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Original Communications.

SUBCUTANEOUS INJECTION OF CORROSIVE
SUBLIMATE IN SYPHILIS.

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ATTENTION is called in Nos. 14 and 17 of this Journal to some experiments made by Dr. O. Max-Van-Mons in the hospital at Pacheco, and reported in the Academy of Brussels in January of this year, to test the value of hypodermic medication in established cases of syphilis. The drug used in these experiments was calomel; the use of corrosive sublimate is, however, preferable, as calomel must first meet the alkaline intestinal fluids before it can be wholly decomposed and absorbed.

M. Jeannel, in his "Theory of the dissolution of calomel in the organism,"* says: "The alkaline carbonates are the chief decomposers of calomel; in the presence of alkaline fluids, fats dissolve the oxide of mercury proceeding from the decomposition of calomel; the alkaline chlorides in even concentrated solutions produce only a comparatively insignificant decomposition of calomel. If it be true, as Mialhe states, that the chloride of mercury under the influence of alkaline chlorides at the temperature of the body gives always more or less corrosive sublimate, it would still be erroneous to hold with him that it is to this partial transformation that the calomel owes its medical properties. In fact, but a small part of the calomel taken can be dissolved in the stomach in the presence of the acid fluids which contain chloride of sodium; and the more considerable decomposition of the calomel certainly takes place in contact with the alkaline intestinal fluids. Now come the fats. A long series of experiments has proved that, in mixed fluids composed of water, alkaline bicarbonates and fat oil, a very considerable proportion of oxide of mercury proceeding from the decomposed calomel passes in solution into the fat

bodies; this oxide then loses the energy of its chemical affinities, and can be emulsified and absorbed without producing any local irritation. This theory explains why the action of calomel is slow and generally harmless.

"This action is almost nothing as long as the drug remains in the stomach in contact with acid and faintly chloridized fluids. It shows itself as soon as the drug arrives in the intestine, where it meets an alkaline fluid, giving birth to bichloride, but here albumen and fats are at the same time interposed, and these weaken or annul the irritant action of the soluble mercurial salt and of the oxide resulting from the decomposition of the calomel. The mercury is absorbed in the form of an albuminate or of a fatty-acid salt."

The treatment of syphilis by hypodermic injections of corrosive sublimate was introduced to the medical profession by Dr. Lewin of the Charité Hospital at Berlin, who has now in press a work on this subject. Dr. Lewin has published a report* of 500 cases thus treated. As unfavorable incidents of this treatment he mentions the pain resulting from the caustic property of the sublimate, which, however, was never of long duration or of much importance; inflammation of the skin, and suppuration at the place of injection, can be almost entirely avoided by refraining from the use of concentrated solutions, and by injecting only into parts as remote as possible from lymphatic glands. Toxic manifestations may present themselves after $\frac{1}{2}$ –1 gr. doses, but do not appear after the usual small doses $\frac{1}{8}$ – $\frac{1}{4}$ gr. The more moderate grade of intoxication (gastric pain, cardiac pain, constipation alternating with diarrhœa, restless sleep and languor) is to be treated with small doses of opium, the higher grade (colic, vomiting, diarrhœa, vertigo, fainting, coma and reduction of the action of the pulse) by stimulants, as wine, quinine, ether, &c.

* Gazette Hebdomadaire de Médecine et de Chirurgie, No. 12, March 19th, 1869, p. 189, and Journal de Médecine de Bordeaux, Feb., 1869.

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* Lewin Veber Behandlung der Syphilis mit Sublimat-injectionen. Annalen des Charitékrankenhauses, 1868, Bd. xiv.; p. 121–762.

[WHOLE No. 2165.]

Salivation, once regarded as a sort of crisis in the treatment of syphilis by mercury, should be avoided by all possible means. It is a sign of the general saturation of the body with quicksilver, and it is remarkable that even after such small doses as are absorbed by the system in this method of treatment, salivation is, unfortunately, more frequent than in the treatment by inunction. In a large number of cases the addition of morphine to the fluid used as an injection was proved to be a prophylactic against the stomatitis. The mouth was most often affected when, simultaneously with the treatment by injection, a course of iodide of potash was administered.

