**SICK HOUSE-BUILDING SYNDROME**

- Sick House (SH) has become more common in present times with changing building material and construction practices.
- Cases of SBS are reported to occur predominantly in the offices and sometimes in the schools, whereas cases of SHS are usually found in general dwellings with indoor air pollution.
- Indoor air may be polluted either by biological and/or chemical pollutants.
- Physical factor like poor ventilation is a single most significant contributing factor.
- Symptoms of SHS develop through toxic, allergic or inflammatory reactions from mold exposure.

PUBMED: 19969320 [PubMed-indexed for MEDLINE]

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**TOXIC MOLD SYNDROME**

- **CIRS-WDB**
  - Chronic Inflammatory Response Syndrome Caused by Exposure to the Interior Environment of Water-Damaged Buildings (CIRS-WDB).

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**TOXIC MOLD SYNDROME**

- There are more than 100,000 species of fungi, comprising 25% of the biomass of the earth.
- Mold, has been associated with a number of serious—even deadly—health complications.
- Saprophytic fungi derived from many different systemic groups (Mucor, Aspergillus, Penicillium, Fusarium).
- Toxic fungi are abundant in many living spaces like cellars in older homes with high moisture and new housing with water leaks and plumbing problems.
- Common indoor molds include Cladosporium, Penicillium, Aspergillus, and Alternaria.

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**TOXIC MOLD SYNDROME**

- Indoor contaminants of WDB include but are not limited to:
  - Fungi, Bacteria, Actinomycetes, and Mycobacteria and their toxins.
  - Fragments of fungal structures; Beta glucans, Mannans, Hemolysins, Proteinases, Spirocyclic drimanes and microbial volatile organic compounds (VOCs). They are Inflamagens.

The 161-page research paper can be found, in its entirety, at:
http://www.policyholdersofamerica.org/doc/CIRS_PEER_REVIEWED_PAPER

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**TOXIC MOLD SYNDROME**

- The Indoor contaminants of WDB are:
  - Potent inducers of inflammation in the airways and the lung:
    - Beta-D-glucans present in the cell wall of fungi which can potentially cause local tissue damage.
  - Endotoxins—lipopolysaccharide compounds on the outer cell wall of Gram-negative bacteria cause an inflammatory response.
  - Modulators of the immune system:
    - Beta-D-glucans in itself does not cause a neutrophil inflammation, but when coexist with the endotoxin,- neutrophil invasion persists into the airways and lung.
  - Persistence of an increased number of neutrophils in...
TOXIC MOLD - Sarcoidosis

- Sarcoidosis occurs as the consequence of interaction between one or more environmental agents with genetic factors.
- Environmental agents may vary from exposures to insecticides, pesticide, mold, mold fragments & musty odors-VOCs and living in a home with central air conditioning.

AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE VOL 170 2004

TOXIC MOLD

Mold VOCs produce offensive olfactory odors.
Damp buildings often have a moldy smell or visible mold growth; some of these visible molds are human pathogens having adverse health effect.

- Long term effect on human health is very detrimental especially in children.
- Its mutagenicity is potentially dangerous to humans, animals, microflora and microorganism.

TOXIC MOLD - MYCOTOXIN

Fungi produce the most potent mycotoxins like aflatoxin—Aspergillus flavus, ochratoxins—Aspergillus ochraceus, rubratoxins—Penicillium rubrum or satratoxin—Strachybotrys chartarum

- Mycotoxins have been shown to be very toxic and harmful. It triggers many illnesses mainly upper respiratory tract infections, constant headaches, nausea, lethargy and a general ill feeling.
- Living in spaces for a considerable period may lead to cancer.


