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## Toxic Brain Injury (Encephalopathy)

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Health problems that occur secondary to the bodily absorption of toxic substances can come on acutely and result in life-threatening crises, or occur gradually over months or years. When symptoms present themselves one at a time, very slowly, the period of latency or incubation can be extremely variable in length.

During latency, the body's adaptational or defense mechanisms may be countering the effects of the toxic substances as best they can. Yet as toxins gradually overpower these mechanisms, symptoms may begin to appear slowly and increase in intensity as the body's adaptational or defense mechanisms founder and - perhaps - ultimately fail. Usually, acute responses to toxic substances occur either with large-dose exposure or when there is a severe allergic response to the toxin, no matter the dosage. Should the allergic response be severe enough to result in toxic shock, the situation becomes life-threatening.

In the case of slowly progressing symptoms, there may have been an acute dosage of the toxic substance. The body's resistance to the toxin input, however, may have been strong and appropriately tuned in, taking the edge off the exposure and resulting in mild symptoms that may or may not progress. The symptom pattern that progresses in severity over months or years, however, more likely resulted from ongoing exposure to smaller doses of toxic materials. The organs most obviously affected by toxic substances are the lungs, heart, kidneys and liver. Usually, we see less obvious effects in the gastrointestinal tract, pancreas, spleen, and the bones and joints of the musculoskeletal system.

It generally takes longer to recognize the effects of toxic substances on the brain, spinal cord, autonomic nervous system and voluntary peripheral nervous system. The brain seems to be a keen competitor for the title of slowest responder with the most endurance. What we have been calling "senescent changes in brain function due to normal aging processes" may actually be due to slowly advancing toxic brain inflammation. I refer to that as toxic encephalitis, or toxic encephalopathy.

Recently, toxic substances have been traced through the blood-

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brain barrier into the hypothalamus, and from the hypothalamus into the pituitary gland, where they cause dysfunction. Should the toxicity compromise the posterior pituitary gland, the result can be diabetes insipidus, secondary to dysfunction of the posterior pituitary gland. This posterior part of the pituitary gland produces anti-diuretic hormone. When production of this hormone is curtailed, the tubular reabsorption in the kidneys is impaired.

This situation results in the passage of large amounts of urine, great thirst, and often a voracious appetite. The increased quantities of urine do not contain significant amounts of sugar. Thus, it is differentiated from diabetes mellitus, which is due to a deficiency of insulin, or a problem with insulin receptors in the cell membranes. There are large quantities of sugar in the urine of diabetes mellitus (type I) patients. In type II diabetes (maturity onset), there is also increased urine output that contains significant quantities of sugar (glucose).

It is clear that diabetes insipidus may be caused by toxic substances that were eaten, taken in with water, inhaled, absorbed through the skin, etc., and eventually wound up in the brain and affected the posterior pituitary gland. Presently, there is little, if any, evidence to support the concept that either type I or type II diabetes mellitus is caused by toxic substances, although the possibility may exist.

When toxic substances get into the hypothalamus, there is a strong possibility that they will also get into the anterior pituitary gland, the master gland of the total endocrine system. Imagine that the repetitive inhalation of organic solvents, such as those that vaporize in gasoline fumes and cleaning solutions, may be the underlying cause of anterior pituitary gland dysfunction that might easily result in hypothyroidism (low thyroid); hypoadrenalism (poor adrenal response to emergencies, stresses, etc.); abnormal menstrual cycles; infertility; poor lactation, with the inability to nurse; and poor immune response, resulting in increased vulnerability to infections caused by low-potency bacteria, viruses, fungi, and on and on. Any of these symptoms could result from toxic substance infiltration of the pituitary gland.

Also, consider that these toxic substances probably invaded the hypothalamus of the brain en route to the pituitary gland. What happens when hypothalamic function is disturbed? First, the hypothalamus more or less governs the anterior pituitary gland. It doesn't seem to have much say over the posterior pituitary gland. However, the hypothalamus has a private connecting system with the anterior pituitary, and the highways between the two run both ways.

There are both nerve- and blood-system highways connecting the

hypothalamus and anterior pituitary; therefore, they intercommunicate by both nerve impulses and hormonal molecules that are transported through their connecting blood vessels. Besides its influence on menstrual function via the anterior pituitary gland, the hypothalamus also strongly influences appetite and satiation, and a wide range of emotions, including pleasure, aggressiveness and sadness.

Imagine the possibility that being around cleaning solutions that are organic (and many are) and breathing the fumes every few days can affect your emotions; your sexual and reproductive function (including sperm count and vitality); your appetite-satiety balance (and hence your weight); and other functions. Organic solvent fumes can change your whole life, and you wonder how it is happening.

I suspect we should seriously look for ongoing and possibly hidden sources of toxin input. Perhaps if the input is stopped, the body may be able to effectively clear the remaining toxic substances/molecules. I am also sure that CranioSacral Therapy (CST), in conjunction with some other modalities, such as lymph drainage therapy, can assist in the clearing process.

Exercising the craniosacral system enhances the ability of cerebrospinal fluid to flush unwanted toxic materials from the brain and spinal cord tissues. Since it is now known that cerebrospinal fluid carries small molecule-chelating agents, clearly the enhanced flushing may remove unwanted metallic deposits from brain and spinal cord tissues. CST may also remove traumatically induced obstructions related to the meningeal and myofascial systems that interfere with cerebrospinal fluid flow.

All in all, it's better to include a modality in your protocol that stimulates fluid flow and helps flush the tissues than to ignore the body of evidence pertaining to toxic encephalopathy.

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(For a more in-depth article on toxic encephalopathy, please call 1-800-233-5880 and ask for the Toxic Brain Injury monograph.)

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