

Amalgam Elimination Therapy

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Summary

The fifteen patients included in this study presented at a holistic dental practice with complaints associated with chronic mercury toxicity. All patients underwent amalgam elimination therapy (AET).

Three anamneses per patient were carried out: at the first visit, after 4 weeks of treatment with Derivatio H, and 6-8 months after therapy began. Patients were asked about characteristic symptoms of mercury toxicity and their responses recorded on a standardized questionnaire. All patients received selenium supplementation (100 g daily) for one month between the second and third anamnesis. Presence or severity of symptoms were graded on a four-point scale. After four weeks of Derivatio H therapy and the start of amalgam filling removal, the total symptom score had decreased by 43.9%. After 6-8 months, the score had decreased by 65.6%.

A hair mineral analysis was carried out both before and after AET to monitor the success of therapy by determining the reduction in mercury concentration in the hair. Individual concentrations sank dramatically, by an average of 71.1% in comparison to the original values.

Introduction

More than 50 million German citizens have mercury amalgam fillings, and most 20 to 50-year-olds have more than 10 fillings. In recent years, this most commonly used filling material, which has been in use since 1830, has increasingly fallen into disrepute. The debate among scientists as to whether amalgam fillings are harmful to patients, and if so, how harmful, has been going on almost for as long as amalgam has been in use.

Results of studies conducted in vari-

ous countries over the last 15 years have impressively confirmed that the mercury component in amalgam poses potential hazards for the human body. The first partial or complete restrictions on its use in some countries (Sweden, Austria) and the fact that Germany's leading supplier of amalgam is getting out of the market makes it evident that in Germany the problem of amalgam use is being taken seriously in professional circles and that for the sake of patients, dentists, and dental assistants amalgam will be replaced by other materials before too long.

Methodology

The amalgam-elimination therapy applied in this study consisted of:

removal of amalgam by the dentist
approximately four weeks of treatment with Derivatio H (2 tablets 3 times a day) (See Table 1 for composition of Derivatio H.)

four weeks of supplementation with selenium (100 g per day).

Patients were advised to drink at least 2 liters of fluid (preferably water) per day during treatment to assist the elimination process.

As a parameter to monitor the success

1 tablet contains:

15 mg Anagallis arvensis 4X
12.5 mg Argentum metallicum 30X
12.5 mg Arnica montana 15X
15 mg Bryonia cretica 4X
12.5 mg Carbo vegetabilis 30X
15 mg Chelidonium majus 6X
15 mg Citrullus colocynthis 5X
12.5 mg Digitalis purpurea 5X
15 mg Selenicereus grandiflorus 4X
15 mg Silybum marianum 3X
15 mg Smilax 6X
15 mg Stannum metallicum 8X
12.5 mg Strophantus gratus 6X
15 mg Taraxacum officinale 6X
15 mg Veronica virginica 4X
12.5 mg Viscum album 4X

Tab 1. Composition of Derivatio H

of therapy, three anamneses per patient were conducted at different times and hair mineral analysis was carried out. In addition, galvanic currents in the mouth were measured and the volume of amalgam, precious metal (gold alloy), and base metal fillings was estimated.

In the context of this drug monitoring study, the emphasis was on the most effective therapy for the patients, so no control group was used.

Patient demographics

The age distribution of the 15 patients involved in the study (6 male, 9 female) is given in Table 2.

Age group	Number of patients
15-20 years	1
21-30 years	2
31-40 years	7
41-50 years	3
51-60 years	2

Tab 2. Age distribution of patients

susceptibility to allergies
anxiety
depression
lack of energy
memory deficit
sensitivity to taste
hair problems
skin problems
heart problems
weak immune system
neuralgias
insomnia
pain
dizziness
visual disturbances
digestive problems
tremor
other

Tab 3. Symptoms of low-grade mercury toxicity as recorded on the anamnesis questionnaire. Rating: severe symptoms=3 points, moderate symptoms=2 points, mild symptoms=1 point, no symptoms=0 points.

