A CASE OF MISTAKEN IDENTITY?

Michael F. Ziff, D.D.S. and Sam Ziff

Someone in the dental profession is confused!! More to the point, someone in the dental profession is confusing everyone else in the dental profession, along with government officials and the public itself.

Last month, April of 1993, three major North American Universities published the results of a collaborative research study in a respected, peer-reviewed medical journal. This study, addressed elsewhere in this newsletter, determined that mercury released from amalgam dental fillings is a likely factor in the development of antibiotic resistant bacteria in humans. Media coverage of this study was extensive, much of which was a repeat of an original article written by reporter Gina Kolata and published in the Science Section of The New York Times (page B5) on Tuesday, 27 April 1993.

The New York Times article included rebuttal comment from the American Dental Association (ADA) and Dr. Terry Donovan of the ADA's Council on Dental Materials, Instruments and Equipment (CDMIE). The ADA was quoted as responding that amalgam fillings were safe and that a study concentrating on animals "cannot be viewed as affecting humans." Dr. Terry Donovan added that the findings were far from conclusive and "I don't think anyone should be concerned at the present time."

It may be comforting to the dental profession that the ADA and Dr. Donovan are not concerned that mercury/silver dental fillings may contribute to the increasing problem of antibiotic resistant bacteria, but it is hardly a trivial matter to the medical profession and to increasing numbers of human victims.

The position that "a study concentrating on animals cannot be viewed as affecting humans" is nothing less than a revelation! Until now, medical science has considered animal research to be the foundation of investigation and therapy. Indeed, animal research has even been widely utilized and esteemed in dental research. A preliminary screen of 100 titles published in the respected "Journal of Dental Research" in the past 24 months reveals that fully 18% of the studies utilized animals (including dogs, cats, rabbits, cows, pigs, and hamsters). According to the ADA, then, medical scientists and researchers should be taken to task for knowingly wasting taxpayers' money on research conducted under the "flawed" assumption that the resultant animal data could be extrapolated and have possible applicability to humans. If the ADA is to be believed, then the data derived from animal studies conducted in their own "Research Institute" must also be considered as "busy work and irrelevant," designed only to waste more of the ADA membership and NIDR funds.

It should be further noted that several of the authors of the study condemned by the ADA are amongst the foremost authorities in the world on
gastrointestinal microbiology, the specialty topic addressed. Dr. Terry Donovan on the other hand, is a dentist whose education and career have been devoted to dental materials, without any specialization in the field of gastrointestinal microbiology. The same can be said for the other members of the CDMIE. If they indeed presume to identify themselves as more expert on the subject than are the authors of the study, they would be well advised to recall that numerous dentists have been severely censured or punished for practicing "beyond the scope of dentistry" (commonly referred to as "practicing medicine without a license").

In view of the obvious difference of opinion between the ADA and its spokespersons on the one hand, and the medical specialists and scientists on the other, one must necessarily address the issue of IDENTITY! Just who are the authorities for the issue at hand?

Have the ADA and its spokespersons assumed a mistaken identity as the ultimate experts in medical science, superceding all others previously considered to be the authorities? Is their position that animal research "cannot be viewed as affecting humans" a position shared by the National Institutes of Health, the American Medical Association, the Federation of American Societies for Experimental Biology or the Society of Toxicology? Or, is it a divine revelation that medical science has been remiss these many years? The potential impact of this issue on the public health demands that these questions be answered.

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MERCURY RELEASED FROM DENTAL "SILVER" FILLINGS PROVOKES AN INCREASE IN MERCURY- AND ANTIBIOTIC-RESISTANT BACTERIA IN ORAL AND INTESTINAL FLORAS OF PRIMATES

Summers, AO; Wireman, J; Vimy, MJ; Lorscheider, FL; Marshall, B; Levy, SB; Bennett, S; Billard, L.


