

Mercury and Heavy Metal Toxicity

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Mercury is a heavy metal that has had a variety of uses throughout history, evidence of its use being found in several ancient civilisations. However, perhaps the most controversial use is that in the dental amalgam. In the mid-nineteenth century, the mercury-silver-tin-copper-cadmium mix began to prove irresistible to dentists as a dental amalgam.

The reasons for this were simple; it was extremely easy to use, formed a strong repair and was cheap to obtain. There was only one problem – the toxicity. This was known at the time and the American Society of Dental Surgeons (ASDS) declared the use of dental amalgam as ‘malpractise’ and promised expulsion from the society. As too many dentists chose to use the mercury formula, the ASDS collapsed and, in the midst of widespread worry as to the consequences of using these fillings, the American Dental Association sprung up to soothe the public fears regarding its use.

This has resulted in consistent and outright denials of any danger faced by the public in relation to these amalgams. Throughout the last century, these denials have been consistently questioned and, in recent years, even the AMA has admitted that mercury vapour is indeed released by amalgams (although they still insist that the levels of this toxic vapour are not high enough to cause harm).

This, like many other arguments relating to public health, continues to be debated. The line taken by governmental institutions and chemical companies still fit the traditional mould of reassuring the public until exposure or leak of hidden facts forces a change of policy. The patterns can be seen in relation to aspartame, DHT, PCBs, fluoridation. An example focusing more on mercury has been offered in the form of Gulf War Syndrome. This infamous syndrome first came to light after UK and US soldiers that served in the 1991 Persian Gulf War became ill following the conflict, and causes a wide range of ailments, including immunological and neurological problems, as well as skin, digestive and respiratory problems. The collective Governments continued to dispute the findings of various organisations, even though all the groups that were susceptible to the syndrome had all received the mercury-containing thimerosal preservative in vaccines. (Those that did not receive the vaccine, such as French soldiers, showed no susceptibility). This has been suggested by some as proof that Mercury is the cause of Gulf War Syndrome. It is the very likely candidate, although I think that this immunological disorder is quite probably what happens to susceptible soldiers who are subjected to 17 vaccines (eg. assaults on their immune system) in the presence of toxic Mercury-containing preservatives like thimerosal. The populations of soldiers where no GWS exists had a significantly lower vaccination count.

Mercury can cause serious problems in a variety of ways. The reason for this is the way that it enters the body and bonds with a variety of biological structures, and in doing so

interrupting, slowing and inhibiting normal function of the body. Studies show that mercury from amalgams is absorbed in vapour through the gums and in the lungs, and is deposited in the heart, brain, liver, kidneys and major endocrine glands.

There are a number of types of mercury to be aware of, the difference being in what the mercury is bonded to. These can be classified under two major types, one form being inorganic mercury, the other organic. Whilst inorganic (non-methylated) mercury is the normal form of mercury found widely in the environment, in thermometers and the form absorbed into the body through the vapour released from amalgams, there is a lot more danger posed to the body by organic mercury. This is mercury in a salt form (eg mercuric chloride, mercuric iodide) or mercury that has been methylated in the intestines. This methylation occurs in unbalanced guts, where there is an excess of bad bacteria. This is where ill health can bring about further ill health; once in the body, this methyl mercury is much more able to move through cell membranes and bond to a number of tissues, slowing, inhibiting and interrupting vital functions. It is for this reason that organic mercury is considered a lot more toxic than inorganic mercury.

It is primarily the organic form of mercury that will bond with numerous forms of body tissue; the phospholipid layer of all cells, compromising the permeability of the cells and therefore their ability to communicate and respond to hormonal messages; hormones like insulin, meaning the beta cells in the pancreas must produce more to do the same job; haemoglobin, which can result in the symptoms of anaemia; thyroxin, the hormone produced by the thyroid gland that is necessary for sufficient metabolic rate; all neurotransmitters, hormones and enzymes are potential prey to this bonding of the heavy metal. Because of the variety of ways in which mercury can create damaging symptoms and varying levels of sensitivity in different individuals, there is no set pattern to mercury toxicity.

