OBSERVATIONS

ON

THE TREATMENT OF ZYMOTIC DISEASES BY THE ADMINISTRATION OF SULPHITES.*

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It has been long admitted in medicine that there are diseases whose cause and origin is a specific ferment, either generated within the system, or introduced from without. Such would be, for example, the different viruses, contagious poisons, miasmata, etc. These morbid ferments, inducing a special decomposition of the blood or of the humours, would seem to generate that series of maladies which we term zymotic, and which would seem to depend on the efforts made by the morbid process either in the assimilation or in the attempts at expulsion of the diseased heterogeneous products, and in the resulting reaction of the nervous system against the iniquation of the newly formed blood. When time and strength are in sufficient quantity to enable him to eliminate the products of the fermentative decomposition of the blood, the patient recovers. When, on the contrary, the iniquation of the blood is greater than what can be eliminated by the vital force of the patient, he dies. It had long been the fervent desire of physicians that some means might be devised of neutralising these morbid ferments; but, up to the present age, it had still remained unaccomplished, as, of the many substances which were known to have the power of neutralising ferments, none had yet been found which could be employed with safety; as all those agents which were known to have a sensible power over such ferments were always of so destructive a nature as to render their administration inconsistent with life—for instance, arsenic, chlorine and the hypochlorites, nitric acid, hydrocyanic acid, bichloride of mercury, etc. But while these are, no doubt, strongly antiseptic agents, and adapted to preserve dead specimens of the vegetable and animal kingdoms, they cannot with impunity be administered to living bodies. A substance was still to be discovered, which, while possessing the power of rendering organic matters incapable of being acted on by those fermenting principles, would at the same time exercise this function without in any way endangering any of the vital processes.

During a long series of researches, dating from 1857,† and undertaken with the view of studying the different fermenting processes of organic matters which seemed to bear some analogy to the different morbid alterations of the animal economy, I came to the conclusion that in sulphurous acid we possess the most active agent in arresting all fermenting processes, even those over which arsenic and hydrocyanic acid have no power, such as synaptic and saligenic fermentations (see Piria and Bouchardat); or those which are not arrested by phenic acid, as the diastasic, myronic, pepsinic, and ptyalinic (see Lemaire). But sulphurous acid cannot be administered as gas, except largely diluted with air; nor as an aqueous solution, except largely diluted with water; and its local action, besides, is always difficult to tolerate.

I then turned my attention to its combination with the alkaline and earthy bases, such as the sulphites of soda, potass, magnesia, lime, etc., and the hyposulphites of the same bases, which last, during their passage through the animal economy, become sulphites and bisulphites by the absorption of oxygen; and I was delighted to find that these salts possessed all the properties of free sulphurous acid, with this advantage over it, that their action is more uniform, more constant, and even more intense.‡ Proceeding with my experiments, I administered all these sulphites to dogs, and found that they were perfectly tolerated even in large doses and continued for a long time. I also took large doses of these salts myself, and administered them to friends who were willing to undergo the experiments, in doses of from eight to twelve grammes in twenty-four hours, without experiencing the slightest inconvenience. I also found that those animals which had been fed with sulphites for some days, and then killed and dissected, resisted the putrefactive decomposition for a long time, and remained fresh when other dogs which had been similarly fed and then killed, but had not previously received any sulphites, had long passed into a state of decomposition. I also found that whilst I could, without any apparent inconvenience, take even as much as fifteen grammes of sulphite of magnesia in the day (I prefer this salt, as it is almost tasteless, and contains a larger quantity of

sulphurous acid), I lost all feeling of thirst; that my excrements had lost their usual faecal smell, which was replaced by the smell of pure sulphuretted hydrogen; and that the urine emitted during these experiments remained fresh, acid, and clear, and did not undergo the ammoniacal fermentation (see Van Tighem) for eight or ten days during the hottest Italian summer; while my urine emitted both before and some days after I had taken the sulphites became ammoniacal, fetid, and covered with fungoid growths, in from five to seven days.