ABSTRACT: In a survey of 640 human subjects, a subgroup of 356 persons without recent exposure to antibiotics demonstrated that those with a high prevalence of Hg resistance in their intestinal floras were significantly more likely to also have resistance to two or more antibiotics. This observation led us to consider the possibility that mercury released from amalgam ("silver") dental restorations might be a selective agent for both mercury- and antibiotic-resistant bacteria in the oral and intestinal floras of primates. Resistances to mercury and to several antibiotics were examined in the oral and intestinal floras of six adult monkeys prior to the installation of amalgam fillings, during the time they were in place, and after replacement of the amalgam fillings with glass ionomer fillings (in four of the monkeys). The monkeys were fed an antibiotic-free diet, and fecal mercury concentrations were monitored. There was a statistically significant increase in the incidence of mercury-resistant bacteria during the 5 weeks following installation of the amalgam fillings and during the 5 weeks immediately following their replacement with glass ionomer fillings. These peaks in incidence of mercury-resistant bacteria correlated with peaks of Hg elimination (as high as 1 mM in the feces) immediately following amalgam placement and immediately after replacement of the amalgam fillings. Representative mercury-resistant isolates of three selected bacterial families (oral streptococci, members of the family Enterobacteriaceae, and enterococci) were also resistant to one or more antibiotics, including ampicillin, tetracycline, streptomycin, kanamycin, and chloramphenicol. While such mercury- and antibiotic-resistant isolates among the staphylococci, the enterococci, and members of the family Enterobacteriaceae have been described, this is the first report of mercury resistance in the oral streptococci. Many of the enterobacterial strains were able to transfer mercury and antibiotic resistance together to laboratory bacterial recipients, suggesting that the loci for these resistances are genetically linked. Our findings indicate that mercury released from amalgam fillings can cause an enrichment of mercury resistance plasmids in the normal bacterial floras of primates. Many of these plasmids also carry antibiotic resistance, implicating the exposure to mercury from dental amalgams in an increased incidence of multiple antibiotic resistance plasmids in the normal floras of non-medicated subjects.

BIO-PROBE COMMENT: This study was conducted by medical scientists at the University of Georgia, the University of Calgary Medical School (Canada), and Tufts University School of Medicine. It is a combined human and animal study. Although the amalgam status of the humans was not determined (mercury release from dental amalgam fillings was unknown to the investigators at the time), the relationship between mercury resistance and antibiotic resistance in human gastrointestinal bacteria was determined.

The animal portion of the study was classic in design and execution, establishing a valid primate model for interpolation to the human findings.
An important consideration is the determination that prior use of specific antibiotic therapy is not necessary to the development of bacterial strains resistant to that antibiotic. The proximity of the genetic mechanisms for mercury-resistance and antibiotic-resistance for the bacteria provides for the development of antibiotic-resistant strains from mercury exposure alone, even without a previous exposure to the antibiotic.

It should also be noted that the development of mercury- (and antibiotic-) resistance is a PROTECTIVE survival mechanism for the bacteria. Mercury in its non-valent elemental form is actually not harmful, as it does not yet have the ability to bind to living tissue ligands. The mercury vapor does not actually cause pathologic damage until it oxidizes to its toxic ionic form, which happens very readily and rapidly in human structures. Mercury vapor is considered highly toxic because such a large percentage of the dose rapidly enters the body and its tissues.

So the bacteria, for protection, convert the different forms of mercury to elemental mercury. However, this conversion to the lipid soluble non-polar vapor form also causes the mercury to be recycled back into the body instead of being excreted. Thus, the bacteria are actually increasing the availability of mercury in a form which readily penetrates cell membranes and enters tissues of the host human.

This study has profound implications on medical therapy, with dramatic potential applications. For far too long the medical profession has been led to believe that dental mercury was of no medical consequence. Needed now is for the medical profession to recognize and elevate dental filling derived mercury to the same status and concern that they have for other types of mercury. This concern about the harmful effects of mercury on the environment and human health was in evidence at the recent December 1992 meeting of the American Medical Association (AMA) House of Delegates, when Resolution 418 submitted by the Michigan Delegation was passed. "RESOLVED that the American Medical Association work to establish appropriate federal standards to achieve elimination of lead, mercury and benzene from common household and workplace products."

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AUSTRIA TO BE AMALGAM FREE BY YEAR 2000

"Teeth in Austria are to be free of amalgam by the year 2000 according to a report in the German newspaper, Die Zahnarzt Woche.

The Austrian Minister for Health, Dr. Michael Ausserwinkler, made the declaration after the results of a study which showed that people with amalgam fillings had 40 times more mercury in their bodies than those without. According to Munich based Dr. Max Daanderer, there is no doubt that mercury traces in the body stem from amalgam fillings as mercury from fillings is continuously released into the body.

