

## A Case of Acute Mercuric Chloride Poisoning, Treated by the Lambert Method, with Recovery\*

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It has been only during the last ten or fifteen years that the treatment of acute mercurial poisoning has been put on a more or less scientific basis. Previous to that time the whole treatment, as given in the leading textbooks, consisted of the exhibition of some albuminous substance, such as the white of egg or milk. Outside of that, as one writer expressed it, the treatment was "really watching the case until fatal anuria developed." The impression was general that with albumin, mercury forms an insoluble and inert compound.

This is entirely erroneous. Every particle of mercury taken into the system, whether given therapeutically or taken in toxic doses, is converted into the albuminate before it is absorbed, and the albuminate of mercury is highly poisonous. It differs from the organic substance only in that it is not corrosive. The white of egg or other albuminous substance saves the tissues of the stomach and intestines by furnishing a protein with which the mercury can combine. In other words, the object of the administration of the albumin is to rob the mercurial compound of its corrosive action (1). But the albuminate of mercury thus formed, being a poison, should be removed as soon as possible by stomach washing.

The foregoing explanation, then, shows the rationale of the first two steps in the treatment of this condition.

The modern, eliminative, alkaline and diuretic treatment of acute mercurial poisoning, which was evolved through the work of several investigators, but especially by Lambert and Patterson (2), is briefly as follows:

1. Give the whites of several eggs or milk, or both.
2. Wash out the stomach.
3. Give every other hour eight ounces of the following mixture: Potassium bitartrate, one dram; sugar, one dram; lactose, one half ounce; lemon juice, one ounce; boiled water, sixteen ounces. Eight ounces of milk are administered every alternate hour.
4. The drop method of rectal irrigation with a solution of potassium acetate, a dram to the pint, is given continuously. The amounts of urine secreted under the treatment are very large.
5. The stomach is washed out twice daily.
6. The colon is irrigated twice daily, in order to wash out whatever poison has been eliminated in that way.

It is imperative to emphasize the necessity of keeping up the treatment with the colonic drip enteroclysis day and night without interruption. When poisoning is not severe a week may be sufficient time for treatment. When large or successive doses have

been taken, or when there is a preexisting kidney lesion, or when treatment begins several days after the poison has been taken, longer periods, even up to three weeks, are necessary.

With regard to the white of eggs, Sollman and Cleveland found that whole egg is just as efficacious. Milk is claimed as being in some ways preferable to eggs, as it spreads more uniformly and rapidly over the stomach.

Among other measures, sodium thiosulphate (3), Carter's solution of sodium phosphite and H<sub>2</sub>O<sub>2</sub> have been advocated, but Sansum (4) and Farnham (5) have shown these to be of little or no value. Wilms (6) advocates the use of calcium sulphate. Decapsulation (7, 8) of the kidney is occasionally done, sometimes with beneficial results, but only in the more desperate cases, in which the medical treatment has been too long delayed.

The adoption of this form of treatment was soon followed by a greatly reduced mortality, as reported in the literature. Thus, Shisler (9), in 1887, reported sixteen cases with five deaths; Weiss (10), in 1918, twenty-eight cases with one death; Greenwood (11) reports seventy-one cases admitted to the Cook County Hospital from January, 1920, to May, 1922, with eleven deaths. Latterly (1927), Gabelblatt (12) reported thirty-eight patients admitted to the Cincinnati General Hospital, with four deaths, some, however, were not undoubted cases of bichloride poisoning. Single cases with recovery are frequently being reported.

Thus, the idea that mercuric chloride poisoning is almost uniformly fatal, is no longer true. There is hope of recovery even in cases where a relatively large amount has been taken and symptoms are severe.

### CASE HISTORY

**CASE.**—Miss C. K., twenty-four years of age while somewhat under the influence of liquor, swallowed two seven and a half grain tablets of bichloride of mercury on the evening of February 2, 1928. She was a healthy girl, and family and previous personal history was negative.

Dr. Shenfeld, who lives in the neighborhood, arrived in about an hour and administered three whole eggs and about a quart of milk, which the patient soon vomited. She was then taken to the Atlantic City Hospital.