In another series of experiments, I tried the effects of the sulphites as prophylactics and as curative agents on animals in whom a septic disease had been artificially induced by injecting into their veins different animal poisons, such as putrid blood, fetid pus from unhealthy abscess, and the discharge of glandered horses. The result of these experiments, practised on dogs, and variously conducted, proved to evidence* that sulphites had the power in some instances of entirely preserving the animal from the action of these morbid ferments, and in others to enable the animal, after a short illness, to regain its health; while, in almost every instance of septic injection, the administration of sulphites was sufficient to effect a more or less rapid cure of the typhus or typhoid fevers induced.

After such results, I had nothing more to do than to invite the medical profession throughout the world to undertake clinical experiments with these salts, of which I had already determined the mode of action and the dose in all those diseases in which one might suppose by analogy that the morbid process was a kind of fermentation in the blood, or an induced alteration of the nutritive process, by the presence of an agent operating as a ferment. Such, I believe, would be the case in the various eruptive fevers, measles, small-pox, scarlatina, miliary fevers; in intermittent and other marsh-fevers produced by paludal miasmata; in typhus and typhoid fevers, either epidemic or contagious; in purulent absorption, as in puerperal fever; in fevers consecutive on serious surgical operations, and after dissecting wounds. This call was most freely answered by the medical men of Italy, as well as by some foreigners, among which last I feel happy to name Dr. H. R. de Ricci of Dublin, who was the first—viz., in 1862—to give a full and valuable report of my first researches on this subject,† and who invited his professional colleagues to test the real value of these sulphites by repeating the clinical experiments which he had already initiated; also Dr. W. Jackson Cummins of Cork, who proved successfully these salts in scarlatina, both as curative agents and as prophylactics; also Dr. Hayden, of the Mater Misericordiae Hospital, Dublin, who tested very accurately the hyposulphites in diphtheria.

I published my first memoir on this subject in 1861, and since that time one hundred and forty-eight papers have been published in answer to my call; and, with the exception of five or six, containing some criticisms on my labours, all the remainder confirm in the strongest terms, by many hundreds of detailed observations, the value of these remedies in the diseases above mentioned. By means of the sulphites, the course and sequelæ of eruptive fevers are entirely under control; mild cases being rapidly cured, and aggravated ones being rendered mild. In intermittent fevers, the same results are obtained; and here I have had the most extensive opportunities of trying this new remedy, as, in consequence of the special condition of Lombardy, and the vast area of land constantly under water for the cultivation of rice, paludal fever is the most frequent malady in our hospitals. I have found that I could conquer the most rebellious malarious fevers of every type, either quartan, tertian, or remittent, by employing sulphites only; and hundreds of cases treated by numerous provincial doctors, and by them published, corroborate my experience that not only are the sulphites equal to quinine in the treatment of the various forms of ague, but that they are even superior to it, inasmuch as patients treated with them are much less liable to relapse. These facts are so well known and appreciated in Italy, that the Royal Lombard Institute has established a prize of 2,500 francs (£100) for the best essay "On the Use of Sulphites in Fevers, as compared with other Remedies."

Sulphites have also been used with great success in petechial typhus, in typhoid fever, and in the peculiar fever which follows in cholera; and many papers have been published, establishing these facts, by many of the principal Italian physicians.

Sulphite of soda, as a lotion, has also been extensively tried by many surgeons in the treatment of external sores; and I shall here only mention Dr. Burggræve of Ghent, who seldom, if ever, uses any other dressing on all suppurating surfaces, and who has placed on record that the results of this medication, both internally and externally, are no less marvellous in the treatment of cases of purulent absorption, gangrenous

* Read in the Medical Section before the Annual Meeting of the British Medical Association in Dublin, August 1867.

† See Preface of vol. xxiv of "Annali di Chimica applicata alla Medicina," del G. Polli. Milano: 1857.

‡ I wish to call attention to the fact, that five grammes of sulphite of magnesia represent one cubic centimetre of sulphurous acid gas.

* See "Sulle Malattie da Fermento Morbifico e sul loro Trattamento," del Dr. G. Polli. (Read at the Royal Institute of Sciences of Lombardy in December 1860 and May 1861. Vol. viii. Milano.