The Austrian Ministry for Health has already issued recommendations that amalgam fillings should not be used in pregnant women. By 1996 no children under 14 should be having amalgam fillings and the Ministry for Health believes that by the year 2000 amalgam will no longer be used as a filling material in Austria. However, the question of which safe alternatives will be available to dentists remained unanswered." This article appeared on page 6 in the Federation Dentaire International "FDI Dental World - March/April 1993" issue.

BIO-PROBE COMMENT: This is the first time that the concept of amalgam-free has been advanced by a government. The Austrian Minister for Health is not just talking about stopping the use of amalgam as a dental material, they are saying Austrians will have had all of their existing amalgam dental fillings replaced by alternative materials. Bio-Probe marvels at how well the dental societies around the world have sold the fabricated premise that "suitable alternative materials are not available" as the basis for not taking action to curtail the use of amalgam. The truth is that the biocompatibility and wearability of "composites" as a class of material have been subjected to more scientific study than any other material in the history of dentistry. That statement does not include the large number of favorable studies that have not been published (for what-ever-the-reason), as evidenced by the statements made on the record at the 1992 meeting of the Swedish Medical Research Board. The only real problems related to the use of composites are the equipment used and the technical skill and training of the individual placing the restoration. This is exactly the same problem that patients face when they want an amalgam replaced by a dentist who has no appreciation for the dangers of mercury vapor and who has had no training in the proper protocols for removal that minimize staff and patient exposure to mercury.

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CALIFORNIA "INFORMED CONSENT"

The long awaited "Dental Materials Fact Sheet" has finally been presented by the California State Board of Dental Examiners. The fact sheet was mandated by a California state senate bill (SB 934) initiated by
Sen. Diane Watson, which required inclusion of 1) the materials that are available; 2) comparison of the relative benefits and detriments; 3) comparison of costs; and 4) encouragement of discussion between patient and dentist.

Although the State Board attempted to minimize the documented evidence condemning the use of mercury/silver amalgam as a dental restorative, the document contained language of significant import. Of special note is the sentence "Each restorative material contains some ingredients which may preclude its use on some patients who have sensitivities, allergies, or other special health care needs". On dental amalgam, the Board stated: "Although elemental mercury has been known to be a toxic substance, it was long believed that once it became bound to the metals in the amalgam, it lost its toxicity. Recent research, however, has shown that minute amounts of free mercury can escape from amalgam filling and be absorbed by the body during placement, adjustment, or by vigorous chewing. The preponderance of scientific evidence, to date, fails to show that exposure to mercury from amalgam restoration poses a health risk, except for a small number of allergic and/or sensitive patients."

The Board attempts to characterize the release of mercury from amalgam dental fillings as "minuscule" and would also have you believe that "normal chewing" will not cause the release of mercury vapor by stating that the escape of minute amounts of free mercury can be caused by vigorous chewing. Both premises are wrong, according to valid published scientific literature. Furthermore, none other than the World Health Organization's (WHO) expert committee on mercury declared that dental amalgam fillings are the largest contributor of mercury to the non-occupationally exposed general population and that no extent of exposure to mercury vapor can be considered harmless [WHO. Environmental Health Criteria 118: Inorganic Mercury. Geneva. 1991.]

The preponderance of scientific evidence clearly implicates mercury as a causative or contributory agent in a number of disease states. It is well documented that mercury exposure can cause neurologic dysfunction, cardiovascular disease, high blood pressure, kidney dysfunction, and immune dysfunction, including autoimmune disorders. In addition, it has been scientifically demonstrated that unborn babies are exposed to mercury from the amalgams of the mother and that pre-natal mercury exposure can cause neurologic and behavioral dysfunction, at the very least. It should also be noted that virtually every medical reference prescribes the elimination of exposure as the prime therapeutic consideration for dealing with mercury damage.

By virtue of the "special health care needs" provision and the documented evidence implicating mercury in the disease states, the California State Board of Dental Examiners has now provided formal grounds for the removal of amalgam fillings from patients with those conditions, as the Board clearly stated that such considerations "preclude" the use of a dental material. Accordingly, along with the admission that the Board was previously wrong in considering amalgam mercury to be non-toxic, the International Academy of Oral Medicine and Toxicology (IAOMT) has formally requested the Attorney General of the State of California to direct the State Board of Dental Examiners to cease and desist its activities to punish dentists who object to having their patients exposed to mercury from dental amalgam.

