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Topical Treatment of Diphtheria and Chemical Solution of the Membrane.

SULPHATE OF IRON AND SALICYLIC ACID.

BY
A. W. NELSON, M.D.,
OF NEW LONDON, CONN.

Reprinted from "The Journal of the American Medical Association," March 22, 1890.

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TOPICAL TREATMENT OF DIPHTHERIA AND CHEMICAL SOLUTION OF THE MEMBRANE.—SUBSULPHATE OF IRON AND SALICYLIC ACID.

The *New York Medical Journal*, January, 1874, published "Forty Cases of Diphtheria Treated by Local Application of Sulphate of Iron." The present writer in that paper says: "About 1865 I became confident that some local treatment would best cure the disease, and often wondered what chemical re-agent would destroy and counteract the source of fever, the putrid mucus, pseudo-membrane, continuously exuding, and at the same time not cauterize and irritate the still living, although infiltrated, membrane of the throat. . . . . Creosote suggested itself to be considered (this was just before the carbolic acid discovery or invention), but it was not tested. Another agent, the subsulphate of iron, Monsel's styptic, in some now forgotten way was brought to notice. My first application to the throat in diphtheria determined with me its efficiency, etc. . . .

"You will sometimes induce a little vomiting at first, an effect not injurious—on the contrary, possibly beneficial in ridding the stomach of poisonous mucus swallowed before, etc."

The tincture of chloride of iron has usually

been given, 3 to 10 drops in a *little* water, with the local application of the subsulphate, and this line of general treatment has undoubtedly largely prevailed, in this country at least. Dr. Whittaker, Cincinnati, 1881, gives nineteen cases treated in the same manner, with circumstantial detail. THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Nov. 30, 1889, commends the local treatment editorially, and in the treatise, "Diphtheria and Intubation," by Drs. Billington and Dwyer, 1889, the first topical application named is Monsel's styptic.

Prudden, in his exhaustive paper, "Etiology of Diphtheria," (*American Journal of Med. Sciences*, May, 1889,) advises local applications without indication of the agent. In the same number D'Espine (*Rev. Méd. de la Suisse Romande*, No. 1, 1889) advises irrigation with a dilution of salicylic acid, 1 or 2 in 1,000, or in infants, 1 in 1,000 or 1,500. Several mixtures have been used, as also pepsin and tripsin, to effect solution, sometimes with good results, according to reported cases.

In a large number of diphtheritic throats with enlarged glands of the neck, there is much necrosis of the membrane and fetor, and little doubt of the nature and specific origin of the disease. The best men may sometimes be deceived in the milder cases. The subsulphate application, however, is very effectual in both the severe and mild forms.

Not as frequently we observe a different condition—a diphtheritic membrane firmly attached in the fauces, whitish and blueish, not necrosed, without fetor, gradually spreading from tonsil to velum and uvula and palatal arch, and behind and beyond sight in the post nares. The living internal structures sometimes are slightly swollen; the lymphatics of the neck, as I have observed,

considerably swollen. Great weakness and apprehension accompany this condition, and the usual remedies have little effect.

There can be no doubt here as to the specific nature and origin; nor can there be much doubt that it is the same in specific nature as the pseudo-membrane of croup. Here the two diseases meet and become identical, except in location.

About a year since my attention was attracted to the use of salicylic acid in solutions and ointments for corns of the feet. I tested the pure acid several times, especially in the troublesome soft corns between the toes. The part was moistened once a day and the acid rubbed in for a few days. The hypertrophied tissues would grow smaller and disappear, and sometimes the epidermis near would desquamate, but without soreness of the underlying derma. The effect was quite perfect.

Case 1.—April last I had a case of diphtheria, and it occurred to me to apply the acid pure. It was applied hourly to the patch on the tonsil, where it *stuck* from hour to hour, enveloped in the moisture of the parts, but gradually thinning the deposit and limiting its extent. It was the child of very poor parents, and after three days the mother reported such improvement that it was not again seen. The child recovered soon.

Case 2.—June 4. L. J., girl, æt. 8; well-marked membrane over one tonsil, with slight necrosis of deposit only; enlargement of lymphatics of neck; some fever; no appetite. Powder of salicylic acid hourly, and ℞ tinct. ferri chloridi ʒiv, hydrarg. bichloridi, gr. ij, ♏; gtt. iij in a teaspoonful of water every hour or two; acid every two hours at night. Continued nine days, with occasional intermissions of some hours, when the membrane

would again appear, again to melt under the acid. No extension of the membrane while the acid was used. No complaint of the peppery stinging of the remedy. Towards the last, after disappearance of membrane, used also, ℞ bismuthi subnitratis ℥ss, olei minthæ piperis, ♏ vj, ♏. Make a fine powder. Dust the throat every hour or two.

For a little space beyond the part affected by the membrane the salicylic acid whitens the mucous surface, but without inconvenience and without any invasion of the disease. The surface soon again recovers. The little patient was seen daily twice from June 4th to 11th, and to 13th once daily, and last on the 15th. No sequences.

Case 3.—Sept. 4. Mrs. H., æt. 33; considerable fever; enlarged glands of neck; weak; patch on one tonsil and near it.

℞. Tinct. ferri chloridi ℥iv and hydrarg. bichloridi, gr. ij, ♏, gtt. iv in aqua ℥j hourly or two-hourly. Acid applied every hour or two; sometimes not so often. Complains of its stinging; membrane constantly recurs upon omission of acid. Finally applies remedy hourly with regularity, when the throat is no longer painful and the acid does not sting, and the deposit thins and disappears.

Mrs. H., a woman of intelligence, did not at first like the remedy, but seeing its benefit in the appearance and the lessened sensitiveness of the affected parts she became enthusiastic and thoroughly coöperated. She was visited twice daily for about nine days till Sept. 12th, when the tendency of the membrane to recur ceased. The bismuth mixture was then used with comfort.

A solvent of the membrane without irritation of the living structures *seems* to be found in the salicylic acid—much better than the subsulphate,

whenever the membrane does not necrose and break down. The subsulphate hardens, in that way killing the acting membrane, rather than acting by solution. Creosote might act well but for its tendency to extend deeply.

The question of destructive action upon bacteria has not been discussed. It can in these instances be affirmed without discussion, and the treatment is considered from a different standpoint.

Hourly use of the acid, which is a very light powder, does not affect the youngest patient unfavorably by the amount swallowed or absorbed.