TOXIC MOLD SYNDROME

1. Stachybotrys (SBC) : Black toxic mold is less common than other indoor molds, but far more dangerous as it is capable of producing mycotoxins under certain environmental conditions
2. It grows indoors in moist surroundings
3. Wet material high in cellulose like paper, fiberboard, lint, and gypsum board provides black toxic mold perfect breeding ground. Modern construction is full of such material

TOXIC MOLD - STACHYBOTRYS

- Stachybotrys chartarum is a cellulose-decaying fungus with worldwide distribution.
- It grows well at room temperature and with humidity above 93%. S. chartarum requires special media high in cellulose and low in sugar and nitrogen to compete with Penicillium and Aspergillus.
- Ninety percent of field-collected spores are not culturable. In other words presence of small no. of colonies on culture plate are indicative of higher degree of infestation.
- S. chartarum produces macrocyclic trichothecenes which is highly dependent on strain and environmental conditions.
- Not all strains produce detectable levels of trichothecenes. Therefore presence of S. chartarum is not a proof of presence of toxin

1. The respirable small fragments containing mycotoxin and allergens are released from indoor mold.
2. The small fragments of Stachybotrys species are 500 times more than the spore counts and they are deposited 250 x more than the spore in the respiratory tract.
3. These particles are shuttle for the mycotoxin and allergen entry into the body.
4. The germinating spores release more allergen than dormant spores in many of the indoor molds even when they reside in the resp. tract.
5. Inhaled mycotoxin is 10x more potent than ingested mycotoxin, can cause local mucosal damage independent of the systemic toxicity.

M Strickland MD  JACI Volume 118 Issue 3, Sept 2006 763-764
TOXIC MOLD - STACHYBOTRYS

These fungi produce Cilostatic, Cytotoxic, Inflammatory and mutagenic factors.

7 Water damaged buildings have distinct fungal ecology than outdoor molds.
8 VOCs from Tricoderma Viriciae have been shown to trigger histamine release from the pulmonary mast cells.
9 Fungal Intracellular proteins, protease and fungal surface protein have been shown to be allergenic.
10 Alternaria species sensitization predicts sensitization to a variety of fungi.
11 Mold growth is accompanied by bacterial growth and inflammatory bacterial products, more inflammation.

M Strickland MD  JACI Volume 118 Issue 3, Sept 2006 763-764
Stachybotrys chartarum

Stachybotrys chartarum, a type of greenish-black mold commonly associated with water damage.

Stachybotrys chartarum

MAGNIFIED MICROSCOPIC VIEW OF S.B. MOLD

Stachybotrys chartarum

MICROSCOPIC VIEW OF S.B. MOLD SPORES WHICH Produce macrocyclic trichothecenes (one of which is Satratoxin H)

Stachybotrys chartarum

A conidium of Stachybotrys chartarum showing the ridged surface on a outer layer of mature spore

Stachybotrys chartarum

TOXIC MOLD SYNDROME

In Summary
- Toxic molds can grow in any part of a building that is dark and damp: under the roof, in the drop ceilings, kitchens and bathrooms, etc
- when people are in the proximity of mold growth they inhale mycotoxins resulting in the organ damage.

Toxic Mold Syndrome

Stachybotrys spores contain
- macrocyclic trichothecenes (satratoxins) nonvolatile, highly cytotoxic & harmful when inhaled or ingested and potent inhibitors of protein and DNA synthesis.
- Trichodiene, a volatile trichothecene derivative, is very toxic by inhalation

www.apsnet.org/online/Archive/1999/stachy.htm
TOXIC MOLD SYNDROME
As mold frequently grows inside the walls and ceilings in wet building, spores often end up within a ventilation system of entire house or building exposing occupants to toxic mold away from the site of mold growth

TOXIC MOLD EFFECTS
- Toxic effects of various molds may be non-IgE mediated, including Hypersensitivity pneumonitis, infectious disease, and mycotoxicoses.
- Hypersensitivity pneumonitis is a clinical syndrome associated with systemic and interstitial lung disease that occurs in susceptible individuals following fungal inhalation.
- Most fungi are not pathogenic to man; however, certain fungi are capable of infecting even immunocompetent individuals reside in their upper and lower airways – chronic respiratory disease.