I arrived there while her stomach was being washed out with about three quarts of milk and eggs. The washing was colored blue from the tablet. [Immediately thereafter, I had her put in a private room under the care of a day and night nurse.] She complained of a burning sensation in the throat, dryness of mouth, nausea and severe headache. The face was flushed, the eyelids puffy, pulse regular but rapid. Some of the latter symptoms were all probability due to the alcoholism. She was 8

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luminal, granular effervescent sodium phosphate, one ounce of magnesium sulphate, a soapsuds enema, and a colonic irrigation of three quarts of normal saline solution. At 2:30 a. m. she voided seven ounces of somewhat cloudy urine.

The Lambert routine was started at 8 a. m., or about nine hours after ingestion of the poison. She was given, by mouth, every other hour, eight ounces of the potassium bitartrate, sugar, lactose, lemon juice, and water mixture, and eight ounces of milk in the alternate hour. Rectal irrigation with potassium acetate solution by drop method was given continuously. On the third day there was some backing up, and it was then given every three hours, with three hours' rest.

The colon was irrigated once or twice daily with normal salt solution. Hot packs to the body were used once or twice daily. Gastric lavage was not done, but copious emesis was induced once or twice daily with wine of ipecac followed by copious draughts of water. Potassium chlorate and peroxide mouthwashes were used. Magnesium sulphate was occasionally given.

During the first four days the symptoms were sore throat, stomatitis, painful, spongy gums, burning in abdomen, and colicky pains, at times severe, tympanites, and headache. Both the stools and the vomitus contained shreds of mucus and were blood streaked. Temperature, pulse and respiration were normal. She voided twice during the first half day, but during the following two days did not void spontaneously, and had to be catheterized, thirty ounces and over being obtained at each catheterization. This was in all likelihood due to the distention of the bladder by the large amounts of fluid introduced into the system. The daily intake and output was as follows:

First day: Intake, 135 ounces; output, 75 ounces.

Second day: Intake, 108 ounces; output, 75 ounces.

Third day: Intake, 88 ounces; output, 51 ounces.

Uranalysis showed, on the first day, specific gravity, 1.017, albumin less than 5 mgm. percent, innumerable hyaline casts, and fifteen pus cells per field; no acetone or diacetic acid. On the following two days the specific gravity was 1.010 and 1.015, respectively, but normal in every other respect. On the second day the urine was also examined for mercury with negative results.

On March 3, or the fifth day after admission, the patient was apparently fully recovered, signed a release and was discharged.

On March 10, March 16 and April 16, 1928, the urine was normal. On March 16, 1928, she complained of severe backache. On June 7, 1928, she had a return of the stomatitis, which cleared up under potassium chlorate mouth wash. The last uranalysis, on January 1, 1929, or ten months after the acute attack, showed the urine normal. Fifteen months after the attack the patient was perfectly well.

While the symptoms above mentioned show that there was absorption of the poison in this case, the amount absorbed is unknown. The relatively short duration of the morbid state, however, was in all probability brought about, first, by the more or less prompt administration of the antidote and evacuation of the stomach contents, and, secondly, by the employment of the Lambert treatment.

A word may be said here about the elimination of mercury. This begins quickly. According to Cohen and Githens (13), "after subcutaneous injection, mercury may be demonstrated in the saliva in fifteen to thirty minutes, in the urine in two hours or less." Taken internally, a large portion is eliminated in the first twenty-four hours.

Without entering into detail regarding the rationale of the Lambert treatment, suffice it to say that repeated evacuation of the stomach is necessary, because there is continual reabsorption of the mercury from the tissues into the stomach. Glucose is diuretic, and is supposed to possess protein saving power. The alkaline treatment combats the acidosis, which often develops in mercurial poisoning, and which frequently bears no relation to the nephritis present. In this connection it may be stated that in some of the series of cases of mercurial poisoning reported, notably in those by Rosenbloom (14) and Goldblatt (12), elaborate blood chemistry studies were made, such as urea nitrogen, nonprotein nitrogen, creatinin, carbon dioxide volume and chloride determinations, as well as of the amount of mercury in the excretions, and, in the fatal cases, in the various organs. These studies are of both scientific and prognostic value.

