Environmental Toxicity: An Alternative Way of Assessing Heavy Metals.

It no longer matters what you call your disease. The label your doctor gives you is meaningless. What matters is what caused it. The lowering of huge amounts of hidden heavy metals has turned around the worst heart diseases, improved memory, mood and IQ. It is one of the most important decisions of your life."
Dr. Sherry Rogers, MD. Author of the book: "Detoxify or Die."

Numerous scientists worldwide are supporting the view today that all life processes are being determined by subtle electromagnetic and photon phenomena [see Prof. Dr. A. Popp, Dr. Voll (EAP), Dr. Dr. Schimmel (Vega System) and many more). All electrically active metals (ions) and particularly heavy metals can disturb the harmony of the electromagnetic and photon energies in the body, causing disharmony and disease. They also can increase the production of free radicals million-fold.

It has been stated that 90 % of all chronic and serious illnesses could be prevented if we were able to eliminate the 600 most dangerous environmental toxins (Dr. J. Higgensen, Head of Cancer Research, WHO, Geneva, Switzerland). Every health practitioner is fully aware of the devastating influence heavy metals and/or ionic metals can have on our mental, emotional and physical health and well-being.

Until recently, most health care professionals and researchers assumed that heavy metals had to be taken into account only when a patient showed definite symptoms of 'poisoning'. We realize now that our health and well-being is affected by much lower levels of heavy metals than previously assumed. Health authorities constantly correct 'permissible' maximum levels downwards.
It is becoming more difficult to accurately determine the appropriate drug profile in a given case, because the respective simile of symptoms has undergone a shift due to the presence of heavy metal ions. In fact, this phenomenon may be observed for the majority of the classic Hahnemann remedy profiles and it is fair to say that at the present time the effectiveness of any antioxidant therapy is significantly compromised by the presence of heavy metal ions. It is therefore important to first identify the heavy metal in question and then the degree of its involvement. Then, as the cause of the condition, the heavy metal ions must be removed and cleared out.

In cases of acute heavy metal poisoning (commonly the result of accidents or extreme workplace-related contamination), clinical toxicology is generally able to provide an effective, quick response with the DMPS procedure administered as mobilization test and antidote. However, hardly any appropriate treatment or diagnostic procedure is available for cases of long-term heavy metal contamination. No satisfactory method exists for the early recognition of heavy metal contamination.

Two Types of Metals

The methods used to detect heavy metal contamination are cumbersome and costly and in some instances can't differentiate between organically bound and free metal atoms (e.g. Cu, Zn in spectrometric analyses). Recent research has shown that it is essentially electrically active heavy metal atoms not bound with organic complexes that actively destroy molecular compounds and thereby cause the formation of free radicals. Up to a certain point, a healthy body is able to bind (i.e. chelate) free heavy metal atoms, i.e. neutralize their electromagnetic charge and clear them out. If this mechanism is no longer able to function because too many toxins have accumulated in the organism, the number of free radicals will increase, especially if the body is suffering an antioxidant deficiency at the same time. In such cases, administering antioxidant supplements will not solve the real problem, namely the accumulation of heavy metal ion deposits in the body.

Unfortunately, traditional methods like hair or blood analyses are not able to uncover these connections for the

simple reason that the organic sample is destroyed in the course of the analysis. Such procedures are therefore unable to differentiate between metal atoms bound with organic complexes and unbound and therefore electro-magnetically active ions, a difference that is crucial in the assessment of the overall situation.

A new way to assess heavy metals

In 1925 Helmut Fischer of the Siemens Concern in Berlin succeeded in detecting heavy metal ions by means of a dithizone process. As a reagent, dithizone is able to indicate the presence of heavy metal ions in qualitative and in quantitative terms. In binding with them, colored complexes are formed in the interior of the molecule which are soluble in non polar organic solvents. The coloration of these solutions is very intensive, its particular coloration determined by the atomic radius of the respective metal present in the complex. The reaction times of the heavy metal ions vary; therefore, depending on their respective concentrations, different colorations may occur from which one can, in addition to the qualitative conclusions (the dithizon reagent binds to Cu, Zn, Cd, Hg, Pb, Mn, Co, Ni,), draw also quantitative ones regarding the contaminant. (At the lower ppm level, even at the ppb level).

The dithizone heavy metal reagent allows the detection of free heavy metal ions in bodily liquids like urine and saliva. By administering the test reagent as an exploratory measure, contaminations from amalgam fillings or from the environment (cadmium, lead, zinc, copper, manganese, nickel and cobalt - pointing to infections, organ or system disorders), as well as potential health problems, can be identified on the spot. The need for detoxification is established before any specific therapy is administered. The test reagent is therefore an important and recommended aid during the initial evaluation. As it is urgent that necessary counter-measures be implemented in the patients' detoxification therapy, a method to expose and monitor heavy metals becomes crucial.

The dithizone reagent can also be used to determine the environmental sources of the contamination in aqueous solutions such as tap water. Since all heavy metal ions are water soluble, solids like food items, porcelain dishes, dust samples from carpets, wall paints and wall paper etc. can be tested for heavy metals by soaking them in distilled water beforehand. In other words, in addition to being a diagnostic tool for urine and saliva, the reagent is also useful in finding contaminants in the patient's environment.