TOXIC MOLD EFFECTS:
Symptoms:
- symptoms may manifest as early as 2-3 days to few months following exposure; and
- symptoms may manifest in any or many organs
- initial symptoms are often confused with those of the flu or the common cold.
- Eye irritation, headache, runny nose, nose bleeds, coughing and shortness of breath and skin rashes, are all signs of black toxic mold exposure.
- In some cases, the reactions are more severe, including nausea vomiting, diarrhea, severe abdominal pain and leucopenia, thrombocytopenia

TOXIC MOLD SYNDROME
Symptoms:
- If exposure continues, symptoms will often become much more serious like recurrent respiratory infection, asthma, Hypersensitivity Pneumonitis and pulmonary hemorrhage.
- The most famous case of black toxic mold exposure occurred in one Cleveland neighborhood, 45 cases of pulmonary hemorrhage were documented and 16 infants died.
- Mood & Memory problems including memory loss, Muscle pain & weakness, Fatigue & Fibromyalgia are also common symptoms.

TOXIC MOLD EFFECT
- Allergic & Inflammatory responses are the major causes of symptoms
- However, some symptoms may be from the toxic effects of molds and not from IgE or other immune mechanisms.

TOXIC MOLD EFFECT
Study reported in the Arch Environmental Health- July 2003
the authors studied 100 patients who had been exposed to toxic molds in their homes.
- The predominant molds identified were 13 molds

Rea WJ, Didriksen N, Simon TR, Pan Y, Fenyes EJ, Griffiths B.
Arch Environ Health. 2003 Jul;58(7):399-405
Physical Symptoms and signs:
- respiratory symptoms (e.g., rhinorrhea, sinus tenderness, wheezing) were found in 64% of all patients.
- neurological dysfunction (e.g., inability to stand on the toes or to walk a straight line with eyes closed, as well as short-term memory loss) were identified in 70% of all patients.
- Objective abnormal autonomic nervous system tests were positive in all 100 patients tested (HRV).

Sensitivities and exposures to mold were confirmed in all patients by intradermal testing for individual molds (98% positive).
- measurement of serum antibodies (44% positive)
- immunotoxic abnormalities in T and B cells, and subsets, were found in more than 80% of the patients.
- the findings of presence of: trichothecene toxin and its breakdown products in the urine, serum antibodies to molds, and positive intradermal skin tests confirmed mold & mycotoxin exposure.

Number of serious diseases linked to toxic mold exposure varied from:
- fibromyalgia, chronic fatigue syndrome
- lupus, autoimmune disease
- cancer
- Epstein-Barr
- neurological diseases
- Lyme disease, tuberculosis
- sudden infant death syndrome
- chemical sensitivity

Study reported by Thrasher & colleagues showed:
- presence of neural antibodies and neurophysiological abnormalities in patients exposed to molds at home who developed symptoms of peripheral neuropathy (i.e., numbness, tingling, tremors and muscle weakness in the extremities).
- Serum samples were analysed for the 8 neuro-antigens antibodies: myelin basic protein, myelin-associated glycoprotein, myelin oligodendrocyte glycoprotein, ganglioside GM1, sulfatide, alpha-B-crystallin, chondroitin sulfate, tubulin, and neurofilament.
- antibodies to molds and mycotoxins were also measured with ELISA.
TOXIC MOLD EFFECT

Neurophysiologic evaluations for latency, amplitude, and velocity were performed on 4 motor nerves (median, ulnar, peroneal, and tibial), and for latency and amplitude on 3 sensory nerves (median, ulnar, and sural).