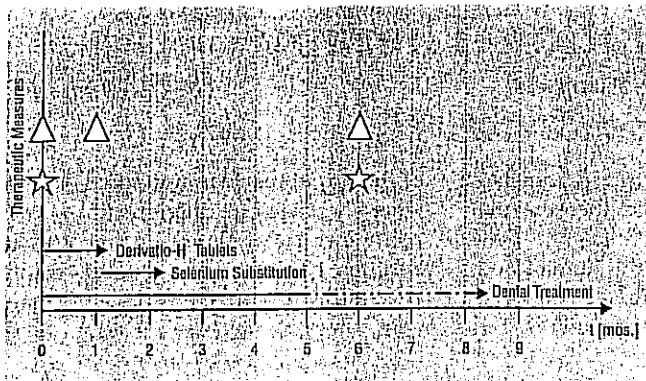


Fig.1: Chronology of the Application Study;
 Δ: Anamnesis; ☆: Analysis of Minerals in Hair

Removal of amalgam by the dentist

Amalgam fillings were drilled out one at a time, with an interval of time in between. The drill ran at a lower than usual speed and a coolant spray was used extensively. In addition, high speed suction was employed to remove particles with the help of a rubber dam to prevent the swallowing of large particles (although the dam was permeable to Hg ions and vapor.)

The patients were asked to rinse their mouths thoroughly to remove drill dust and to drink about 1 liter of milk (or eat the equivalent in milk products) on the day of treatment since milk protein binds with amalgam. The dentist and assistants wore masks and latex gloves to protect against absorption through the skin. Care was taken to provide good ventilation in the treatment room.

Small fillings were replaced with a non-metallic material. If a filling could not be replaced, a crown was prepared. The crown was to cover 100% of the tooth's surface in order (in theory) to prevent incompatibilities from developing later. Because there should be no voltage flow between materials already in the mouth and dental alloys used in replacement fillings, gold-alloys were compatibility-tested with a potentiometer prior to permanent insertion, using a test kit of biocompatible alloys made by different manufacturers. Permanent dental prostheses can be put in place only after six months have elapsed since

the removal of the last amalgam filling. If necessary, the laboratory can make temporary synthetic resin prostheses for use in the meantime.

Anamneses

At each patient's initial visit, a comprehensive holistic anamnesis was conducted (Table 3). At this time, the patient was inter-

viewed about the presence or severity of symptoms typical of low-grade mercury toxicity. The dentist began removing the fillings of patients with amalgam and at the same time started an approximately four-week course of treatment with Derivatio H (2 tablets 3 times a day) with all patients. This was followed by a second anamnesis, which was then followed by one month of selenium supplementation (100 g per day). The third anamnesis was carried out 6-8 months after treatment began.

Hair mineral analysis

Hair and nails reflect what has been deposited in body tissues, allowing mineral deficiencies or long-term exposures to toxins to be very reliably ascertained. Hair and nail analysis has been used for decades in forensic medicine. Reduced or elevated levels in the tissues are especially frequent in the chronically ill and in patients with symptoms of unknown origin.

In addition to determining mercury levels, levels of zinc, selenium, and copper were also measured. During the chelation therapy that is often used for mercury elimination,

these elements are also often dramatically eliminated, making supplementation crucial.

Study material

Test hairs used in mineral analysis may not be bleached, colored, or permed. To assure reliable test results, precise explanations of how to take hair samples were provided to the patients both in conversation and with the help of an information sheet. Hair is taken from close to the scalp. For the second hair mineral analysis, regrown hair was cut from the same area. About 0.5-1 g of hair, or 2-3 teaspoons, is required for testing.

Study methods

In the laboratory, the hair was carefully washed in deionized solutions. Contrary to what is often erroneously assumed, these solutions remove only external environmental factors without influencing endogenous deposits in the hair shaft. Then the hair was carefully dried in special ovens and weighed with an accuracy of within one thousandth of a gram. The amount required for testing was carefully exposed to heat and acid in a test tube to turn it into ash and was then diluted with deionized solutions and further prepared for spectral analysis, which was carried out through ICPAES (inductively coupled atom emission spectroscopy) and ICPMS (inductively coupled plasma mass spectrometry). The latter process permits taking measurements on a scale

