



## ***Clinical report***

---

Scand J Work Environ Health [1997;23\(3\):65-67](#)

### **Experiences from the amalgam unit at Huddinge hospital -- somatic and psychosomatic aspects**

by [Langworth S](#)

The following article refers to this text: [2002;28\(1\):0](#)

**Key terms:** [mercury](#); [somatic aspect](#); [symptom](#)

This article in PubMed: [www.ncbi.nlm.nih.gov/pubmed/9456069](http://www.ncbi.nlm.nih.gov/pubmed/9456069)

---



This work is licensed under a [Creative Commons Attribution 4.0 International License](http://creativecommons.org/licenses/by/4.0/).

## Experiences from the amalgam unit at Huddinge hospital—somatic and psychosomatic aspects

by *Sven Langworth*<sup>1</sup>

Langworth S. Experiences from the amalgam unit at Huddinge hospital—somatic and psychosomatic aspects. Scand J Work Environ Health 1997; 23 suppl 3:65—67.

The “amalgam unit” at the Huddinge University Hospital in Sweden examined 379 of 1300 patients referred for health problems which the patients related to amalgam tooth fillings. Toxicologic, clinical, odontological, and psychiatric examinations were performed. More than 30% had medical causes for their complaints; 7% had severe diseases which had been unrecognized. The most common symptoms were diffuse pain, general weakness, fatigue, headache, and difficulties in concentrating. Anxiety and depression were the most prevalent psychiatric complaints. The psychological examination revealed a high prevalence of somatization. The treatment was information about mercury and amalgam, appropriate odontological routines without removal of intact amalgam fillings, medical therapy when necessary, and strengthening of the patients’ social networks. Ninety percent were satisfied with the treatment. The results indicate that there are various explanations for the complaints of patients fearing “amalgam disease”. No cases of mercury intoxication were found.

**Key terms** mercury, somatic, symptoms.

In 1993, a special amalgam clinic was started at the Huddinge University Hospital. The clinic was started because of the problems encountered in the care of patients with health disturbances that they related to dental fillings. Many patients felt mistreated and worried about the possible health effects of mercury released from amalgam fillings. This was a question that their regular physicians could not always handle. The health authorities therefore decided that all such patients in the Stockholm County region (1.8 million inhabitants) should be directed to this new clinic, located in the Department of Occupational Medicine, and to the Institute of Odontological Toxicology at the Dental School.

A broad program for investigating the patients’ problems was established. The program is based on dental, medical, and psychological examinations. It was declared from the start that the diagnostic methods and treatment used must be based on established scientific and clinical experience.

At the patient’s first visit, blood and urine samples are collected by a nurse, and a questionnaire is filled

out. The questionnaire contains questions on occupational history, medical history, use of drugs and supplements, current symptoms, and life-style factors such as smoking and drinking habits.

The patient is then examined by a dentist, who registers the odontological history, present type of dental fillings, aberrations in the mucous membranes or tongue, bite function, and the like.

The results are summarized in a protocol, which is present at the patient’s next visit, 3–4 weeks later, when the patient sees a physician. The patient’s medical and occupational history is reviewed in detail, followed by a physical examination. The findings, including results from the laboratory analyses, are then discussed. The laboratory analyses include several biochemical markers, blood cells, electrolytes, liver, kidney, and thyroid function markers, and the levels of serum zinc, serum B<sub>12</sub> and serum folic acid. Furthermore, the concentration of mercury in blood, plasma, and urine and selenium in plasma is determined.

Additional tests are done if needed, and in cases in which a medical disease is suspected, the patient is referred to a special clinic at the hospital for further

<sup>1</sup> Institute of Occupational Medicine, Karolinska Institute, Huddinge University Hospital, S-141 86 Huddinge, Sweden.

examination. A skin patch test, to diagnose type IV allergy to restorative material, is performed for patients with oral lichen or facial eczema.

On the same day, the patient sees a psychologist. During a 1-hour interview, information is collected about the patient's life history, mental trauma, social network, and personality. All patients are also asked to fill out three questionnaires: the Symptom Check List (SCL-90) (1), Sense of Coherence (SOC) (2), and the Toronto Alexithymia Scale (TAS-20) (3). These questionnaires are widely used in clinical practice, and they reflect different psychological aspects, such as personality, somatization, and alexithymia.

Thereafter, each case is discussed at a meeting in which the dentist, the physician, and the psychologist participate. Possible diagnoses and treatment are considered. The patient is then called for a final visit with a physician and then given information about the results and recommendations for treatment.

The primary strategy is to suggest therapy for any medical or odontological disorders, to give correct information about the adverse effects of mercury, and to strengthen the patient's social network. Removal of amalgam fillings is recommended only in cases with proved allergy to mercury (or other components in amalgam) or in cases with oral findings or symptoms, like oral lichen or a strong taste of metal.

After the completed investigation, the patients are asked to answer a questionnaire regarding their opinion of the investigation. The questionnaire is anonymous and includes questions on both the treatment and the given recommendations.

Over 1300 patients have been referred to the clinic since its start, and thus far we have examined 379 subjects, 263 women and 116 men. This group was very heterogeneous, with women aged 40–50 years predominating. The average age of the women was 46 years, and that of the men was 45 years. About 30% of the patients were employed, about 30% were on sick leave due to their illness, and about 30% were retired because of sickness or old age. Forty percent were smokers.