One thing is beyond doubt – the effects of mercury in the body are both real and quantifiable. A 1984 study showed that presence of amalgams reduced T-cell numbers by 55.3%, seriously compromising the immune system. This disruption of the natural level of T-cells has grave consequences as it disturbs the delicate balance of T and B cells (both types of lymphocyte, a class of white blood cell) which can have dire consequences.

For example, T4 cells – also called T-helper cells – mark out antigens, singling them out to identify them to the B-cells, which make antibodies that neutralise them. If these are low, your immune system will not respond adequately to invasion from foreign microbes. However, if the action of the T4 cells is not opposed by that of the T8 cells (that calm the action of the B-cells), then the immune system can become over-active. This results in allergic reaction to dietary or environmental elements, or even in auto-immune reactions; this is where the immune system begins to attack its own cells (type I diabetes and rheumatoid arthritis are classic examples of auto-immune conditions). These auto-immune conditions are possible because the antibodies have an in-built flexibility with regards to what they attack to allow them to deal effectively with viruses that are constantly modifying their form – unfortunately, when an imbalance occurs between the level of antibodies and the amount of invading antigens (eg. the requirement), damaging reactions can occur.

Problems with mercury often seem to take some time to have an effect on an individual. This is explained by the composition of the metal and the way it interacts with the body. As

mentioned above, there are two forms of mercury, the inorganic and the more dangerous organic form. An individual may not show sensitivity to the presence of the inorganic form of mercury (the type that leaks from amalgams) but, when combined with Hydrogen Sulphide gas (H₂S) in the intestines, it can be methylated by a specific enzyme, Thiomethyl Transferase (TMT). The important issue to be aware of here is that H₂S is only produced by bad bacteria or fungi in the gut, so a compromised digestive function can be a trigger of mercury toxicity. Ironically, the way that mercury compromises the immune system has been linked to a disruption in the normal balance of intestinal flora. Probiotics (and prebiotics) are therefore an essential supplemental step for anyone with a dental amalgam, as is any step that maintains good digestion (sufficient quality food, healthy stress patterns).

Whilst we know that mercury is toxic and we know a number of ways in which it damages the body, the lack of governmental acceptance and the lack of pharmaceutical interest in this problem means we are left with an incomplete model when attempting to assemble a time-line of mercury-related symptoms that an individual can expect to experience.

Certainly, what does not help in any attempts to determine the effects of heavy metal toxicity is the incessant need for the medical community to label dysfunction as a specific illness, and treat it as such. Although this model of categorizing patients into convenient boxes makes the task of prescribing drugs a less taxing process, it fails to recognise that disease is a complex process which reflects the systematic conditions within the patient. Chronic fatigue conditions such as lupus erythematosus and fibromyalgia are perfect examples of this medical malady; these are considered acquired diseases in their own right and little, if any, consideration is given to the integrated involvement of the immune system, hormonal imbalance, adrenal dysfunction, liver and kidney overload, heavy metal toxicity in the individual. It is clear to me that there are so many manifestations of symptoms all lumped under the umbrella of lupus, and this label is quite restrictive as these sufferers have different problems (ie. different causes or, to be more exact, different combination of causes). Metal toxicity is clearly a factor in some cases, and not in others.

This uncertainty as to the level of the problem seems destined to continue. The powers that control the medical establishment (drug companies and industrial sponsors) have no interest in investigating this matter; it is simply not in their interests – a healthier population is one that requires less pharmaceutical products. With limited resources, those that do have this interest in uncovering the facts will struggle to make inroads in obtaining information on a bigger scale.

Although perhaps not given the mainstream coverage it deserves, concern as to mercury's negative effects in the body and the use of such a toxic metal in dental amalgams is nothing new. The first concerns were rationally voiced by the ASDS in 1845, although one reason that we do not hear such a balanced debate now is because the organisation set up to promote mercury, the ADA, have not only performed an excellent job in selling their side of the story but also enjoy support from high government. So, despite concern for the use of this substance first being registered more than 150 years ago, the majority of the facts regarding mercury remain in darkness.

Meanwhile, conditions associated with heavy metal toxicity include: Fatigue, Poor concentration, Hypoglycaemia, Migraines, Respiratory Disorders, Arthritis, Auto-immune

conditions, Allergies, Depression. Naturally, these are more general disorders; mercury toxicity has also been linked with a long list of conditions from epilepsy to multiple sclerosis.