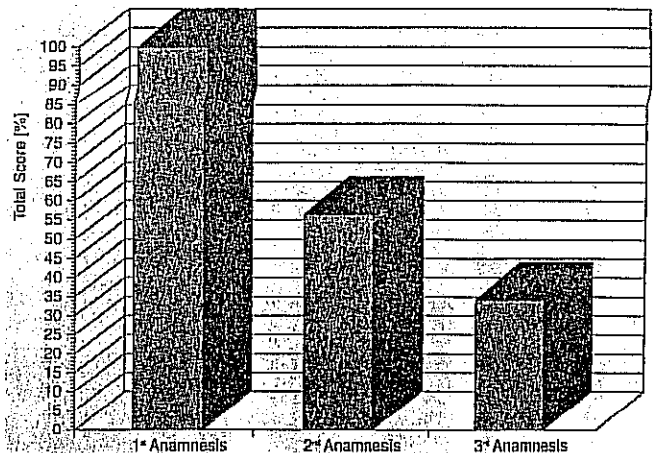


Fig. 2: Total Score of Symptoms in All Patients; n = 15

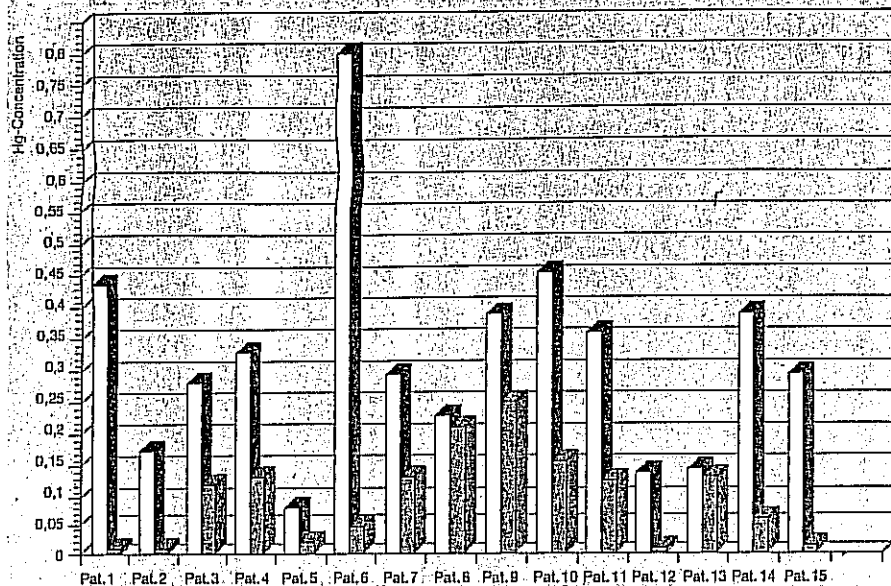


Fig. 3: Concentration of Mercury within the Hair, Prior to □ and Ensuing ■ Amalgam-Elimination Therapy

of parts-per-trillion. It makes it possible to conduct analytic examinations of very difficult areas and is the most progressive and reliable measurement technique currently in existence. The first hair mineral analysis was performed before treatment began, the second six to eight months later (Figure 1).

Filling materials

During the initial visit, each patient's dental status was assessed. The quantity of filling material (amalgam, gold alloy, non-precious metal) was estimated and recorded on the following scale:

- none present
- < 2 cm³
- 2-6 cm³
- > 6 cm³

Galvanic currents

Currents flow between precious and base metals in accordance with their position in the electrochemical series. For example, between gold and silver, a current of approximately 0.62 volts flows through saliva and tissue fluids in the oral cavity. This is approximately 15 times more than is needed to stimulate a

cell (40 mV). People with amalgam fillings often become aware of the phenomenon of currents in the mouth without knowing anything about it—for example, when they touch a filled or crowned tooth with a metal spoon while eating. This flow of currents from the oral "battery" results in ion displacements that trigger impulses on the surfaces of nerve fibers. These oral currents are not experienced consciously by patients, but they do constitute a continual irritation on a segmental level. Higher currents indicate correspondingly greater amounts of dissolved amalgam components.