RESULTS:

- Patients with documented exposure to molds have elevated titers of antibodies to neural-specific antigens (IgA, IgM, and IgG).
- Nerve conduction studies revealed abnormalities in 4 patient groupings:
  1. Sensory-motor polyneuropathy (n = 55, abnormal),
  2. Motor neuropathy mixed (n = 17, abnormal),
  3. Sensory neuropathy (n = 27, abnormal), and
  4. Presence of symptoms but no neurophysiological abnormalities (n = 20, normal controls).

TOXIC MOLD EFFECT:

- All groups showed significantly increased autoantibody titers for all isotypes (IgA, IgM, and IgG) to neural antigens when compared with 500 healthy controls.
- Groups 1 through 3 also exhibited abnormal neurophysiologic findings.


TOXIC MOLD EFFECT

The authors concluded that exposure to mold in the water-damaged buildings increases the risk for development of:

- Peripheral neuropathy
- Neural autoantibodies,
- Neurophysiologic abnormalities in exposed individuals.

PMID: 15259425 [PubMed - indexed for MEDLINE]

AAEM MOLD REVIEW 2004


Conclusions:

- Common indoor molds produce 70+ allergens & 100’s mycotoxins.
- Exposure to high levels of indoor mold can cause injury to and dysfunction of multiple organs and systems including respiratory, hematological, immunological, and neurological systems, in immunocompetent humans.

AAEM MOLD REVIEW 2004


- Memory loss, poor concentration, chronic headaches and severe depression seen in over 40% of indoor mold exposed patients
- 43 mold exposed patients had neurocognitive deficits compared to 202 healthy controls—including balance, blink reflex, color perception, reaction times & left grip strength (p<.001). (Gray, Kilburn, Crago)
- EEG brain studies also noted abnormal brain waves in mold exposed patients (Crago et al.)

ACOEM MOLD POSITION PAPER 2002

HARDIN et al.

- ACOEM statement ... which concludes that evidences does not support the contention that mycotoxin-mediated diseases occur thru inhalation in non-occupational settings
- It is unlikely that sufficient numbers of spores could be inhaled to cause health effects
- The presence of mycotoxins could not give rise to a group of non-specific complaints
**AAAIAI MOLD POSITION PAPER 2006**
Bush et al. JACI 2006;117:326-33

- “We agree with the ACOEM statement …
- which concluded that evidences does not support the contention that mycotoxin-mediated diseases occur thru inhalation in non-occupational settings”
- It is unlikely that the sufficient numbers of spores could be inhaled to cause health effects
- “Furthermore, the contention that the presence of mycotoxins could give rise to a group of non-specific complaints is not consistent of what is known to occur.”

**TOXIC MOLD SYNDROME**
Opinion on Causation on Toxic Tort should settle the following:
1. Plaintiff’s exposure to a toxin
2. Toxin is capable of causing the particular illness “general Causation”
3. Plaintiff was exposed to sufficient level of toxin to cause the illness or “specific causation”

Therefore documentation of the necessary facts are essential to win the legal battle

**TOXIC MOLD SYNDROME**
DO NOT FORGET TO EVALUATE YOUR PATIENT FOR THE FOLLOWING:
- TOTAL LOAD
- EXPOSURE TO MOLD & MYCOTOXIN
- CO-MORBIDITY AND RISK FACTORS
- BIOCHEMICAL INDIVIDUALITY
- GENETIC SUSCEPTIBILITY
- NUTRITIONAL DEFICIENCIES

**The Total Load Effect**
depends upon
- Food
- Infections
- Inhalants
- Genetics
- Emotions
- Electromagnetic
- Nutrition

**CASE STUDY**
D.B 48Y.o W/F, Professor of Biochemistry

- Fatigue
- Memory Problems: poor concentration, short term memory & comprehension.
- AR, Asthma and Chronic Rhino-Sinusitis-Frontal Headache-Dust-Mite-Mold- Pollen Allergy
- Diarrhea/Constipation, Gas-Bloating, Weight Loss,
- Sensitivity to Medications & Hormones
- Transient, Joint Aches, muscles & Fatigue

