Fraser (W.)

STRYCHNINE

IN

ASIATIC CHOLERA.

BY W. FRASER, M.D.,

29916

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During the present epidemic of Asiatic Cholera, I have, from witnessing the frequent failure of most of the different plans of treatment hitherto recommended by writers for that disease, been led, on physiological grounds, to try the effect of minute doses of strychnine as a *general stimulant*, for sustaining the vital powers on the eve of their failure, and for restoring them to functional action when that is all but suspended by the supervention of collapse. By thus sustaining life till the virulence of the disease is expended, time is afforded for the trial of any plan of treatment to which the medical practitioner may be most partial, for correcting the abnormal condition of the blood and secretions, a condition resulting from the combined effect of the original cause of the disease and the discharges from the gastro intestinal mucous membrane. It will hence be perceived that strychnine is not suggested by me as a remedy for superseding the treatment hitherto pursued in cholera, but as a stimulant superior to any hitherto in use for sustaining life, in cases where life would, to all appearance, otherwise become extinct before treatment calculated to restore the blood and organic functions to their normal condition could be made available. Administered for fulfilling the object thus defined, in the mode which I will presently explain, strychnine in cholera has been attended with an amount of success in my hospital practice which far surpasses what I have met with from any other remedy, and justifies the *a priori* opinion, formed on physiological grounds, of its probable *modus operandi* in this fearfully rapid disease; hence I am induced to lay the result before the profession.

For the sake of explicitness, I will explain, 1st, The indications which have guided me in the administration of strychnine; 2dly, The dose

found most suitable, and the intervals at which it ought to be repeated; 3dly, The result of my hospital practice; 4thly, The testimony of others.

1st, *The indication for the administration of strychnine.* In all cases of real Asiatic cholera (tested by the evacuation of rice water stools), even before the supervention of collapse, the coming failure of the circulation is indicated by less or more irregularity or fluttering in the rhythmic action of the pulse. When the case is seen at this stage, the strychnine should be at once commenced simultaneously with means for arresting and correcting the discharges. Given at this early period, it will rarely fail to arrest the patient's descent into collapse. From 6 to 12 doses will usually cause the pulse to become firmer and more regular, and the anemic appearance due to the serous discharges from the alimentary canal to be replaced by an active capillary circulation. In those cases, on the other hand, that are in a state of collapse when first seen the principal indications are to bring on reaction and to arrest the discharges, when these still continue. All who have seen much of cholera must be but too familiar with the frequent failure of ordinary stimulants in bringing on reaction; hence the necessity of employing such an extraordinary and powerful agent as strychnine, which, according to my experience, will often, but not always, succeed in doing so, in cases where all other stimulants would fail. In some desperate cases, other stimulants, as tea, camphor, brandy, or champagne, may be advantageously given, when the stomach will bear them concurrently with strychnine, they will however be very commonly rejected, while strychnine alone is retained.

2ndly, *The dose* which I have found most suitable is the 1-48th part of a grain, dissolved in acetic acid and alcohol, and repeated every quarter of an hour, or every five or ten minutes in very severe cases, till the pulse, if it has been fluttering, as in incipient collapse, becomes steady, or till reaction is established in cases of collapse,—when these objects are accomplished, the interval between the doses ought to be lengthened —and should the specific effect of the medicine on the nervous system be produced, then its exhibition should be suspended till these disappear, when it may be again administered if deemed requisite at longer intervals. The medicine should be thus continued till the circulation is fully and firmly established, and the patient is fairly beyond the risk of collapse. During the administration of this dangerous remedy, the patient should be frequently seen by the physician in order to watch its effects, and direct its discontinuance, should its effects on the nervous system manifest themselves. When not convenient for the chief medical attendant to see the patient sufficiently often for the purpose, then an intelligent and well instructed assistant ought to be en-

gaged to watch the case. In none of the hospital cases, to which I shall presently refer, did the least injurious effect follow the use of the medicine—in the majority of them reaction came on without the necessity of pushing it so far as to produce its constitutional effect—while in a few that effect was requisite together with the assistance of auxiliary stimulants.

3rd, *The result of hospital practice.* The number of cases in which strychnine has been administered under my directions by the zealous and intelligent house surgeon, Dr. Craik, between the 17th July and 2d August, is 22. For the satisfaction of the profession, I here give a table showing the date of admission, names, ages, stage of the disease on admission, and the result.

TABLE OF CASES TREATED BY STRYCHNINE.