† See "Dublin Quarterly Journal of Medical Science," May 1862.

infection, puerperal fever, dissecting wounds, etc. So much is this sulphuric treatment of all forms of wounds and sores, whether simple or with a tendency to gangrenous degeneration, gaining ground in Italy and other parts of the Continent, that in many places it has completely superseded the use of all other dressings; and, at this time, Professor Gritti, surgeon-in-chief to the great hospital of Milan, never uses any other external dressing, for not only does it prevent any fermentative process in the parts to which it is applied, but in many cases its immediate action is that of an anæsthetic; but it also destroys all bad smells; it is inodorous in itself, and colourless—a great and positive advantage, and one which cannot be claimed by many disinfecting substances, as coal-tar, phenic acid, the permanganates, etc.

In concluding this compendious communication, to which you have lent so courteous an ear, I beg to recommend these sulphites to your clinical experimentation. For internal administration, in a *curative* point of view, I recommend the sulphite of magnesia, both as containing more sulphurous acid, and also as being pleasanter to take. As a prophylactic, I recommend the hyposulphite of soda, when it does not act too much as a purgative; and, for external use, I advise the sulphites and bisulphites of soda, which are more soluble than the magnesian salts. On trial, these sulphuric preparations will be found of much value in more particulars than one. The sulphite of magnesia will always be tolerated by the stomach, even in extreme cases of irritation. It never acts as a poison, and therefore an erroneous dose will never be productive of evil—a quality which it alone possesses among those remedies which have any decided value. Its extreme cheapness is another merit; it is, perhaps, the cheapest remedy in the whole materia medica; and, when its real value has been ascertained, its cheapness will still more be appreciated.

I do not put forward these sulphuric salts as a panacea. I wish my professional brethren to put them to the test of clinical experiment; and I shall feel indebted to them more for the notes of their unsuccessful cases, if accurately observed, than of the favourable ones.

And now, in conclusion, let me observe that these salts do not act as poisons towards the several morbid ferments which we have supposed to be the cause of the several zymotic diseases. They do not kill the catalytic germs of the organic poisons; but they react on the material components of our own organism, rendering it, by their presence, incapable of being acted on by these catalytic germs. It is, therefore, easily comprehended how extensive and beneficial must be the use of these sulphites, when it is remembered that among zymotic diseases we class the most numerous, the most obscure, and the most fatal of all diseases.

OBSTETRIC MEMORANDA.

UNDER this head we shall from time to time, as materials come to hand from correspondents, publish records of cases remarkable in themselves, or illustrating points of interest in obstetric practice, therapeutic or manipulative. We shall probably in this way preserve from oblivion the notes of very many useful and instructive occurrences in private practice; for the great obstetric experience is that—for the most part hitherto unwritten—of the great body of general practitioners throughout Great Britain. We will only ask those who may forward cases for record to relate them with the utmost brevity, and equally to condense any appended remarks.

PUERPERAL CONVULSIONS.

By R. S. CROSS, Esq., Petersfield.

THE following case, I think, illustrates the good effect of removing, with as little delay as possible, the persisting, if not the immediately exciting, cause—the contents of the uterus; as well as the connexion between imperfect kidney-elimination during pregnancy, especially when that is induced suddenly, so to speak, and the occurrence of convulsions in labour.

On September 28th, I was consulted by Mrs. L., aged 34, a tall, well-formed woman, pregnant for the first time. She came to bespeak my attendance in her confinement, which was expected in about one month. She had, about ten days before, caught cold while hop-picking, and had noticed her legs, feet, and knees to become very swollen and puffy. The bladder was very irritable, and scarcely any urine was passed. This condition prevailed when I saw her, and she looked worn and pale. I prescribed alteratives and diuretics.