Presented in 12/00; problems since late 1995: saw 5 physicians including 3 internists, an ENT, and an allergist; was seeing an allergist and a reproductive endocrinologist at the time of visit; health problems led to early retirement in 8/04. She came in for the Work up for Food and Chemical Sensitivity Didn't want any work up for Inhalant sensitivity as was getting inj from allergist.
Her symptoms worsened from exposure to:

Work Environment
Wet Weather (worse in Oct/Nov & March/April)
Home vs. Being Away on vacation
Foods
Perfumes / Chemicals

System Review:
- **HEENT:** Dark circles under eyes, recurrent Chronic Rhinosinusitis, postnasal drip, Headache, Canker sores, Cold sores
- **Dental:** 13 Amalgams / 1 Gold Crown
- **Respiratory:** Asthma controlled by corticosteroid inhaler, bronchodilator, and antihistamine
- **Abdominal:** Bloating, constipation, diarrhea, discomfort & pain, Acid reflux disease, H Hernia
- **Precancerous colon Polyp**
- **Neurological:** Memory, concentration & cognitive problems; some coordination problems
- **Musculoskeletal:** Sporadic joint & muscle aches
- **GYN:** Endometriosis - Infertility, Sex hormone def.
- **Skin:** Skin cancer - 4 Basal Cell Lesions + 1 cell atypia

Past History:
- Exposure to Crop Dusting, DDT directly sprayed on her as she followed the truck and ran behind it (9-12)
- Recurrent Respiratory Infection and Tonsillitis, Throat Ager 12
- Menarche Age 13, Dysmenorrhea - Metrorrhagia
- Exposed to Vinyl Chloride & solvents in Analytic Lab, Age: 18-20
- Undergraduate: Exposure to Lead - Mercury and Solvents
- Post Surgical Hormone Deficiencies required HRT

Past History:
- In 1996 moved in the moldy, dusty building at work
- Colon Adenoma – 2000
- Thyroid Adenoma – partial thyroidectomy – 2003
- Hypothyroidism - 2003
- Lyme Disease & Co infections – 2005 (Multiple Tick bites in Maryland and remained undiagnosed for 10 yrs)
- GH Deficiency – 2006
- IgA, IgG 1/4 Deficiency – 2006

Surgical History:
- 1963: T & A
- 1970: Wisdom Teeth Extraction
- 1971: D & C
- 1974: Removal of Vaginal Gartner Duct Cyst
- 1986: Laparoscopy for the Dx & staging of Endometriosis and Fibroid
- 1990 & 1992: Laparoscopy
- 1993: Hystrectomy & Oophrectomy - HRT Transdermal
- 2000: Removal of precancerous Colon Polyp
- 1997-2002: Removal of skin cancer lesion

ENV History
- 26 Yr Old House / FHA Gas Heat/ Electric Stove
- Ceramic Tile - Half of 1st Floor
- Vinyl Tile - 2nd Floor Bath
- Carpet throughout Remainder of House
- Remodeling – 1997
  - Added Family Room
  - New Wallpaper in Parts of House
  - New Carpet throughout House
  - New Paint throughout House
  - Upgraded Furnace
  - New Roof Shingles
  - Added Roof Stack Vent (no prior roof ventilation)
CASE STUDY (cont’d)

**Occupational History**
- Moved to Basement of an Old Building – 1996
  - Moldy Environment
  - Poor Ventilation
  - Incinerator Smoke / Cigarette Smoke / Exhaust Fumes (enter from outside)
  - Sewer Backups
  - Roach Infestation
  - Exposed to Solvent Fumes from Labs and Sewer System - Office Adjoined Lab; Worked in Lab with Solvents including Benzene & Dioxin

CASE STUDY (cont’d)