Most of the subjects had amalgam fillings, but 37 persons had already substituted amalgam with other types of materials. The average number of amalgam surfaces was 18, whereas there were 13 composite surfaces and 5 gold surfaces.

The prevalence of general symptoms was very high. Many patients reported 20 or more symptoms. The most reported general symptoms were diffuse pain in muscles and joints (78%), general weakness (75%), fatigue (68%), dizziness (68%), and difficulties in concentrating (68%). Headache, anxiety, and depression were also common complaints.

Tremor, the main symptom in chronic mercury in-

toxication, was reported in only a few cases, however. The most frequent odontological manifestations were tender or aching teeth (60%), a taste of metal (54%), sore mouth (43%), dry mouth (43%), and tender gums (41%). About 10% of the patients had a positive patch test to mercury, gold or palladium, indicating contact allergy to these restorative materials.

For nearly 10% of the patients nondiagnosed medical diseases were revealed. For instance, six patients displayed profound anemia, six had thyroid disease, two suffered from severe heart disease, two had cancer, and one had a serious kidney disease.

The median concentration of mercury was 10 (SD 2.5–55) nmol/l in whole blood, 5 (SD 0.7–15) nmol/l in plasma, and 15 (SD 1–70) nmol/l in urine. Only three patients had slightly elevated mercury levels in their blood or urine, but nine of them were judged to suffer from mercury intoxication. The median concentration of selenium in plasma was 0.93 (SD 0.54–2.60)  $\mu$ mol/l; 42% of the patients were taking selenium as a supplement. There was no significant correlation between plasma selenium and mercury concentration in blood or urine. The concentration of mercury in plasma and urine correlated significantly with the number of amalgam surfaces ( $P < 0.001$ ,  $r = 0.29$  and  $0.30$ , respectively).

A preliminary analysis of the psychological examination revealed that the prevalence of recent mental trauma (within a year of onset of illness) was high (>70%). The questionnaires revealed great variation, but there was a clear tendency towards somatization in the Symptom Check List. The score for somatization was elevated, with a mean score of 1.3 (the normal limit being 0.72). Almost 70% of the subjects had scores above that limit. In the parameters for anxiety, depression, and obsession, about 40% of the subjects had scores over the normal limit. For the Toronto Alexithymia Scale, the average score was slightly elevated, and 15% of the subjects displayed scores above the margin for alexithymia (ie, more than 60 points). The average scores in the Sense of Coherence test were mainly normal.

There were few signs of serious mental illness, and only three subjects were judged to suffer from psychosis.

The results of the anonymous questionnaire showed that more than 90% of the patients were satisfied with the treatment, and about 80% were pleased with the results of the investigation.

To summarize, this group of patients with "amalgam disease" was found to be very heterogeneous. The group included many patients with widespread symptoms, but also patients with mainly odontological complaints. A number of patients had chronic diseases of uncertain origin, such as multiple sclerosis and collagenosis. Several patients expressed anxiety about the adverse effects

of their amalgam fillings, especially mercury intoxication, and it was obvious that many of them had received incorrect information from the newspapers, television or from a patients' association. None of the patients were judged to be mercury intoxicated (4, 5). The concentrations of mercury in blood and urine were normal, and there were no clinical signs of mercury poisoning. There was, however, a clear tendency towards somatization and perhaps a tendency towards alexithymia.

Our results are in agreement with those of other studies in Sweden (6—8). They do not support the opinion that mercury intoxication lies behind the condition "amalgam disease"; instead they clearly demonstrate that there are various explanations for patients' complaints.

### References

1. Derogatis LR, Rickels K, Rock AF. The SCL-90 and the MMPI: a step in the validation of a new self-report scale. *Br J Psychiatry* 1976;128:280—29.
2. Antonovsky A. The life cycle, mental health and the sense of coherence. *Isr J Psychiatry Relat Sci* 1985;22:273—280.
3. Bagby RM, Taylor GJ, Ryan D. Toronto alexithymia scale: relationship with personality and psychopathology measures. *Psychother Psychosom* 1986;45:207—215.
4. Berlin M. Mercury. In: Friberg L, Nordberg GF, Vouk VB, editors. *Handbook on the toxicology of metals; vol II*. Amsterdam: Elsevier 1986:387—445.
5. Clarkson TW, Hursh JB, Sager PR, Syversen TLM. Mercury. In: Clarkson TW, Friberg L, Nordberg GF, Sager PR, editors. *Biological monitoring of toxic metals*. New York (NY): Plenum Press 1988:199—246.
6. Anneroth G, Ericson T, Johansson I, Mornstad H, Ryberg M, Skoglund A, et al. Comprehensive medical examination of a group of patients with alleged adverse effects from dental amalgams. *Acta Odontol Scand* 1992;50:101—11.
7. Herrström P, Högstedt B. Clinical study of oral galvanism — no evidence of toxic mercury exposure but anxiety disorder an important background factor. *Scand J Dent Res* 1993;101:232—7.
8. Langworth S, Elinder CG, Göthe CJ, Vesterberg O. Biological monitoring of environmental and occupational exposure to mercury. *Int Arch Occup Environ Health* 1991;63:161—7.