Date of Admission.	NAME.	Age.	Condition on Admission.	Result.	Remarks.
1854. July 17	Fredrick Bremmer .	23	Severe Collapse	Dead, July 24	Secondary fever.
.. ,,	John Schmitt	35	Severe Collapse	Dead, July 25	This patient was discharged cured, and re-admited for the relapse, of which he died
.. ,,	Joanna Spratt	14	Severe Collapse	Cured.	
.. 19	Ann M. Crawford ..	34	Incipient Collapse ..	Cured.	
.. 20	John Moodie	31	Slight Collapse	Cured.	
.. ,,	Jeffrey Balwin	19	Slight Collapse	Cured.	
.. ,,	William Anderson..	41	Severe Collapse	Dead.	Admitted 9 A. M. died 3 P.M.
.. 21	Robert Marshall ...	56	Incipient Collapse ..	Cured.	
.. ,,	Hannah Foley	45	Severe Collapse	Cured.	This patient was in the worst possible condition.
.. 24	Sophia McCoy	19	Severe Collapse	Cured.	
.. 25	Williams Barns....	60	Severe Collapse	Cured.	One of the worst cases.
.. 26	John Connors.....	60	Severe Collapse	Cured.	
.. 27	Mary Hawkins	20	Severe Collapse	Cured.	
.. 26	Antonio Josette	26	Severe Collapse	Cured.	
.. 29	Austin Webber	29	Severe Collapse	Cured.	
.. ,,	Zeske Webber	30	Severe Collapse	Cured.	
.. 30	Ann S. Collins	38	Incipient Collapse ..	Cured.	
.. 31	Mary Zuyer	18	Slight Collapse	Cured.	
.. ,,	Margaret Ring	22	Incipient Collapse ..	Cured.	
.. ,,	Patrick Lynch.....	40	Severe Collapse	Dead.	Aug. 8, of secondary fever.
Aug. 1	Willielma Fleischer,	30	Severe Collapse	Dead.	Aug. 7, of secondary fever.
.. 2	Louisa Harris.....	17	Severe Collapse	Under treatment & doing well.	

It is right to mention that these cases were not selected as favorable ones for obtaining favorable statistics for the strychnine treatment, but include every case as they came under my charge during the above period, which appeared to require stimulating treatment, with one exception, moribund, at the time of admission, and which I did not see. In all the cases the calomel treatment was simultaneously employed, together with other means suggested by general principles for combating symptoms as they arose.

From the table it will be seen that the number of deaths in the 22 cases was 5, or about 22½ per cent. It will also be noticed in regard to the 5 deaths, that in 4 of them reaction came on, and they died not of cholera, or at least not in the collapsed stage of cholera, but of the secondary fever which so often follows it. The only one that did die in collapse was William Anderson, and he (though several hours in the hospital) was but one hour under the strychnine treatment, during which Mr. Loverin, the student who watched him, tells me he took four doses only, so that in his case it can hardly be said to have had a fair trial. I conceive it is therefore deserving of special notice that in all the cases (and some of them were of the very worst description) except in Anderson's, the strychnine was successful in accomplishing the purpose for which it was prescribed, namely, bringing on reaction, which tends to prove its superiority over all other stimulants hitherto employed in this disease.

4th, *The testimony of others.* This I subjoin without any comment; the certificates speak for themselves. It will afford me much pleasure to learn the result of the experience of any professional gentleman who may give the plan suggested a fair trial, so that its merits and demerits may, by extended observation, be accurately defined.

From Dr. G. W. CAMPBELL, Professor of Surgery, McGill College, Montreal.

Great St. James Street, Aug. 17, 1854.

MY DEAR SIR,

In reply to your note asking my opinion of strychnine as a remedy in cholera, I have to state, that my experience of it is limited to three cases, all of them the most severe form of the disease. In the first case, which occurred the day after you mentioned your favorable opinion of strychnine in the collapse of cholera, I attribute the recovery of the patient entirely to its use. The attack was brought on by a small dose of salts and senna, which the young gentleman said he was in the habit of using as a laxative. Two hours before visiting my patient, I had sent him three scruple doses of calomel, with half an ounce of a mixture, composed of equal parts of solution of mur. morphiæ, and the emulsion of cam-

phor in chloroform, a teaspoonful of the mixture, with one of the powders, to be taken every half hour till I saw him, and mustard poultices to be applied to the abdomen. At my first visit at 6 a.m., the medicines had all been taken, without in any way arresting the attack; the rice-water vomiting and purging still continued; the cramps were very violent, the skin blue and cold, the pulse nearly gone at the wrist, the voice reduced to a whisper, and the collapse complete. I immediately commenced the use of the solution of strychnine, by acetic acid and water, giving the 32nd part of a grain every quarter of an hour, and suspending all other treatment. An intelligent nurse was directed to continue the remedy, till convulsive twitching of the muscles was produced by it. The patient was permitted to have ice and cold water in small quantities. I saw my patient every second hour till two o'clock p.m., when the first grain of the strychnine was finished, without producing its physiological effects, and without any sensible influence on the disease, except that I thought the mere fact of his holding out so long indicated some stimulating influence on the part of the remedy; and having to pay a distant visit in the country, I did not see my patient again till 6 p.m., when I found that half an hour previously, violent twitchings of the limbs had been produced by the strychnine, and one convulsive attack of such severity, that the attendants stated they had great difficulty in holding him in bed. His intellectual faculties were not in the least confused, and he compared the sensation to an electric shock passing down the spine and darting along the limbs. The upper extremities were not so violently affected as the lower, and the paroxysms were usually ushered in by a loud cry of pain on the part of the patient. Simultaneously with the occurrence of the twitchings, reaction commenced; I found the pulse, which had been entirely gone, 120, and almost sharp to the feel; the countenance began to fill out, the lips were red, and warmth had returned to the surface; the dose of the strychnine was diminished to the 100th part of a grain, and continued every half hour, so long as any tendency to flagging of the vital powers remained. As might have been expected, from the duration of the collapse, the subsequent secondary fever was very severe, and the convalescence, which is now complete, has been protracted by inflammation and suppuration of both parotids.