In this study, the maximum oral currents were measured with a potentiometer and assigned to one of four categories:

- < 10 mV
- < 100 mV
- 100-1000 mV
- > 1000 mV

Results

This amalgam elimination therapy proved to be extremely effective for all the patients involved in the study. A large number of individual results were report-

ed and noted in the course of the study; the data reflect only a fraction of the success of this holistically oriented therapy.

Patients reported no undesirable side effects or interactions. Derivatio H and the selenium supplement were extremely well tolerated.

Anamneses

Each patient's symptoms improved between the first and second anamnesis, and three of the patients were already symptom-free by the second anamnesis. Prior to treatment, the total score of symptoms for all patients was 157 points (100%). Four weeks after the beginning of treatment (taking Derivatio H, amalgam removal) the score sank to 88 points (56.1%) Six months after the beginning of treatment and after four weeks of selenium supplementation in the interim, the score was still 54 points (34.4%) (Figure 2).

Hair mineral analysis

The results of hair mineral analysis showed a dramatic reduction in the concentration of mercury in the hair of all patients. Prior to treatment, the average mercury concentration was 0.317 ppm (100%), while after treatment it was 0.092% (29%) (Figure 3).

Prior to AET, zinc concentrations were in the normal range (142-248 ppm) for all patients. After AET three patients had zinc levels slightly below the reference value.

Five patients had deficiencies of selenium prior to treatment, while two had deficiencies after AET (normal range = 0.2-5.46 ppm).

Concentrations of copper all fell within the normal range (5.48-40 ppm) both before and after AET.

Dental status

Thirteen of the patients had amalgam fillings. In five of them, amalgam and base metal alloys were removed at the same time and gold fillings either removed or added. As had been expected, most patients initially showed maximum galvanic currents of over 1000 mV (Table 4).

	Amalgam		Gold		Non-precious Metals		Galv. Current	
	BT	AT	BT	AT	BT	AT	BT	AT
Pat. 1	3	0	1	2	2	0	3	0
Pat. 2	3	0	2	3	1	0	2	0
Pat. 3	2	0	2	0	1	0	2	0
Pat. 4	0	0	0	0	0	0	0	0
Pat. 5	2	0	0	0	3	0	3	0
Pat. 6	2	0	3	3	1	0	2	0
Pat. 7	3	0	1	0	0	0	3	0
Pat. 8	3	0	3	0	0	0	3	0
Pat. 9	3	0	1	3	1	0	3	0
Pat. 10	2	0	3	3	0	0	3	0
Pat. 11	0	0	2	0	0	0	3	0
Pat. 12	3	0	2	3	0	0	3	0
Pat. 13	2	0	0	0	0	0	1	0
Pat. 14	2	0	2	0	1	0	2	0
Pat. 15	3	0	3	3	0	0	3	0

Amalgam, Gold, Non-precious Metals	Galvanic Current
3 Points = $>6\text{ cm}^3$	3 Points = $>1000\text{ mV}$
2 Points = $2-6\text{ cm}^3$	2 Points = $100-1000\text{ mV}$
1 Point = $<2\text{ cm}^3$	1 Point = $<100\text{ mV}$
0 Points = none	0 Points = $<10\text{ mV}$

Tab 4: Dental Status and Galvanic Current, Before and After Amalgam-Expulsion Therapy; BT=Before Therapy; AT=After Therapy

Noteworthy individual results

Prior to elimination therapy, the concentration of mercury in a 38-year-old dental assistant's hair was approximately the average for the group. This value decreased by over 60% simply through treatment with Derivatio H and selenium supplementation.

A 55-year-old housewife had had her amalgam fillings removed at a different practice, without any precautions or elimination therapy, several months prior to the commencement of this study. This had made her symptoms worse, and her first hair mineral analysis detected a considerable concentration of mercury remaining in her hair. Her symptom score and Hg concentration were reduced dramatically by treatment.

Discussion

The goal of our study was to test the effectiveness of an amalgam elimination

therapy that included use of a homeopathic combination remedy. With regard to the parameters investigated, the effectiveness of this therapy was clearly confirmed. The positive results were surprising, because in spite of the precautionary measures described in the section Removal of amalgam by the dentist, amalgam removal does increase the mercury load, and a temporary worsening of symptoms is to be expected. However, this interim exposure to greater amounts of mercury did not result in any worsening of symptoms in these patients, and the concentration of mercury in their hair did not increase during the monitoring period. We assess this as being due partly to the described precautions during amalgam removal and partly to Derivatio H medication and selenium supplementation.