Replacement Reaction or How to Asses Heavy Metal Toxicity

The sheep study done at the University of Calgary in Canada (sheep had amalgam fillings placed in their mouths) clearly showed that very little mercury is found in the urine and in the blood, but highest amount are shown in the kidneys, stomach and other organs. Since this is the case, how is it possible to assess mercury or other heavy metal toxicity via the urine?
To understand this, a short review of basic bio-chemistry and how heavy metals react in the body is necessary.

In the human system, the bivalent metals are engaged in a continuous fight against one another, e.g. copper against zinc, magnesium against calcium, which results in the replacement of the "lighter" element by the "heavier" one in terms of their atomic masses. Replacement reactions, also called "fight for the site", occur when heavy metals grab the biological spaces that should be filled by necessary minerals.

Just as carbon monoxide replaces essential oxygen, other elements and compounds cause their toxic effect by replacing chemicals essential to the body functions. Within a group, for example group 2 in the periodic table of elements (2 refers to the number of extra electron) there is zinc (Zn), cadmium (Cd), and mercury (Hg), in order of increasing atomic weight. (65, 112, and 200 respectively). Zinc in its ionic form, Zn^{2+}, is necessary for proper body function, although an excess is toxic. Cadmium, found in paints, cigarettes, tires, and brakes, is toxic. Mercury, found in amalgam fillings, paints, and some industrial processes, has no known use in the body and is even more poisonous.

Since cadmium and mercury, in their more soluble ionized or salt forms, will attempt to participate in the same biochemical reactions as zinc, their presence will prevent the zinc reacting and performing its functions in the body. This is like a 65 pound person (zinc) competing unsuccessfully with 112 pound (cadmium) and 200 pound (mercury) people in a wrestling match.

In vivo and ex vivo displacement of zinc from metallothionein by cadmium and by mercury.
Divalent cadmium and mercury ions are capable in vitro of displacement of zinc from metallothionein. This process has now been studied in vivo and ex vivo, using the isolated perfused rat liver system, in order to determine if this process can occur in the intact cell. Rats with normal and elevated (via preinduction with zinc) levels of hepatic zinc thionein were studied. Cd(II) completely displaces zinc from normal levels of metallothionein and on a one-to-one basis from elevated levels of metallothionein, both in vivo and ex vivo. Hg(II) displaces zinc from metallothionein (normal or elevated) rather poorly, as compared with Cd(II), in vivo, probably due to the kidneys preference for absorbing this metal. Ex vivo Hg(II) displaces zinc from metallothionein (normal or elevated) on a one-to-one basis, with considerably more mercury being incorporated into the protein than in vivo. The results of double-label ex vivo experiments using metal and [35S]cysteine (+/- cycloheximide) were consistent with the above experiments, indicating that de novo thionein synthesis was not required for short term incorporation of cadmium and mercury into metallothionein. These data are supportive of the hypothesis that cadmium and mercury incorporation into rat hepatic metallothionein during the first few hours after exposure to these metals can occur primarily by displacement of zinc from pre-existing zinc thionein by a process which does not require new protein synthesis.
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As a result, mercury leaching into the body from silver-mercury amalgam fillings, or lead and cadmium absorbed through food, will cause symptoms of zinc deficiency such as fatigue, PMS, thyroid problem, loss of smell and taste, macular degeneration, prostate enlargement, rheumatoid arthritis, sterility, immune suppression, etc., even if there is plenty of zinc available.

Other symptoms caused by mineral deficiency and displacement by a heavy metal (Hg, Cd, Pb,) include:
θ Magnesium Irregular heartbeat, osteoporosis, receding gums, etc
θ Iron Anaemia
θ Copper Anaemia, Thyroid dysfunction, impaired digestion, scoliosis
θ Zinc Anorexia nervosa, loss of taste, low libido, PMS, etc
θ Iodine Thyroid dysfunction

Causing a toxic accumulation of essential minerals
By taking the biological spaces of the essential minerals, heavy metals are blocking the absorption of essential minerals and simultaneously a toxic accumulation of unbound zinc and copper ions occurs. At this stage of toxic contamination, the discharge of copper and zinc ions from the organism is not yet relevant, but as free electrically active metals, they can be made visible with the dithizone reagent. The valuable essential metals copper and zinc have, in effect, become toxic metals. Diagnostically, the test indicates that the body cannot handle the heavy metals and uses liver, kidneys and other tissue as waste deposit sites.
Therefore when checking the urine for heavy metals by using the dithizone reagent, toxic amounts of copper and zinc (direct antagonist to most of the heavy metals which have all a 2+plus valence) will always show up first during the test procedure and indicate the presence of heavy metals in the body. Other reasons why the amount of unbound heavy metal ions in the urine is very high are:
1. Excessive intake of supplements.
2. Metals are accumulating due to constipation or reduced bile flow: Heavy metals and in particular mercury accumulates in the gallbladder, creating a perfect environment for bacteria and fungus which leads to a sluggish or thick bile.

Conclusion

In a healthy body with a functioning detoxification system or in the absence of heavy metals, there should be no free heavy metal ions found in the urine. Consequently, the more unbound metal ions are found in the urine, the more the body's detoxification capacities are exhausted.

Instead of measuring the mercury or other heavy metal ions, which is very difficult to assess, since these heavy metals are neither in the blood nor in the urine, the indirect disturbance caused by the heavy metal atoms are measured.

Since heavy metals contribute to up to 80% of the causes of all diseases, the assessment for heavy metal contamination has become an essential component of any initial diagnosis. The dithizone reagent offers an alternative way to assess heavy metal toxicity and is actually the only test which allows the assessment on the intracellular level.

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