**FAMILY History:**
- Mother : Died at age 74 Pancreatic Ca, Skin Ca
- Father : Skin Cancer, Prostate Ca, Kidney Ca, High Cholesterol, High BP.
- Pat GM & PGGM: Liver Cancer
- Mat Uncle: Colon Ca Died at age 41
- Pat Aunt & Cousins - 3: Menstrual Probs, Endometriosis

CASE STUDY (cont’d)

**Physical Examination:**
NL except
- Red-Boggy, swollen nasal m.membrane,
- Swollen tender palpable Thyroid
- Lungs-Scattered Rhonchi
- Abdomen- neg, except scars from surgery and laparoscopy
- Neurological: Brain Fog, Augmented Romberg +ve, very talkative

CASE STUDY (cont’d)

**Lab Results:**
- CBC-NL, MCV 97, T&B Cells NL, T4/T8 Ratio 1.9 NL, (2.4-in 2003), IL2 NL
- T&B cell Function : PHA-NL, CONA-LNL, Pokweed Mitogen LNL, Liposaccharide NL, NK Cell 18%, NK Cell Activity 38.8%
- Auto Immune panel : NL
- CMP-NL, Lipid Panel NL

CASE STUDY (cont’d)

**Lab Studies (cont’d):**
- Thyroid Function – NL, Thyroid Peroxidase AB neg
- Hormones: Estrogen -357,
  - DHEA-SO4-41L, Testosterone-19 L, Free 1.8 L, 0.96 %L
- Vitamins: Vit A 43 LNL, Vit E 25.3 H, Vit B12-1702 H
- Serum Folate >20 H
- Mineral s: RBC-Mg 3.8 LNL, PO4-518 LNL, Mo .0006 LNL
- URINE: Low Mo, Se, Sulphur.
  - Gliadin Ab-IGG& IGA – Neg, Transglutaminase Ab Neg, HLA-Type-NEG
  - 2OHE/16OHE1 Ratio: 3.10 NL (Estrogen replacement Rx)
  - Cortisol: 15 AM
  - IGF1 had arginine infusion test and showed GH deficiency
- Lyme co infection: positive for Lyme, Babesia and Sxs of Bartonella (2005)
  - Provocation Challenge for Toxic Heavy Metals (8 hrs urine): Lead & Mercury
- Blood-Chemical Analysis:
  - Pesticides: HCB, DDT, DDE, Trans-NonAchlor
  - Solvents: Hexane, 2-3 Methyl Pent
CASE STUDY (cont’d)

Lab Studies (con’t)
Mold plates of her house- 2001: Cladosporium and sterile fungi 2-5 colonies per room

House evaluation by an expert (2004-6)
Found dead mice, urine & excreta in her First Floor Ceiling.
Attic: penicillium, Aspergillus
Basement: water Leak -> Stachyboitrys, Penicillium, Aspergillus
Bedroom: Aspergillus and Penicillium, High no. of colonies.

CASE STUDY (cont’d)

URINE ORGANIC ACIDS
Fatty Acid Metabolism: Abnormal, Carnitine Def.
Mitochondrial Function: Functional Abnormalities
Arginase def (very high orotate +ve), B-complex, CoQ10 & Niacin Def
Detoxification Markers: Antioxidant def
Intestinal Dysbiosis Markers: Positive
Plasma Amino Acid Def: Low
Arginine, Lysine, Histidine, Glutamic acid, Phenylalanine, Threonine, Tyrosine, Leucine etc.