The example of the dental assistant suggests that taking Derivatio H and selenium supplements is of value not only for those who actually have mer-

cury amalgam fillings but also for people whose occupation constantly exposes them to mercury. The case of the housewife demonstrates the great importance of amalgam elimination therapy, because amalgam removal without AET increases the patient's mercury load.

The results of this study present some preliminary but promising findings on the effectiveness of this AET and of the homeopathic combination remedy Derivatio H. It needs to be followed up by a study of a large enough number of cases to permit valid statistical analysis. In that case, the duration of treatment with Derivatio H and of selenium supplementation can and should be longer. In addition, the value of administering other important minerals, trace elements, amino acids, and vitamins (zinc, copper, glutathione, and Vitamin B6) should be assessed. The monitoring period should be lengthened and case histories evaluated for a larger control group and at shorter intervals.

References

- (1) American Dental Association Divisions of Communication and Scientific Affairs: When your patients ask about mercury in amalgam. *J Am Dent Assoc* 1990; 120: 395-8.
- (2) Austrian Minister of Health: Austria to be amalgam free by the year 2000. *FDI Dental World* 1993; March/April: 6.
- (3) Berglund A. Estimation by a 24-hour study of the daily dose of intra-oral mercury vapor inhaled after release from dental amalgam. *J Dent Res* 1990; 69: 1646-51.
- (4) California Proposition 65 (U.S.A.): Dentists to post warning of mercury in fillings. *Californian News*, 15 December 1993, 3B.
- (5) Clarkson TW, Friberg L, Hursh JB, Nylander M. The prediction of intake of mercury vapor from amalgam. In: Clarkson TW, Friberg GF, Nordberg PR, Sager PR (eds.). Biological Monitoring of Toxic Metals. New York: Plenum Press 1988; 247-60.
- (6) Daunerer M et al. Handbuch der Amalgamvergiftung. Landsberg/Lech: ecomed 1992.
- (7) Degussa AG (Germany). Press release, 21 December 1993.
- (8) Dorsch P, Werlé-Scherrer L. Einfluß von pH-Wert und O₂-Gehalt der Lösung auf die Korrosion von Amalgamen. *ZWR* 1995; 104 (3): 162-6.
- (9) Drasch G et al. Mercury burden of human fetal and infant tissues. *Eur J Pediatr* 1994; 153: 607.
- (10) Drasch G, Schupp I, Riedl G, Guenther G. Einfluß von Amalgamfüllungen auf die Quecksilberkonzentration in menschlichen Organen. *Dtsch Zahnärztl Z* 1992; 47: 490-6.
- (11) Eggleston DW, Nylander M, Suffin SC, Martinoff JT, Rieders MF. Correlation of dental amalgam with mercury in brain tissue. *J Prosthet Dent* 1987; 58: 704-7.
- (12) Fredin B. Mercury release from dental amalgam fillings. *Int J Risk Safety Med* 1994; 4: 197-208.
- (13) Fredin B. Studies on the mercury release from dental amalgam fillings. *Swed J Biol Med* 1988; 3: 8-15.
- (14) Friberg L, Nylander M. Transcript of proceedings, Dental Products Panel Meeting. U. S. Food and Drug Administration, Rockville, Maryland, March 15, 1991.
- (15) Friberg L. Environmental Health Criteria EHC 118: Inorganic Mercury. World Health Organization WHO, Geneva 1991.
- (16) Gross MJ, Harrison JA. Some electrochemical features of the in vivo corrosion of dental amalgams. *J Appl Electrochem* 1989; 19: 301-10.
- (17) International Committee (L. Friberg, Chair). Maximum allowable concentrations of mercury compounds. *Arch Environ Health* 1969; 19: 891-905.
- (18) KEMI (Sweden, Chemical Inspection Agency). Amalgam will be banned. *Dagens Nyheter*, 6 October 1989.