It is certainly possible that the whole population are affected to some extent, especially those with dental amalgams. A single dental amalgam can release up to 15mcg of mercury per day, and eating mercury-tainted seafood can provide up to 2.3mcg, a level that many scientists believe to be extremely toxic. A vaccine that uses thimerosal as the preservative delivers an dose of 25mcg mercury (The EPA say that this is an acute toxic dose for any animal less than 500lbs). Overall, the evidence for mercury poisoning from fish is not especially strong when compared to that of amalgams and vaccines, so I would not encourage too much panic in regards to the consumption of fish unless the individual in question appears to be especially sensitive to heavy metals. As with all foods, sensible selection and an awareness of where the food was sourced from remain paramount.

Genetic sensitivity and under-nutrition is perhaps the key as to whether or not mercury exposure will result in symptoms of ill health. As with many issues, such as stress and bacterial/viral infections, some people are heavily affected by exposure to a certain element, whilst others display no ill effects. A strong immune system, adequately supported by sufficient levels of anti-oxidants, zinc, iodine, vitamin D, etc, can deal with removing toxic compounds much better than a suppressed immune system and the susceptibility of the individual reflects this also. The effects of these genetic/nutritional factors were well demonstrated in Gulf War Syndrome.

Depending on the level and type of stress experienced by an individual at any given time, the workload of a specific gland will be vary greatly and this plays a big role in the response an individual is able to generate to a challenge to his/her homeostasis. Clearly, very low-level sensitivity would certainly fall below the radar, and indeed most people may struggle to distinguish the difference between tiredness caused by waking up 20 minutes too early and a very minor depletion in haemoglobin levels.

As I see in testing for allergies, an individual may have sensitivities to some elements but not to others, whilst his neighbour shows sensitivity to a totally different range of chemicals. With this in mind, I have no doubt as to the potential reactions that some people may experience when exposed to other heavy metals, such as aluminium, lead, and arsenic.

Aluminium has been shown to promote many diseases including breast cancer and anaemia as well as being heavily implicated in the onset of Alzheimer's Disease and depletion of potassium levels in the body. All anti-perspirant deodorants and Teflon pans contain aluminium, but it can also be found in kitchen foil, cheap table salt, antacid and painkilling concoctions – clearly we are more at risk of aluminium exposure than most metals. Significantly, aluminium has been shown to increase the damage reeked by mercury in the nervous system; however, the authorities do not consider this synergy is assessing safe exposure levels.

Arsenic can cause nausea and vomiting, a disruption in blood cell production, and a number of broad issues, from internal bleeding in the GI tract to skin cancer. Arsenic exposure is not especially high in the UK, although there are still numerous potential

angles for exposure; it is used to treat disease in chickens, in fireworks, in wood treatment agents, in photocopier drum coatings and in metal alloy, amongst other things.

Cadmium is another toxic metal that we are not routinely exposed to. Cadmium damages DNA directly but can also cause other problems from liver, lung and kidney problems to neurological damage. Cadmium is used in battery manufacturing and in heavy industry such as mining and burning coal; it is also present in tobacco smoke.

So are we all affected to some extent by heavy metal toxicity? A more appropriate question may be whether there is anyone who is not affected by heavy metal toxicity. What is definitely relevant is the health of the nation continues to decline, despite medical advances and an increase in funding for healthcare, and there will inevitably be a number of reasons for this irregularity. I see heavy metal toxicity as one of the many pieces of the puzzle.

Mercury, aluminium and other heavy metals do harm the body, and they are an issue to the population at large. However, as highlighted at different points in this article, the pattern that heavy metal toxicity follows is one where symptoms present hand-in-hand with malfunction of various bodily systems (eg. immune system, intestinal flora) and is a health problem that, like so many others, is extremely complex and individual in its symptoms. This, combined with the industry's lack of willingness to examine the issue, ensures that it remains impossible to accurately calculate the severity of heavy metal toxicity across the population. Meanwhile, the key to avoiding problems clearly lies in staying as healthy as possible and avoiding exposure wherever possible and, if you feel that exposure may have occurred, taking action by supporting the liver and the immune system (eg. with an effective liver detox) in partnership with a suitably experienced practitioner.

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