Whether the development of the newer treatment of mercurial poisoning came as a result of the increased number of cases of such poisonings, accidental or suicidal, I cannot say, but that there has been such an increased incidence is a fact. Lambert and Patterson (2) in 1915 were of the opinion that the increase was due largely to the newspaper notoriety which had been given to a case of accidental poisoning a few years previously. "The public was instructed in all details of the symptoms, and great stress was laid not only on the sureness of the fatal outcome but also on the painlessness and lack of suffering which accompanied the weeklong illness of that particular victim. The repetition of similar publications and the ease with which tablets of this drug could be obtained appealed to would be suicides, and thereafter these cases became common." Thus, in a table which they made of cases of poisoning from all causes for the decades from 1890 to 1914, the number of cases of poisoning by mercuric chloride rose from nine in the years 1900-1904 to 104 in the 1910-1914 period, while the cases of poisoning by arsenic fell from 99 to 48 during the same periods, and those by phenol fell from 1455 to 154.

It is interesting to note that the same increase was reported from other countries. As a result, laws were passed in some States forbidding the sale of bichloride tablets to the laity altogether, and in others requiring the tablets to be dyed.

#### SUMMARY

1. A case of poisoning by fifteen grains of mercuric chloride, taken with suicidal intent by a girl under the influence of liquor and treated by the Lambert method, with recovery, is reported.

2. Immediately following the administration of the albuminous antidote and evacuation of the stomach, the Lambert method of treatment, which is the treatment of choice, should be employed.

3. In all cases, regardless of the amount of the

drug taken, or the interval elapsed, an attempt at cure by this method should be made.

4. Blood chemistry studies should be made whenever possible, along with other laboratory observations.

5. The idea among the laity that mercurial poisoning runs a painless course, should be dispelled.

6. Some restriction by law should be made affecting the purchase by the laity of toxic mercury compounds, and tablets should be dyed.

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1109 PACIFIC AVENUE.

## Eliminating Facial Scars

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The basis for the very definite statements contained in this article is the experience in a practice limited entirely to that phase of plastic surgery which deals primarily with the restoration of normal appearance, as distinguished from the other phase which deals more particularly with restoration of function.

With juries daily awarding greater damages in accidents resulting in scarred faces, scars assume a recognized economic importance, for such verdicts are based upon the assumption that disfiguring scars, from the depressing influence they may have on the individual himself, and by barring him from many social or economic positions, which might otherwise be open to him, directly limit his progress and earning capacity.

In similar manner, unprepossessive facial features, as manifested by irregularly shaped noses, outstanding ears, excessive redundancy of skin, wrinkles, etc., are nowadays considered a handicap, and the application for surgical correction merely represents the patient's earnest desire, based upon economic necessity, to let no remedial defect interfere with his advancement. Such procedures obviously must leave no telltale scars.

### PRINCIPLES OF SCARFREE SURGERY

Evidence of surgical intervention may be rendered practically invisible by observance of the following guiding principles:

If the operation is elective and an indirect approach is possible, we may hide the incision entirely by placing it within areas normally covered by hair or within orificial surfaces; if direct approach is unavoidable in an exposed area, then the incision must be blended as much as possible with the cleavage lines of the skin, also referred to as the grain, or Langer's lines of muscular tension.

To minimize scarring in an accidental wound, we must depend entirely upon a special technic of wound treatment, detailed herewith.

### THE AVERAGE ACCIDENTAL WOUND

Considering the average wound, within an hour or so after the accident. Hemorrhage has ceased or nearly so; the desire for immediate repair prompts us to sew up the wound immediately after cleansing it, with as likely as not the result that next day we find a swollen, congested area, and the sutures thereby rendered so tight as to cut through the skin, each one leaving its mark. There will also probably be a blood clot in the wound, acting as ideal pabulum for infective organisms, which are seldom completely removed in a single casual cleansing. Next day, there is a purulent discharge, then a slowly healing wound, and finally a permanent scar.

Far better results may be obtained by cleansing the wound and then, without suturing it, applying an antiseptic wet dressing with a fair degree of pressure, thus obtaining hemostasis, internal cleansing by prolonged and profuse lymph drainage, and avoidance of clotting, congestion and swelling. Next day it may be sutured as a surgically clean wound.

### SUTURE MATERIAL AND METHODS

Metallic skin clips give a very nice coaptation, but when pressure is applied they are easily tilted to one side, thus causing one skin edge to override the other, leaving a ridged scar. The most satisfactory result is obtained with needle and thread. The needles are straight or curved, light or heavy, whichever modification is demanded by the contour, the accessibility of the wound, and the thickness of the skin in that area, but they are always sharp and