On October 7th, at 11 A.M., I was called into the country to see her. I found that she had been suffering pains for nearly three days, and had passed three sleepless nights. On the last, she had taken nearly half a

pint of brandy, feeling worn out and exhausted. The medicine prescribed on September 28th had acted well on both the bowels and kidneys, and the swollen condition of the extremities was not now remarkable. The head was found presenting naturally in the pelvis; the membranes were entire, flaccid. The pains were but very slight. The uterus was well dilated, thin, and moist. The general condition was one of great weakness. I administered nourishment, with a small quantity of brandy; and at twelve began to give liquor secalis in half-drachm doses every twenty minutes. She was sick immediately after the fourth dose. I ruptured the membranes about 1 P.M. At 2 P.M., the pains had increased gradually, and the case was progressing favourably. Nourishment was administered; and, as I was wanted elsewhere, I sent in for the gentleman who assists us, Mr. Holt, to relieve me. He arrived a little before 3 P.M. I was on the point of leaving, when the nurse summoned us hastily to the bedside. We found the patient in a convulsion. The twitching of the face, foaming at the mouth, and contortions of the muscles were very great; and the body for the time was as rigid as a board. I had fortunately asked Mr. Holt to bring the forceps. These were at once applied, and the child delivered (alive) with as much speed as practicable, at about 3.10 P.M. The mother had remained insensible after the first fit, and had a more violent one just before delivery; shortly after which the crying of the child aroused her, and she asked whose it was, and supposed she had been under chloroform, having taken that twice in the hospital for some operation on the bones of the foot. Her face had the wandering, unmeaning expression characteristic of this condition; and she picked the clothes and her dress about as though in search of something. The condition of the abdomen revealed the existence of another child. On examination, it was found still high up, no part presenting. On consultation, we decided to allow time for her to rally, giving nourishment, and waiting. At about 3.30, there was slight pain. She was more rational, and expressed herself as being quite comfortable. At four, she had another violent convulsion. I immediately delivered her of the second child by rupturing the membranes and bringing down the feet, which were found presenting. This was at 4.15. The child was alive. The patient was insensible, breathing heavily. The placenta was in the uterus, which was large, contracting on pressure, and rubbing and grasping with the hand. This was kept up for about twenty minutes; but, as the placental mass was not presented, I introduced my hand into the uterine cavity. Both placentæ were adherent throughout—one low down on the right side; the other high up, and to the left side of the fundus. I discovered a small clot presenting through a thin portion of the membranes; and, passing my hand in at this point, with the back of my hand and fingers I detached them one after the other. The uterus contracted well on the withdrawal of the hand. The patient gradually regained her perfect consciousness, and her face quickly assumed its wonted aspect. Mr. Holt remained until 6 P.M., and left her very comfortable. Next day, at 8 A.M., the mother and children were going on well. She has made as satisfactory progress as any other lying-in woman would after a natural labour.

VASCULAR TUMOUR OF THE URETHRA.

By ARTHUR W. EDIS, M.B.

S. P., aged 50, married, the mother of five children, in June last presented herself at the St. George's and St. James's Dispensary, having suffered for the last two years from a scalding sensation on micturition, accompanied by "a kind of smarting pain" along the inner side of both thighs. She had occasionally, also, numbness with aching pain in the left hip. The symptoms were worst on first rising of a morning. There was also constant uneasiness in the vulva, with frequency of micturition, and a sense of weight and bearing-down or dragging pain in the left groin. The pain in the vulva was much increased by walking, and severe on coitus. During the greater part of this period, she had taken alkalies, diuretics, sedatives, tonics, etc., without relief. She had been carefully examined by more than one medical man, but nothing abnormal was detected. The symptoms had greatly increased during the last year.

With such a history, I naturally requested an examination. On separating the vulva, nothing unusual was detected; but, on dilating the urethra with a small bivalve ear-speculum, a large vascular tumour, almost filling up the urethra, was at once seen. By means of a pair of blunt-pointed curved scissors, this was removed, and the base freely touched with nitric acid. No subsequent hæmorrhage occurred; and, after a few days, the smarting and soreness having ceased, the previous symptoms were greatly diminished. Early in July, I again applied the acid, as there was some slight tendency to a reappearance of the growth. Since that time she has been almost entirely free from her former symptoms, and early in the present month (October) reported herself convalescent.