILLS, 4444 GIDDI 2 OUEST DIAGNOSTICS INC AUBURN HILLS, 4444 GIDDI	greater than 350 ith the TSI bioa lts. t and are suspec ave both a TSI a measured. A ser nterfere with th results. In thes d TSI is obtaine w 40,625 mIU/mL estation) NGS ROAD, AUBURN HILLS, MI- VY, SAN JUAN CAPISTRANO, CA	micro-Internat: ssay and potent: ted of having nd human Chorion um hCG level gr e TSI bioassay : e patients it i: d when the hCG (usually after 92675-2042 Laboratory Director: STEVI 92675-2042 Laboratory Director: JNN:	ional ially nic eater and s EN H. MANDELL.MD, CLIA: 23D0664147 ION NAKAMOTO, MD PHD, CLIA: 05D0643352
NOTE: A serum TSH level Units/mL can interfere w give false positive resu Patients who are pregnan hyperthyroidism should h Gonadotropin (hCG) tests than 40,625 mIU/mL can i may give false negative recommended that a secon concentration falls belo approximately 20-weeks g ERFORMING SITE: 4 QUEST DIAGNOSTICS INCAUBURN HILLS, 444 GIDDI 2 DIGST DIAGNOSTICS INCAUBURN HILLS, 444 GIDDI 3 DIGST DIAGNOSTICS INCAUBURN HILLS, 444 GIDDI 4 DIGST DIAGNOSTICS INCAUBURN HILLS HIL	greater than 350 ith the TSI bioa lts. t and are suspec ave both a TSI a measured. A ser nterfere with th results. In thes d TSI is obtaine d TSI is obtaine w 40,625 mIU/mL estation) NGS ROAD, AUBURN HALLS, MI- YY, SAN JUAN CAPISTRANO, CA OUT OF RANGE COLI	micro-Internat: ssay and potent: ted of having nd human Choriou um hCG level gru e TSI bioassay : e patients it i: d when the hCG (usually after 92675-2042 Laboratory Director: STEVI 92675-2042 Laboratory Director: JMN: 0.01 L 4.2 H	ional ially nic eater and s EN H. MANDELL.MD. CLIA: 23D0664147 ION NAKAMOTO, MD PHD. CLIA: 05D0643352 0.40-4.50 mIU/L 0.8-1.8 mg/dL



- Diagnosed with thyroiditis/hyperthyroidism
- Treated with:
 - Increase in Iodine 100 mg/day
 - Given Myers IV
 - Within 2 days, feeling better
 - Within 7 days, back to normal

Patient Information	Specimen Informa	ation	Client Information Client #: 22467049 AH0100 BROWNSTEIN, DAVID DAVID BROWNSTEIN MD Attn: CENTER FOR HOLISTIC 6089 W MAPLE RD STE 200 WEST BLOOMFIELD, MI 48322	
FRANK E DOB: 03/30/1954 AGE: 61 Gender: M Phone: 313.655.1862 Patient ID: 03301954FK Health ID: 8573004362147474	Specimen: WX- Requisition: 0046 Collected: 12/2 Received: 12/2 Reported: 01/0	4473798 321 9/2015 / 13:03 CST 9/2015 / 22:43 CST 5/2016 / 21:26 CST		
COMMENTS: FASTING:NO				
Test Name TSH T4, FREE T3, FREE T3 REVERSE LC/MS/MS	In Range 1.48 1.0 2.6 15	Out Of Range	Reference Range 0.40-4.50 mIU/L 0.8-1.8 ng/dL 2.3-4.2 pg/mL 8-25 ng/dL	

PERFORMING SITE: BIH QUEST DIAGNOSTICS INC AUBURN HILLS, 4444 GIDDINGS ROAD, AUBURN HILLS, MI 48326 Laboratory Director: STEVEN H. MANDELL, MD, CLIA: 23D0664147 EZ QUEST DIAGNOSTICS/NICHOLS SJC, 33608 ORTEGA HWY, SAN JUAN CAPISTRANO, CA 92675-2042 Laboratory Director: JON NAKAMOTO, MD PHD, CLIA: 05D0643352



Allergy

- Rare
- Radioactive iodine allergy not a cause of allergy to inorganic, non-radioactive iodine
- NAET very effective.