The Dental Materials Fact Sheet also infers that dental composite fillings are carcinogenic. If true, such information can have a profound effect on the dental profession and the public health. For example, what could be the impact of such knowledge on the American Dental Association and the United States Food and Drug Administration for having certified and approved the use of a dental restorative known to be carcinogenic. Accordingly, the IAOMT has also asked the California Attorney General to demand that the State Board of Dental Examiners produce substantiating evidence for the claim. Failure to do so would constitute consideration of their formally presented claim to be a flagrant and inflammatory mis-presentation to the public by an official government agency.

The Fact Sheet also stated: "Information contained in this fact sheet is intended to encourage discussion between the patient and dentist in the selection of dental materials best suited to the patient's dental health"; and, "Patients and dentists alike should be aware of the risks when choosing these options."

California mercury-free dentists have now been given full liberty to address all aspects of exposure to mercury from dental amalgam with their patients! More importantly, all California dentists are now legally obliged to learn the scientific facts about mercury and to provide accurate information to their patients. The admission by the Board that they were previously wrong in claiming that dental amalgam mercury is not toxic provides formal basis for ceasing claims that the material is "harmless", upon pain of risking charges of "negligent misrepresentation."
MANDAMUS UPDATE

Following the decision of the United States Court of Appeals for the District of Columbia to reject the Petition for Mandamus asking the Court to direct the Food and Drug Administration (FDA) to evaluate and classify dental amalgam, the petitioners filed a motion to reconsider with the Court. The Court rejected the motion to reconsider without comment, ignoring the compelling arguments that had been filed.

As the action now stands, the Court has directed the petitioners to deal directly with the FDA. In doing so, the FDA now must deal with the petitioners and, most importantly, the requirement to evaluate and classify dental amalgam. This is now a matter of formal court record.

As the next step, the mandamus petitioners will now file a formal petition "as directed by the Federal Court" with the FDA requesting that dental amalgam be evaluated and classified as a device. Should the FDA continue to refuse, the Court will have no recourse but to order the FDA to do so.

In addition, a group of concerned citizens is filing a separate petition with the FDA calling for a ban on the use of mercury. Thousands of people have already signed the petition. More signatures are welcome as the petition may be amended. These petitions may be obtained from Murtlene Brake of D AMS (725-9 Tramway Lane, N.E. Albuquerque, NM 87122).

The actions of the mandamus petitioners have now placed the FDA in a corner on dental amalgam; they can no longer ignore evaluation and classification of the material without facing a Court order to do so. This highly successful activity has cost money, primarily in legal fees. Contributions to support this dramatic tactic would be greatly appreciated. Send to the Foundation For Toxic Free Dentistry, P.O. Box 608010, Orlando, FL 32860-8010, earmarked for the Legal Fund.

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REVIEWS/ABSTRACTS

We are deeply indebted to Mats Hanson, Ph.D. of Sweden. Dr. Hanson who is also a fellow in the International Academy of Oral Medicine and Toxicology, is one of the great unsung heroes in the battle to have the truth about the dangers of dental amalgam mercury revealed. He has accumulated one of the largest individual collections of scientific studies and books in the world. He gives freely of his time and energy and readily shares his knowledge with others. The translation of German scientific articles is a formidable task. Doing it under pressure is even worse. When Dr. Hanson told us briefly about the following three studies we asked if he could possibly translate them for inclusion in this issue of the Bio-Probe Newsletter.

This morning we received a 15 page FAX from Dr. Hanson providing us with the following extremely critical information.

Alopecia and environmental pollution.
Klobusch J, Rabe T, Gerhard I, & Runnebaum B.
(Dept. of Gynecologic endocrinology and Fertility
Disturbances, University-Women Clinic,
Heidelberg, Germany)

AUTHORS ABSTRACT: Patients with alopecia are
with increasing frequency seen by gynecologists. A
new focal point in the differential diagnosis of
alopecia is a consideration of environmental toxins.
132 women with different forms (a. androgenetica,
a. diffusa, a. areata) and severity of alopecia
underwent the DMPS test (heavy metal
determination) and blood analysis to determine the
incorporation of pesticides (pentachlorophenol,
findane). 51% of the examined patients tested
positive for at least one heavy metal. Mercury was
elevated in 49%, arsenic in 9%, cadmium in 2% and
lead in 1%. The excretion of mercury was
dependent on the number of amalgam tooth fillings.
Therapeutic success was achieved in 68% of the
women after the fillings had been removed, whereas
therapy had been unsuccessful before that. Elevated
pesticide concentrations were found in 26% of the
examined patients.