The second case in which I employed strychnine, being some distance from town, I had no opportunity of watching its effects, but the rapidly fatal termination did not seem in the least to be arrested by it.

The third case, a most intense one, was in an individual advanced in life, and of a weakly constitution; and here the stimulating effects of the remedy, in restoring the pulse, were very conspicuous; so much so, that

at one time I thought reaction fairly established, and the prospect of recovery favorable, but collapse again set in, terminating fatally.

Notwithstanding the unfortunate result in two out of the three cases in which I administered the strychnine, I look upon it as the most valuable stimulant to the nervous system I have yet seen tried in the collapse of cholera; and one great advantage is, that its administration does not in any way interfere with the employment of other remedies, such as calomel, which may be regarded by the practitioner as of essential service in the treatment of this disease.

I remain, my Dear Sir,

Yours very truly,

GEO. W. CAMPBELL, M.D.

From MR. C. AULT, Apothecary, Montreal General Hospital.

Montreal General Hospital, Aug. 15, 1854.

DEAR SIR,

In compliance with your request, I have much pleasure in giving my testimony as to the comparative efficacy of strychnia in the treatment of cholera.

During the late epidemic I have witnessed the relative effects of the various modes of treatment adopted at the present day, but in none have I seen such decided and favorable results produced as by the strychnia, both in preventing collapse and restoring reaction when collapse had supervened.

In fine, it agrees well with the patient, gives rise to no unpleasant symptoms whatever, and is generally retained on the stomach when all other substances would be immediately rejected.

With much respect, yours,

CHS. AULT.

From DR. CRAIK, House Surgeon, Montreal General Hospital.

Montreal, 12th August, 1854.

DEAR SIR,

I have much pleasure in complying with your request, by stating my opinion with regard to the efficacy of strychnia, as suggested by you, in the treatment of cholera.

My present position has afforded me a favorable opportunity for observing the relative effects of the various remedies made use of in this disease, and I have been led to the conclusion that no remedy hitherto employed possesses the same power of warding off the fatal collapse which so rapidly supervenes, nor of bringing on reaction after the state of collapse has been fully established.

I am convinced that if the administration of strychnia were early commenced, in conjunction with the other remedies usually employed for checking the discharges, the supervention of collapse might be prevented in a large majority of cases, and even where that state has already become extreme, its diligent and persevering use, together with the employment of other stimulants, might bring on reaction in cases otherwise perfectly hopeless.

I have further observed that the strychnia has been retained upon the stomach when all other substances were instantly rejected, and the strength has thus been sustained, while the extreme irritability of the organ was being combated by other means.

In the hope that by the general adoption of this plan of treatment the mortality of cholera may be materially diminished,

I remain, &c.,

R. Craik, M.D.

In conclusion I may observe that the same plan of treatment will likely be found advantageous not only in the collapse of cholera, but also in various other prostrated conditions of the system, as after hemorrhage, and from the effects of narcotic poisoning—to this latter class of cases strychnine, properly administered, will in all probability be found in some degree an antidote—its action on the nervous system being directly the opposite to that of narcotics, which destroy nervous power by paralizing the nervous centres, while strychnine, by its affinity for, and extraordinary power of, stimulating the nervous centres, diffuses life and activity through every tissue and organ. To use the words of my talented and venerable friend Dr. Marshall Hall, "*It makes the old young, and the feeble strong.*" It is true that the action of strychnine is chiefly manifested on the cerebro-spinal system and the parts which it supplies with nervous power, and consequently its action is not so direct upon the organic organs, whose ordinary functions are believed to be independent of nervous power. But that the nervous system of animal life has a controlling influence over the organic functions, is a question in physiology that has been settled in the affirmative by both observation and direct experiment; hence when the cerebro-spinal system is stimulated to an extraordinary degree; that stimulation will be extended in some measure to the organs of organic life, and especially to the heart, blood vessels, liver, and intestines.—Upon the important function of respiration, which derives its nervous power directly from the cerebro-spinal system, and which shows early signs of failure in the collapse of cholera, strychnine exercises a more direct influence. That such is the modus operandi of strychnine in cholera, any one who pushes it so as to produce its consti-

tutional effect will, I dare say, be convinced, on finding the failing circulation of collapsed patients becoming active and strong, while heat and life are diffused into every limb and organ, some of which may have previously been in a semi-moribund condition. So remarkable was the effect in some of my cases, that it looked more like magic than medicine.

Little St. James Street, August 21, 1854.