- Clear both iodine and iodide
- May need to clear in combination with endocrine glands
- Clear toxic halogens with NAET
 - Bromine, Fluoride and Chlorine

For more information on NAET go to: naet.com

Autoimmune Thyroid Disease

- Iodine was treatment of choice for autoimmune thyroid disease before onset of radioactive iodine
 - Effective treatment dates back over 100 years
- Iodine levels have fallen over 50% in last 30 years
 - Autoimmune thyroid illness has increased at rapid rate during same time

Detoxification Reactions

- Iodine is a detoxifying agent for body
 - Bromine, Chlorine, Fluoride, Mercury and other metals
- Can overload the body's detoxification mechanisms
 - Proper nutritional support
 - Raise pH
 - Healthy diet
 - Water, salt, etc.
 - Liver support

Iodine-Induced Hypothyroidism and Goiter

- Hokkaido, Japan
 - 1960 increased rate of goiter
 - 1987 found no increase rate of goiter
- In patients given from 1.5-150mg daily of iodine transient decrease (24-40 hours) in thyroid hormone production noted *
 - Thyroid levels quickly adjust

Iodine-induced hyperthyroidism

- Hyperfunctioning autonomous nodules
 - Nodule may become hyperfunctioning with iodine replacement
 - Very rare possibility



Iodism

- Metallic taste in mouth
- Increased salivation
- Sneezing
- Coryza
- Frontal sinus headache
- Acne

Rare. Personal experience shows iodism occurs in approximately 1-3% of patients. Easily rectified by using minerals and electrolytes or lowering dose. NAET also effective.

Thyroid Cancer

- 1% of all cancers in U.S.
- Women 3:1

• Iodine levels have fallen 50% over the last 30 years

- Thyroid cancer has significantly increased during the last 30 years
 - From 1993-2002, thyroid cancer increased 2.4x in the U.S.
 - FP News. 4.1.07
- Radiation exposure increases risk
 - Iodine is prophylactic agent against radiation exposure when iodine is sufficient in thyroid gland
 - Chernobyl

How to Minimize Adverse Effects

Use adequate vitamins and minerals

- Magnesium
 - Cytosolic free calcium which causes calcification of mitochondria
 - Free calcium responsible for initiating the oxydizing process of TPO in thyroid gland
 - Magnesium and Iodine can reverse this process
- Electrolytes
 - Salt
- Antioxidants
- Eat Clean Diet
- Balance horomones

Medical Iodophobia

"Medical iodophobia is the unwarranted fear of using and recommending inorganic, nonradioactive iodine/iodide within the range known from the base of three generations of clinicians to be the safest and most effective amounts for treating symptoms and signs of iodine/iodide deficiency (12.5-**50mg/day).**"

Dr. G. Abraham, 2004



- Iodine levels have fallen over 50% during the last 40 years
- During this time, elevations in autoimmune thyroid illness, autoimmune disorders, thyroid cancer, breast cancer, prostate cancer and other cancers
- If iodine were a dangerous agent for the above conditions, incidences of the above conditions would not be rising over the last 30 years.



- Start slow
- Check pre and post levels of iodine
- Follow patients closely
- Get ultrasounds before starting treatment when indicated
- Combine treatment with a holistic plan
 - Diet, vitamins, minerals, detox, etc.



- Use a combination of iodine/iodide
- Lugol's Solution
 - 1 drop: 6.25mg (2.5mg iodine /4mg iodide)
- Lugol's or Tableted Lugol's
 - 1 capsule: 12.5mg (5mg iodine/7.5mg iodide)

Therapeutic doses of iodine/iodide combinations vary between 6-50mg/day.



"The great enemy of the truth is very often not the lie, deliberate and contrived and dishonest, but the myth, persistent, persuasive, and unrealistic."





Autoimmune Disease | Cancer | Detoxification | Fatigue | Thyroid Disease

David Brownstein, M.D.