BIO-PROBE REVIEW: Of the 132 patients in the
study, 107 had alopecia (which is defined as a
disease in which the hair falls out) and 25 had
hirsutism (abnormal hair growth). Most of the
women had suffered hair loss for a long time and
had treated themselves or been treated by their
doctor with locally applied estrogen- or
corticosteroid-containing solutions or
anti-androgen therapy.

An interesting test was used to study the abrasion of
metals during chewing. In a tube, 5 ml saliva was
collected (starved patients). The patients were then
given sugar-free gum to chew energetically for 10
minutes after which an additional 5 ml saliva was
collected in a different tube. The saliva was
analyzed for copper, mercury, silver and tin. The
results of the saliva tests demonstrated higher
mercury levels after chewing. However, in some
individuals there were reverse results, which the
authors suspected was caused by extremely bad
amalgam fillings to start with. Because of this, the
mercury levels in the saliva were already elevated
before the chewing started.
The urine tests given to the alopecia patients were even more interesting. 76 of the patients had amalgam fillings and 31 did not. Laboratory levels of urine mercury after DMPS challenge should be less than 50ug/g creatinine. The urine mercury levels of the 31 patients without amalgam fillings did not exceed the 50ug/g creatinine criteria. However, the results from the patients with amalgam fillings was quite different. The urine mercury levels were clearly above the limit and the max levels were obtained 2 hours after DMPS administration. The urine mercury levels after DMPS were clearly related to the number of amalgam fillings. Nineteen patients, with alopecia and high urine mercury levels after the DMPS challenge, had their fillings removed. The DMPS test was repeated at least 6 weeks after removal of all amalgams. Figure 4 of the article presented the following average results:

- Patients: n = 19
- Diagnosis: alopecia n = 14
  alopecia + hirsutism n = 3
  alopecia areata n = 2
- Mean age: 30 years
- Mean symptom duration: 6 years
- Mean Hg in urine before removal: 258 ug/g creatinine (120 minutes after DMPS).
- Mean Hg in urine after removal: 104 ug/g creatinine (120 minutes after DMPS).
- Improved/new hair growth 68% (13/19)

In their discussion, the authors bring out the following important points: "The issue of mercury exposure from amalgam dental fillings is being discussed more frequently. The discussion is, in addition to the source, primarily the question of limits and normal levels. The limit should be below the level at which not tolerable damage occurs. The determination of this limit is especially difficult in chronic exposures since late organ damage almost never can be determined.

Use of DMPS mobilizes mainly the lightly bound mercury deposits in the kidneys and apparently to a lesser extent in the toxicologically more interesting CNS.

The relevance of the mercury load from amalgam is doubted by many since the values after DMPS challenge are far below those of occupationally exposed persons without symptoms. One must however clearly note that exposure from amalgam fillings is chronic and not acute poisonings. Even if there is a general background exposure in the population, our values clearly show how much the amalgam fillings contribute to the mercury concentration since the values increased with increasing number of amalgam fillings and that after removal there is a rapid reduction of levels."

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Fertility disorders may result from heavy metal and pesticide contamination which limits effectiveness of hormone therapy.

Gerhard I and Runnebaum B.

AUTHORS ABSTRACT: Heavy metals and chloro-organic compounds can influence female fertility at every phase of reproduction. They can also result in abortions and fetal malformations. For this reason, the urinary excretion of heavy metals was measured after oral loading with the chelating agent dimercaptopropanol sulfonate (Dimaval) in women with hormonal irregularities. In addition, blood was examined for various polychlorinated compounds (polychlorinated biphenyls - PCB, hexachlorocyclohexane - HCH, pentachlorophenol - PCP, hexachlorobenzol - HCB, dichlordiphenyltrichloroethane - DDT, dichlordiphenylethane - DDE, tetrachlorodiphenylethane - DDD). Mercury contaminations were seen most commonly and correlated significantly with the number of amalgam fillings and with the release of mercury while chewing. The latter was demonstrated with the so-called chewing-gum test. Women with hormonal disorders or alopecia had, on the average, the highest mercury excretion during the wash-out test. Cadmium excretion was pronounced for the following groups of women: Those with technical professions, those suffering from thyroid dysfunctions and those with habitual abortions and uterine fibroids. With increasing age, pesticide concentrations of the blood rose significantly. Women with endometriosis and with antithyroidal antibodies had significantly higher PCB values. Despite therapeutic interventions, fewer women with elevated DDT/DDE/DDD values conceived when compared to those with lower values. Alpha - HCH concentrations were often elevated in women with uterine fibroids. With increasing PCP levels pregnancies often ended in abortion. Results of this investigation indicate that women with hormonal irregularities or specific fertility disorders should be examined for heavy metal and pesticide contamination prior to hormone treatment.