With regard to relapses, Lewin's statistics show that their occurrence after this treatment is 50 per cent. less frequent than after other modes of treatment, whether mercurial or vegetable. The fewest relapses occurred after a simple uncombined treatment by injections, the greatest number after the combination of the same with treatment by sarsaparilla and sweating, and a lesser number after the combination with iodide of potash. The combination with chl. pot. (10 gr. 1-3 times daily) proves also of no avail against relapses, although it is of service against salivation.

After the simple treatment by injections (which does not forbid the simultaneous employment of remedies for acute or chronic catarrh, scrofula, tuberculosis, anæmia, &c.), not only was the number of relapses diminished, but also their severity. The relapse demands on an average, for its cure, $\frac{3}{4}$ gr. sublimate less than the original syphilis. Two affections only do not yield to the subcutaneous treatment: syphilis of the bones, and of the brain.

The advantages of the treatment by injections over other methods are the following, according to Lewin:—I. The quickness with which the syphilitic appearances are caused to vanish. This quickness is in exact proportion to the amount of the daily injected doses of sublimate. If $\frac{1}{2}$ – $\frac{3}{4}$ gr. be injected *pro die*, in two or three doses, violent cases of iritis recover in from five to seven days. This quick cure, which, however, presupposes prudence in the management of the patient, has been employed by Lewin in other forms of syphilis with surprising results. II. The certainty and regularity of its results. Lewin's observations extend over some 900 cases of various degrees of severity. The result was always a thoroughly satisfactory one, with the exception only of cases of bone or brain syphilis. III. The relatively small number and

the mildness of the relapses. IV. Ease of administration, and accuracy in the measurement of the doses; and the forbearance it displays towards the much abused digestive organs.

Dr. Kohn, of Vienna, having called attention* to these results of the experiments of Dr. Lewin, this method of treatment was employed also by Dr. Derblich, an Austrian Surgeon of Infantry, who thus reports† his most favorable case. "A musician of 60th Regt. Infantry, æt. 21 years, acquired a hard chancre in 1865. Came under my supervision Feb. 27th, 1867. He was a weak, anæmic and easily excitable youth. Reported his last coition as taking place six months before this date, by which coition his chancre, at that time still remaining and still indurated, was broken open, and in spite of wet bandages not yet healed. Patient hoarse; condylomata lata around anus; position of frænum occupied by a chancre, hard as cartilage and shining like parchment, an inch in length and with a slight secretion; glands in groins, elbows and neck enlarged; angina; exanthema on soft palate; on left tonsil two large raised plaques; roseola on breast and back. Patient had been already treated by inunction, which fact, joined to his physically weak condition, induced me to make use of subcutaneous injections.

"1st day—Injected $\frac{1}{2}$ gr. sublimate dissolved in 10 gr. aq. dest. under a fold of skin on the inner surface of the left upper arm. This was followed immediately by a sensation of weight and pain in arm, disappearing in half an hour.

"2d, 3d and 4th days injected a similar amount into the right and left buttocks and right fore arm respectively.

"5th day—Injected right breast. In each case only momentary pain at point of application. After 5th injection slight dyspnoea lasting $\frac{1}{2}$ hour, and two liquid stools with slight colic.

"6th day—Injected left forearm. Roseola has disappeared.

"7th to 16th days—Injected daily $1\frac{1}{2}$ gr. sublimate in various places. Once a slight subcutaneous hæmorrhage around wound which was in this case on the thigh. Once slight œdema and sensitiveness, the injection in this case being in the left groin. Both cases were relieved in a few hours by wet bandages. In the night of the 16th day severe salivation made its appearance, and before the morning visit some $\frac{3}{4}$ vi. sa-

* Wiener Medizinische Presse, No. 11, 1868.

† Ibid., No. 12, March 22d, 1868.

liva had been ejected. Gums red, but neither swelled nor painful.