CASE STUDY (cont’d)

Intradermal Test:
Sensitive to
Indoor Inhalants: ID, DM, Mold Mix 1-2-3-4,
and many different Molds
Outdoor Inhalants: Tree, Grass, and Weed Pollens
Foods: Many
Hormones: Estradiol, Testosterone, DHEA, Progesterone, Pregnenolone, Cortisol, LH, Thyroid
NTs: Histamine, Serotonin, Nepi, Dopamine, A-Choline

CASE STUDY (cont’d)

Diagnoses:
Chronic Fatigue
Allergic Rhino-Sinusitis, Asthma,
Toxic Brain Syndrome
Chemical Exposure: solvents and pesticides
Toxic Heavy Metal Exposure
Immune Suppression,
Hashimoto’s Thyroiditis, Hypothyroidism,
Food and Chemical Sensitivity
Inhalant(Mold, Pollen etc.,)
Chemical Exposure: solvents and pesticides
Toxic Heavy Metal Exposure
Immune Suppression,
Hashimoto’s Thyroiditis, Hypothyroidism,
Food and Chemical Sensitivity
Inhalant(Mold, Pollen etc.,)
Metabolic Dysfunction in Energy Cycle and in CHO and Fat Metabolism

CASE STUDY (cont’d)

Subsequent Diagnoses:
Neurocognitive Dysfunction
Severe Mold Sensitivity (changing end points)
Chronic Lyme- Neuroborelliosis coinfection
Growth Hormone-Sex Hormone Deficiency

CASE STUDY (cont’d)

House Remediations:
2004:
• Replaced Moldy Roof & Insulation
• Cleaned Attic & Basement
• Repaired Leak in Basement where Deck Joined
• Cleaned Carpet, Upholstery & Ducts
• Replaced Austin Air Filters
Case Study (cont’d)

House Remediations:
2007:
- Replaced Carpet w Hardwood Floors
- Cleaned & Sealed Moldy Bathroom Popcorn Ceiling & Replaced w Mold-Resistant Drywall
- Painted Entire House Interior w - Low VOC Paint
- Cleaned Ducts & Upholstery;
- Replaced Austin Air Filters
- Washed All Furniture & Clothes
- Installed Lennox 16mer Filter in Furnace Return Duct
- Installed Venmar 4000 Energy Recovery Ventilator for extra ventilation

Case Study (cont’d)

Effects Of Remediation:
- Significant improvement of her overall health
- Improving end points for molds, pollens, food, chemical, Hormones and NTs
- Changing requirement for HRT, Thyroid & GH
- Improving Neurocognitive Function
- Reduction in the requirement for IV antibiotics.

CASE STUDY (cont’d)

Comprehensive Management:
- Avoidance - Environmental Control
- Four Day Rotation Diet of Chemically Less Contaminated Food, Low yeast Diet
- Antifungal; Nystatin, Diflucan
- Probiotics-Digestive Enzymes,
- Nutrient Replacement by IVs, and oral Supplements
- Antigen Injection for Inhalants-Mold-pollen,Food -Chemicals-Hormone -
- Chelations to lower Total Toxic Load
- Biodetoxification - Cholestyramine
- Sauna Detoxification - Heat Depuration-Exercise(Tennis)
- Antimicrobial Therapy for Lyme and CO infection(MedPort)
- Stress Reduction : Early Retirement from Work Environment – 2004

CASE STUDY (cont’d)

Comprehensive Life line, Env, Occupational
Family History is very important in the evaluation of a complex patient.(2-3x)
- Listen to your patient but be persistent in your own evaluation as you are the commander in chief.(when pt fails to have predicted response to the treatment)
- The role of Mold –Mycotoxin as well as solvents, DDT-Dioxin and Toxic Heavy Metal retention was significant in this patient’s complex presenting symptoms. These environmental exposures have cumulative and additive as well as synergistic effect

Case Study (cont’d)

Summary:
(1)
- Mold and mycotoxin exposure can not only cause respiratory symptoms but can also trigger neuro-immune-endocrine dysfunction and epigenetic changes
- Chemicals can trigger Neuro-Immune – Endocrine amplification system. Immune suppression can trigger Autoimmune disease, Cancer,Adenoma, Chronic persistent Infection like lyme & co infection
- Total Load Reduction has been the most important prong of medical management in this case by process of Remediation-remodeling-ventilation etc

Summary: (2)