- (19) Kennedy CD. Biocompatible Restorative Dentistry. In: Friberg LT, Schrauzer GN (eds.). Status Quo and Perspectives of Amalgam and Other Dental Materials. Stuttgart, New York: Gustav Thieme 1995; 119-30.
- (20) Koch W. Amalgam, Wissenschaft und Wirklichkeit. Oeko-Institut, Werkstattreihe Nr. 70, Freiburg 1991.
- (21) Koepfel C. Mercury Concentrations, Clinical and Neuropsychological Findings in Patients Suspecting Mercury Poisoning from Amalgam Fillings. In: Friberg LT, Schrauzer GN (eds.). Status Quo and Perspectives of Amalgam and Other Dental Materials. Stuttgart, New York: Gustav Thieme 1995; 70-4.
- (22) Masi JV. Corrosion of Restorative Materials: The Problem and the Promise. Friberg LT, Schrauzer GN (eds.). Status Quo and Perspectives of Amalgam and Other Dental Materials. Stuttgart, New York: Gustav Thieme 1995; 39-50.
- (23) Molin M et al. Mercury, selenium, and glutathione peroxidase before and after amalgam removal in man. *Acta Odontol Scand* 1990; 48: 189.
- (24) Nylander M et al. Mercury accumulation in tissues from dental staff and controls in relation to exposure. *Swed Dent J* 1989; 13: 235.
- (25) Pleva DJ. Mercury from Dental Amalgams. In: Friberg LT, Schrauzer GN (eds.). Status Quo and Perspectives of Amalgam and Other Dental Materials. Stuttgart, New York: Gustav Thieme 1995; 21-31.
- (26) Pleva J. Mercury from dental amalgams: exposure and effects. *Int J Risk Safety Med* 1992; 3: 1-22.
- (27) Schrauzer GN. Quecksilberdetoxifikation durch Selen: Ein Beitrag zur Lösung des Amalgamproblems. *Acta medica empirica* 1990; 10: 561-4.
- (28) Schrauzer GN. Quecksilber-Selen-Wechselwirkungen und das Zahnamalgam-Problem. Friberg LT, Schrauzer GN (eds.). Status Quo and Perspectives of Amalgam and Other Dental Materials. Stuttgart, New York: Gustav Thieme 1995; 106-18.
- (29) Stannard JG. Amalgam. In: Materials in Dentistry. 2nd ed. Hanover (MA): Denali Publ. 1988; 1-13.
- (30) Stock A. Die chronische Quecksilber- und Amalgamvergiftung. *Arch Gewerbepathol Gewerbehyg* 1936; 7: 388-413.
- (31) Stock A. Die Gefährlichkeit des Quecksilbersdampfes. *Z Angew Chem* 1926; 39: 461-88.
- (32) Taskinen H, Kinnunen E, Riihimäki V. A possible case of mercury-related toxicity resulting from grinding of old amalgam restorations. *Scand J Work Environ Health* 1989; 15: 302-4.
- (33) Vimy MJ, Lorscheider FL. Dental amalgam mercury daily dose estimated from intra-oral vapor measurements: a predictor of mercury accumulation in human tissues. *J Trace Elem Exp Med* 1990; 3: 111-23.
- (34) Vimy MJ, Lorscheider FL. Mercury Exposure from "Silver" Dental Fillings: Current Research Findings about Uptake, Tissue Distribution and Pathophysiology. In: Friberg LT, Schrauzer GN (eds.). Status Quo and Perspectives of Amalgam and Other Dental Materials. Stuttgart, New York: Gustav Thieme 1995; 85-91.
- (35) Visser H. Indikationen und Kontraindikationen der Amalgamfüllung. In: Friberg LT, Schrauzer GN (eds.). Status Quo and Perspectives of Amalgam and Other Dental Materials. Stuttgart, New York: Gustav Thieme 1995; 32-8.
- (36) Wander R. Stofferfeld und Schwermetallbelastung. *Aerztezeitschr Naturheilverf* 1995; 36 (5): 356-8.
- (37) Ziff MF. Dental amalgam: Status Quo, Political Aspects, International Situation. In: Friberg LT, Schrauzer GN (eds.). Status Quo and Perspectives of Amalgam and Other Dental Materials. Stuttgart, New York: Gustav Thieme 1995; 8-15.

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