"On this night loss of sleep, otherwise general health good. Appetite had increased. Patient looked stronger and was more cheerful. Chancre no longer hard. Ulcer in throat healed. The glands before mentioned but slightly swelled. Injections were stopped. Since then the condylomata have disappeared, and patient may be considered cured, so far, at least, as we dare speak of a cure of syphilis. Time of treatment four weeks. Whole amount of sublimate used, gr.j. To military hospitals in particular I recommend this mode of treatment, on account of

"I.—Its security. The regimental surgeon cannot always be present to determine exactly the amount used in an inunction. The injection, however, he makes himself, knowing its amount and strength.

"II.—Its cleanliness, which in inunctions can only be obtained by the use of much soap and ley, and frequent change of garments and bed-clothes.

"III.—Its harmlessness as regards other patients. As is well known, the salve evaporates during inunction in a hot room, and causes salivation in other patients in the chamber who are not using any form of mercury.

"IV.—Its cheapness. The cost of the whole amount of sublimate required for the treatment is almost nothing.

"The arguments against the injection appear to me to have but little weight. The inflammation of the skin is slight and yields to wet bandages. Any hardness remaining after the injection can be dispelled by tincture of iodine. One danger alone there is. Prof. v. Nussbaum, in an experiment on himself, had the misfortune to wound a vein. Other cases have also occurred, but none is yet known of death from this cause, though hypodermic injections have been used for years. Moreover, such cases yield to tampons and wet compresses. In general, it is only necessary to select for the injection those parts of the body where the skin is loose, the veins few, and hairs absent, for wounding a hair bulb produces violent pain. It is well to warm the solution before injecting it, and to apply subsequently a bit of plaster to the wound. The best results may be hoped from this method, provided the physician can overcome the antipathy of the patient to anything like a wound, and is willing himself to make the slight extra exertion."

The most recent work published on this

subject* says, "For the treatment of syphilis by hypodermic injections use a solution of 4 gr. of sublimate to 1 ounce aq. dest. Inject 15 gtt. of this, i.e., $\frac{1}{3}$ gr. sublimate. This is invariably followed by pain, to obviate which, add $\frac{1}{10}$ – $\frac{1}{8}$ gr. acet. morph. and a little glycerine. Should we wish to inject the large dose ($\frac{1}{4}$ gr.) it is better to inject half the quantity in two places. The syringe should be thoroughly cleaned after using, and smeared with oil, and its permeability retained by a fine silver wire or a bristle. The preferable places for the injection are the outer sides of the extremities, the thorax, shoulders, loins and nates; in short, avoid those parts of the body in whose vicinity the lymphatic glands lie. The best time for the injection is the forenoon; if it is wished to give two injections on the same day, the second should come six hours after the first. The maximum dose of the injection is $\frac{1}{4}$ gr. sublimate; a stronger concentration of the liquid is to be avoided on account of its local irritating property.

It is not necessary that the patient should remain in bed during the treatment, provided he will preserve a regular temperature and a moderate perspiration, wear a woolen shirt and avoid exertion. His daily food should be reduced to $\frac{2}{3}$ of its normal amount. Food difficult of digestion should be avoided; as fats, salts, acids and spices. Since, to obtain the best results from a mercurial treatment, it is necessary to guard against salivation as much as possible, the patient must be directed to brush his teeth often and to rinse his mouth frequently with cold water and especially with a solution of chloride of potass. As regards the number of injections, 2 $\frac{1}{2}$ –3 gr. sublimate are generally necessary for a cure, and this quantity should be divided among 15–16 injections."

(To be continued.)

PENETRATING WOUND INVOLVING THE FEMALE GENITO-URINARY ORGANS.

By W. G. FROST, M.D., Freeport, Me.

Mrs. G. M. L., a large, robust woman, æt. 38, weighing 190 pounds, while attempting to climb upon a hay-mow, slipped and fell astride a stake of hard wood an inch and a quarter in diameter. The stake first encountered the inner part of the right thigh, roughly abrading the skin, and, passing on, it struck three fourths of an inch to the

* Compendium der Geschichte, Pathologie und Therapie der venerischen Krankheiten. Von Friedrich Wilhelm Müller, M.D. Erlangen, 1869.