BIO-PROBE REVIEW: During the years 1987 to 1989 the woman’s clinic at Heidelberg did heavy metal challenge tests on 419 women with hormonal disturbances. Half of the patients had a urine
mercury of more than 50 µg/g creatinine. The highest value measured was 36000 µg/g creatinine. Metals in the saliva were also checked and the levels of mercury in the saliva increased with the number of amalgam fillings. The World Health Organization has an upper limit of 1 µg/l in drinking water. During the saliva chewing-gum test the authors measured mercury levels up to 800 µg/l.

A statistical test showed that women with alopecia and women with polycystic ovaries and with hyperandrogenia had significantly higher levels of urine mercury than those without these symptoms. The authors felt their results gave primary indications that heavy metals and pesticides are causing endocrine disturbances with a concomitant reduction in fertility. The etiologically oriented therapy (eliminating exposure, adding vitamins and minerals) provides an improvement in fertility prognosis in women with primary and secondary sterility. In the years 1982-1986, the fertility clinic obtained spontaneous pregnancy in a third of the patients without the use of hormonal therapy. However, during recent years, when able to recognize and treat the environmental contamination burdens of these women, 70% of them became pregnant.

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Toxic factors and infertility. Heavy metals and minerals. Review
Gerhard I and Runnebaum B.

AUTHORS ABSTRACT: So far the influence of lead, cadmium and mercury on human fertility has hardly been considered. First experiences by the authors with the chelating agent 2,3-dimercaptopropane-1-sulfonate (DMPS), which mobilizes heavy metals deposited in the body, seem to favor an association between the body load of heavy metals and complications during the menstrual cycle and during pregnancy. By means of an extensive survey of references, the importance of heavy metals for reproduction is demonstrated. In addition, the deficiency of particular minerals and their interaction with heavy metals are considered. Indications are given for diagnosis and therapy of the exposure to heavy metals. The practical procedure is demonstrated by means of three case studies.

BIO-PROBE COMMENTS: We will only relate one of the case histories to demonstrate the significance of what the authors are bringing out.

Case 1: This woman, born in 1956, has attempted to get pregnant since 1978. Symptoms: Irregular heart, muscle tremor, inner unrest, irritability, lump in throat, allergies.

Work: Thermometer factory with measurements and control equipment. Soldering under an exhaust system. No contact with Hg. Lives in a street with much traffic. Normal food. Fish less than once a week.


DMPS test: Hg after 2 hours 838 µg/g creatinine (normal less than 50).
Pb after 2 hours, 70 µg/g creatinine (normal 80).
Zinc in spontaneous urine 158 µg/g creatinine (normal 150).
Selenium in spontaneous urine 15 µg/g creatinine (normal 10).

Chewing-gum saliva test: Hg 528 µg/l; Ag 359 µg/l; Zn 88 µg/l; Cu 16 µg/l. The woman had 10 amalgam fillings, 3 gold crowns and 1 root-filled tooth.

Antibodies to thyroid, otherwise no notable laboratory findings.

Occupational exposure could be excluded. No Hg-containing preservatives in home building materials. Combination therapy (zinc, selenium, calcium, vitamin C, vitamin E and vitamin B6) did not result in a reduced Hg level. Subsequently the amalgam fillings were removed and replaced with alternative materials. A re-challenge test with DMPS showed 41 µg/g creatinine after 2 hours, Pb 17 µg/g creatinine after 3 hours. Medication was reduced. Outcome: Spontaneous pregnancy.

