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14 - BEYOND THE BARRIER: A HYPOTHETICAL MODEL FOR CAUSE AND PROGRESSION OF MORGELLONS DISEASE

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The author proposes the symptoms set often referred to as Morgellons Disease is the result of increasing inorganic mercury levels beyond the blood/brain barrier (hereafter referred to as the Barrier Theory). While inorganic mercury does not easily pass beyond the barrier, organic mercury does and may return to an inorganic state beyond the barrier. If proven valid, our present understanding of mercury will need reevaluation.

The Barrier Theory considers **mercury as a neurotoxin** the foundation of the symptoms set often called Morgellons Disease. This theory is introduced with consideration of the various species of mercury and their relationship to the blood/brain barrier, an initial inventory of agents potentially changing inorganic mercury to organic, and suggested progression of symptoms relating to increasing inorganic mercury levels beyond the barrier. Proposed directions for Morgellons Disease research are shared.

PROPERTIES OF ORGANIC AND INORGANIC MERCURY



Mercury exists in the inorganic form as well as various species of organic form. Viewing the body as an aquatic environment, it is noteworthy mercury is mobile, "...liquid at room temperature... (and) is 13.6 times heavier than water" (Gochfeld 2003: abstract).

Mercury is ingested into the body through various means. Inorganic mercury does not appear to directly effect the nervous system as, "Studies on rats and monkeys indicate that inorganic mercury penetrates the blood-brain barrier only to a very limited extent" (Friberg & Mottet 1989; abstract).

While there are a variety of organic species of mercury, the research of passage beyond the blood/brain barrier and related neurological consequences generally focus on methyl mercury (see Abraham et al 2008, Carrier et al 2001, Gochfeld 2003, Friberg & Mottet 1989). Simply stated, "the ability of MeHg (methyl mercury) to cross the blood-brain barrier accounts for its accumulation in the CNS (central nervous system) and a clinical picture that is dominated by neurological disturbances" (Aschner & Aschner 1990). In organic form, mercury migrates through the blood/brain barrier.

Mercury may change from inorganic to organic when introduced to other agents. It may also change from organic to inorganic. Friberg and Mottet (1989) observe, "Results from a number of studies on humans exposed for many years to methyl mercury have shown high concentrations of inorganic mercury in the brain in relation to total mercury"; this may indicate a transformation from organic to inorganic beyond the blood/brain barrier.

The ability for mercury to pass beyond the blood/brain barrier in organic form and then stabilize to inorganic would increase amounts of mercury beyond the barrier.

BARRIER THEORY RELATED TOXINS

This model requires organic mercury or the occurrence of chemical reactions creating organic mercury within the body. The associations of dental adhesives containing toluene (and other potential interactive agents) to Morgellons, as well as similarities between Morgellons' and methamphetamine users' symptoms, may relate to body chemistry.

Mercury



Sources for ingestion of mercury include, but are not limited to: dental materials, water runoff from gold and silver mining (mercury used in extraction, found in tailing piles and transported within associated water shed), skin lightening creams, fish consumption and coal burning power plants. Organic mercury ingested in quantity results in neurological disorders and death as documented in Minamata, Japan (Allchin 2008) and northern Iraq (Jalili & Abbasi 1961).

Mercury containing amalgam fillings have long been considered as a potential source of mercury ingestion. The FDA has released a warning of, "Dental amalgams contain mercury which may have neurotoxic effects on the nervous systems of developing children and fetuses" (<http://www.fda.gov/cdrh/consumer/amalgams.html>, accessed Aug. 3, 2008); suggesting amalgam related mercury may be carried through the body. Reviewing the likely effects of amalgam fillings, it is surprising it is still in use (see Mutter 2011). While anecdotal, my own documented case of symptoms and recovery after bioremediation of dental toxins suggest a connection (Keleher 2008a).

While there have been studies to better understand distribution and effects of mercury from historic mining activities (see Churchill et al 2004, Suchanek et al 2008, and Winch et al 2008), one suggest, "Effects of historical contamination by heavy metals are potentially exacerbated by presence of organophosphate pesticides, at concentrations exceeding National Academy of Sciences recommendations, throughout the lower watershed and the San Francisco Bay" (Hinton, DE 1998). This may relate to organic mercury levels and a concentration of Morgellons sufferers.

A large scale study on the effects of mercurial skin whitening creams, list "scabies" as a commonly documented symptom (Mahe' et. al. 2003). Morgellons patients, including the author, are often diagnosed with scabies. Toxic skin creams containing mercury are still in use in various locations globally including US Border States (Center for Disease Control and Prevention, "Mercury Poisoning Associated With Beauty Cream- AZ, CA, NM and Texas" 1996).