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Acute Mercury Poisoning (Acroderma) Mimicking Pheochromocytoma in an Adolescent
Heningsson, C; Hoffman, S; McGonigle, L; Winter, JDS.

ABSTRACT: A 14-year-old boy was seen because of irritability, insomnia, lethargy, and profuse sweating, together with hypertension (blood pressure: 160/120 mm Hg), tachycardia, and a diffuse erythematosus rash with desquamation of the palms and soles. Initial biochemical investigation suggested a diagnosis of pheochromocytoma, but subsequently a history of exposure to mercury vapor was obtained. This case emphasizes the clinical and biochemical similarities between
mercury poisoning (acrodynia) and pheochromocytoma.

**BIO-PROBE COMMENT:** Pheochromocytoma is a tumor of the adrenal medulla or sympathetic paraganglia notably characterized by elevated blood pressure, reflecting an increased secretion of epinephrine and norepinephrine. The clinical similarities to acute mercury poisoning have been frequently pointed out in the past literature.

Although under constant evaluation and therapy, the patient's clinical condition rapidly deteriorated until the connection to mercury was discovered by repeat history. Exposure had been from playing with metallic mercury, some of which had been heated. After chelation therapy with dimercaprol, the patient slowly improved over a 4 month period, but was subsequently re-hospitalized with seizures. This is yet another of the increasing number of cases being reported in the medical literature where diagnosis eventually led to the discovery of mercury as the causative agent.

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**Immunotoxic effects of mercuric compounds on human lymphocytes and monocytes.**

Shenker BJ; Berthold P; Rooney C; Vitale L; DeBolt K; Shapiro IM.


**ABSTRACT:** The major goal of the study was to determine the effects of high and low levels of mercury on human B-cells. Following treatment of B-cells with HgCl₂ (0-1000 ng) and MeHgCl₂ (0-100 ng), their activation by mitogens was evaluated. Both forms of mercury caused a dose dependent reduction in B-cell proliferation in the presence or absence of monocytes. MeHgCl was approximately 10 times more potent than HgCl₂. Mercury also inhibited the ability of these cells to synthesize IgM and IgG. Analysis of the expression of activation markers indicated that CD69, an early marker of cell activation, was not effected by mercury. In comparison, B-cell expression of the low affinity IgE receptor and the transferrin receptor were significantly reduced. Of particular interest, cells activated by mitogen for 48 hr became refractory to the immunotoxic effects of mercury. When exposed to high levels of HgCl₂ (0.5-10 micrograms/ml) and MeHgCl (0.5-1 micrograms/ml), there was minimal reduction in B-cell viability at 1-4 hr, however, after exposure to mercury for 24 hr, cell death was apparent. MeHgCl was approximately 5-10 times more potent than HgCl₂. Electron microscopic analysis revealed early nuclear alterations characterized by hyperchromaticity, nuclear fragmentation and condensation of nucleoplasm. Both forms of mercury caused a rapid and sustained elevation in the intracellular levels of Ca²⁺. The results of this investigation clearly show that mercury-containing compounds are immunomodulatory; moreover, the decrease in B-cell function indicates that this metal is immunotoxic at very low exposure levels. Furthermore, the cytotoxic events are consistent with the notion that mercury initiates changes associated with programmed cell death.

**FORUM**

The Ninth Annual Science Symposium of the International Academy of Oral Medicine and Toxicology (IAOMT) will be held in Chicago, Illinois this year.

**Date:**


Thursday evening Reception (30 Sept); Sunday morning Board Meeting (3 Oct).

**Site:** Hyatt Regency, Oak Brook, Illinois. IAOMT room rate - $78.00/night.

**Program:**

Murray J. Vimy, DMD: University of Calgary mercury research.

Boyd Haley, PhD: University of Kentucky Alzheimer's Disease research.

Richard Gordon Foulkes, MD: Previous Minister of Health for British Columbia, Canada - on fluoride.

Peter Duesberg, MD: University of California retrovirologist - on HIV.

Walter J. Clifford, MS: Immune system effects of dental materials.

Others (to be announced).

Chair: Dr. Marcia A. Basciano. 2932 Finley Rd. Downers Grove, IL. 60515.

Bio-Probe considers the information contained in this Newsletter to be so dynamic that each recipient should make a special effort to share it with any colleague who still places amalgam.

We challenge any member of the pro-amalgam establishment to refute the data presented, with comparable scientific studies.