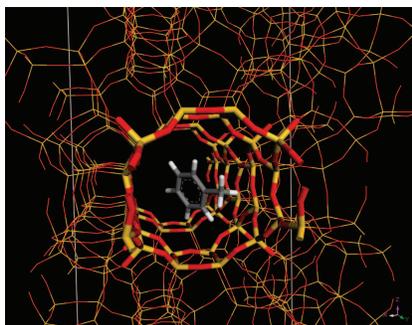
Under the general search of "Mercury fish consumption" Pubmed.gov list eight hundred eight related reports (accessed March 29, 2011). The dangers of eating fish from contaminated sources within the US are well documented (see Mercury Study Report to Congress, 1997).

The emission of mercury from coal burning power plants has been extensively researched. Associated problems appear to be global when appraising health risk and management (Chamley 2006). Little published research on this topic has been done since 2007 and a current and ongoing assessment is needed.

The effects of mercury on public health may be greater than presently understood. As explained by Diner (2008), the known symptoms of mercury poisoning are extensive and, "...usually misdiagnosed because of the insidious onset, nonspecific signs and symptoms, and lack of knowledge within the medical profession". Symptoms are listed online (<http://www.emedicine.com/EMERG/topic813.htm> accessed August 8, 2008).

Organic Transformation Agents

Biochemistry is complicated. While I have shared this theory with several biochemists, complete clarity of mercurial interaction with possible agents was not developed. Further investigation of mercury interaction and transformation between organic and inorganic form is needed. The association of toluene and methyl forms to symptoms may guide further inquiries.

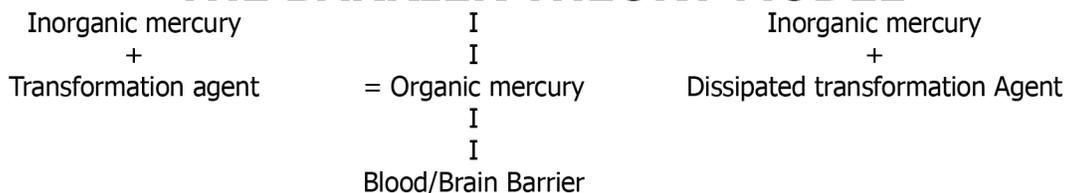


Toluene is found in dental adhesives and described in connection to the Morgellons symptom set (called Neurocutaneous Syndrome and discussed in Amin 2001, 2004a, 2004b, 2004c, 2005, 2006, 2010). Mercury and toluene are key ingredients in the pesticide Ceresan M which is a neurotoxin (Kozik et al 1981). Large scale effects of Ethly Mercury Toluene Sulphonamide on a population's health were documented in Iraq (Jalili & Abbasi 1961).

Methamphetamine used as a recreational drug has documented symptoms similar to those experienced in Morgellons Disease (most notably crawling sensations and skin lesions). The organic form of methyl mercury may result from drugs interacting with inorganic mercury within the body. The historical documentation of medicinal mercury presents symptoms similar to those of the meth addict including hair loss, bleeding gums, dental deterioration, gastrointestinal and neurological consequences, and skin eruptions (MacKenna 1929: 15-16, Davis 1913: 102, Stelwagon 1914: 283, MacKenna 1923: 273, Strickler 1927: 207, Walker 1911: 71, Evans 1912: 251).

Following ingredients with potential ability to alter internal mercury species from inorganic to organic may provide evidence for evaluating the Barrier Theory.

THE BARRIER THEORY MODEL



SPECTRUM OF MORGELLONS SYMPTOMS

While it might at first appear that the symptoms set for the often self diagnosed Morgellons Disease varies, when populations are examined, such as the study by Harvey et al (2009) or given a much needed voice* (Amin 2010: 24- 31), the symptoms may be viewed as progressive stages of the same. With the Barrier Model in mind, symptom severity would increase in relation to mercury levels beyond the blood/brain barrier. Symptoms below are presented in a general order with the understanding more clinical observations are needed to better define (noted from Harvey et al 2009, Amin 2010, personal observations, and various personal communications of author with sufferers).

Physical Symptoms



The crawling, biting and itching sensations are often the earliest symptoms recognized and are usually accompanied by fatigue. Dermal symptoms such as pimples, sores, lesions, swelling, skin thickening, rashes, specks and or fibers can occur. Other physical sensations such as heart palpitations, abdominal bloating, night fever/sweat and flu-like symptoms may be experiences. Weight gain, hair loss, dental erosion, vision problems and discharges from various orifices have been described.

* note: Amin considers Morgellons and NeuroCurtaneous Syndrome distinct conditions. I consider and present NCS as a category of Morgellons and both subcategories of mercury poisoning.

Neurological Symptoms

Anxiety and depression are common. Movement and vibrating, clicking or ringing in head are sometimes described (and could be considered physical). Memory loss and what is often described as "Brain fog" may occur.

Parasitic Connection

Parasitic infestation has been the focus of much medical queries related to Morgellons and insects and associated body parts are being pulled from patients. However, the primary "crawling sensation" associated with Morgellons may not be related to parasitic infestation. Dr. Omar Amin, an internationally respected parasitologist who has examined hundreds of NeuroCurtaneous Syndrome (Morgellons symptoms set) patients, clarifies the parasitic connection,

"Opportunistic infections with springtails from NCS patients' sores, especially scalp sores, are not uncommon. Arthropods are attracted to open sores, especially those infected with micro-organisms, for feeding, moisture and possibly nesting. Facial sores of one NCS patient living in an old musty home in a wooded area in Oklahoma included a tick, an ant, a caterpillar, thrips, oribatid mite, and parts of a wasp, cranefly and other insects. Other arthropods collected from open facial sores of NCS patients include fleas, beetles, winged flies and midges, and spiders. It should be noted that all kinds of opportunistic infections represent only aggravating but not causal factors of NCS sores" (Amin

2006: 32). Paresthesia, "An abnormal sensation of the skin, such as numbness, tingling, pricking, burning, or creeping on the skin that has no objective cause" (<http://www.medterms.com/script/main/art.asp?articlekey=4780> accessed May 4, 2011), was found associated with widespread mercury poisoning documented in the Japanese fishing village of Minamata (Yorifuji et al 2008: abstract). The crawling sensations associated with Morgellons Disease may also connect to mercury.

CONCLUSION/DISCUSSION

The primary differences between Morgellons Disease Symptoms and accepted symptoms of mercury poisoning include sub-cutaneous symptoms (crawling, biting, poking, etc. which may be variations of paresthesia documented in Minamata) and fibers projecting from the skin (see Oklahoma State University Center for Health Studies' lists of symptoms at: <http://healthsciences.okstate.edu/morgellons/> or the signs and symptoms developed by the Morgellons Research Foundation at <http://www.morgellons.org/case.htm> (both accessed Aug 3, 2008)). If Morgellons Disease is a subcategory of mercury poisoning specific to the nervous system and progressing through internal biochemical processes, unique symptoms could be expected.

While inorganic mercury does not easily move beyond the blood/brain barrier (Friberg & Mottet 1989), organic forms do. The relationship between historically documented Morgellons symptoms and mercury exposure has been discussed (see Keleher 2008 as well as "Rethinking DOP" found at <http://morgellonspgpr.wordpress.com/category/joseph-keleher/> (accessed March 29, 2011)). Toluene found in dental adhesives has also been connected to Morgellons symptoms (called "NeuroCurtaneous Syndrome" in Amin 2001, 2004(a), 2004(b), 2004(c), 2005, 2006, and 2010). The combination of mercury and toluene are key ingredients in Ceresan M an organic form of mercury and documented neurotoxin (Kozik et al 1981) which may be the basis of the recent increase in sufferers of the Morgellons symptom set.

While studies related to Morgellons Disease need to continue focusing on cause and cure, a survey of successful treatments needs to be reviewed by qualified medical professionals. The Barrier Theory may be confirmed or rejected by the input from qualified biochemists and/or medical scholars; if confirmed, a best approach to diagnosing and removal of toxins needs to be designed, discussed, shared and implemented.

FINAL WORDS

I have investigated possible connections between mercury exposure and historic Morgellons Disease (Keleher 2008b) and found further connections in DOP cases (<http://morgellonspgpr.wordpress.com/category/joseph-keleher/> (accessed March 29, 2011)). I had the symptoms set myself, had amalgam fillings and dental adhesives removed, aggressively detoxified, and recovered (documented in Keleher 2008a). While I have suggested qualified researchers consider mercury as a possible cause (as far back as 2008), I have not seen any related published work. I present the Barrier Theory stating clearly—I am not a medical professional or a biochemist. Given the current uncertainty, confusion and growth in number of sufferers, I ask those qualified to consider the Barrier Theory.

I recommend to patients any health related protocol be overseen by a qualified medical professional. I share thoughts relating to Morgellons and toxicity issues at: morgellonsjoe.blogspot.com . As always, my thoughts and prayers go to the sufferers.

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