OBSERVATIONS

ON

THE SUCCESSFUL TREATMENT OF DIABETES BY
ALKALIES AND THE PHOSPHATIC SALTS OF
AMMONIA; WITH LIMITED RESTRICTION
OF DIET.By WILLIAM R. BASHAM, M.D., F.R.C.P.,
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THE report of a case of diabetes successfully treated by opium, without restriction of diet, made by Dr. Pavy to the Clinical Society (see JOURNAL, January 9th, 1869), appears to me to give to the subject of the treatment of diabetes by other remedies, excluding opium, some interest at the present time. Those who have had opportunities of observing and studying the symptoms and progress of diabetes are aware of certain peculiarities which belong to the disease, according to the period of life at which it is manifested. They recognise the more manageable and less fatal character of the disease in advanced life, compared with its rapid and fatal progress in the early or middle period. In the diabetes of age, there are fewer complications, a greater exemption from pulmonary disease, less evidence of such degeneration of tissue as cataract, less emaciation, less aroma both in breath and in urine, although the specific gravity of the urine may be as high, and the proportion of sugar per ounce as great, as in the diabetic urine of an earlier period. Carbuncle is the most serious and the most fatal concomitant which presents itself in the diabetes of age. Nevertheless, based on clinical observation, there is a fairer expectation of the mitigation, not to say the removal, if even only temporarily, of the disease, by a plan of treatment about to be mentioned, than can be entertained in the earlier periods of life.

In advanced life, diabetes may either become intermittent or disappear altogether. In the former class, the urine for months together will exhibit maximum quantities of sugar—twenty, even thirty, grains to the ounce—with distressing frequency of micturition, and proportionate increase in quantity of urine, with aggravated thirst. The quantity of sugar may gradually subside, and be reduced to a scarcely appreciable amount of sugar—one or two grains of sugar to the ounce—with the disappearance of both thirst and the superabundant excretion of water. This favourable state may continue for months; when, usually attributed to some dietetic error, the old symptoms return, again to become mitigated, and again to return, presenting conditions which give to this form of the disease the not inappropriate title of intermittent diabetes.

These facts being premised, it becomes an interesting therapeutical question, how far remedies may be relied on as agents in those cases in which mitigation becomes so marked. This question has acquired an additional degree of interest from Dr. Pavy's case already mentioned, treated by opium without restriction of diet. The patient was sixty-eight years of age. It is not my intention to comment on that case, further than to remark that it is unfortunate for the claim of opium as a curative agent, that, by an oversight, the patient, during the whole period of treatment, continued to take alkaline remedies—carbonate of potash and the aromatic spirits of ammonia. For it was through the agency of such remedies that, in the cases about to be recounted, the mitigation of the symptoms, and indeed the disappearance of the sugar, appeared to take place. Opium in no form was given; and the restriction in diet was only carried out to a limited degree.

A gentleman, seventy years of age, a merchant of the city of London, of a stout and plethoric habit, of ruddy, not unhealthy aspect, consulted me first in the early part of the winter of 1867-68. He had been subject more or less through life to rheumatic, or perhaps gouty, symptoms, of which lumbago was a prominent symptom. From time to time the skin had been the seat of scaly eruptions (psoriasis), so intimately connected with the uric acid diathesis. Of late, a diffuse chronic eczema had appeared on the inner part of the thighs, perinæum, and buttocks. Constipation and piles may be added, as well as some structural condition of the sphincter ani, for which he had consulted the late Mr. Salmon, as the chief characteristics of his past history. The leading symptoms, when first under observation, were, an excess of urine, eighteen to twenty pints in the twenty-four hours, of specific gravity 1035, containing seventeen grains of sugar to the ounce. Micturition

was distressingly frequent during the day, less by night. There were thirst, and a dry, furred tongue; but many of the ordinary and typical symptoms of diabetes were either absent or existed only in a minor degree. There was no wasting, nor loss of weight; no craving appetite; no odour in the breath; no preputial irritation; nor any of that nervous irritability present in some cases. The pulse was soft and equable. The heart's sounds were feeble and remote, as is usual in stout people of advanced years. The bowels were torpid, a condition habitual to him. A scheme of diet was written out; the phosphate of soda, in half-ounce doses, recommended as a purgative; and the carbonate of ammonia with the bicarbonate of potash, in effervescence, with fresh lemon-juice, prescribed three times a day. This treatment was continued for some weeks, with varying results as to the proportion of sugar present. At the end of two months, it had decreased to twelve grains to the ounce; by the end of the year, under the same treatment, to six grains. Up to this period, I have reason to think that only a moderate degree of restriction in diet was observed, chiefly in abstinence from wheat bread and potatoes. The Pullna water for a time aided the action of the phosphate of soda as a laxative. During the months of February, March, and April of last year, the average specific gravity of the urine was 1036, and the mean average of sugar eight grains to the ounce. The treatment was continued uninterruptedly. During May, a notable increase in the proportion of uric acid became apparent, without any diminution in the proportion of sugar. As the summer advanced and the heat increased, the specific gravity rose to an average of 1040, with considerable increase in the sugar, which rose on several occasions to twenty grains to the ounce. The heat very much oppressed him. In September, the following form was substituted for the carbonate of ammonia and potash in lemon-juice: Phosphate of ammonia and carbonate of ammonia, each ten grains; and aromatic spirit of ammonia, half a drachm; in an ounce of water, added to the juice of a fresh lemon, and taken three times a day. This remedy was continued without intermission for the following four months, and with the most favourable results.

	Mean sp. gr.	Sugar per oz.
September (began the phosphatic salts)	1037	18 grs.
October	1040	18 grs.
November (great increase of urates)	1036	6 grs.
December 4th (large proportion of urea and urates)	1018	½ gr.
December 28th (urea and urates in excess; a large crop of crystals of oxalate of lime after cooling)	1024	Nil.
January 26th, 1869 (same as above as regards the urea, urates, and oxalate of lime)	1026	Nil.

All details of this case, unconnected with the decrease of sugar in the urine, and the consequent mitigation of the diabetic symptoms, have been purposely omitted. During the last four months, I have enjoyed the advantage of Mr. Hilton's suggestions in respect of symptoms unconnected with the primary disease, as well as the support of his opinion in enforcing a stricter attention to dietetic prudence, particularly as regarded beer and soft bread.

I am reluctant to swell this communication beyond reasonable limits; but I cannot forbear to add that this principle of treatment by alkalies, especially by ammonia and its phosphatic salt, has been successfully employed by so many physicians and writers on diabetes, as to justify our placing the greatest confidence in its utility. The success apparent in one case would not justify the inference I have drawn from the employment of this class of remedies; but the invariable mitigation of the symptoms even in the most unpromising cases, and its more complete success in others, warrant the conclusion at which I have arrived. A gentleman now living consulted me so far back as 1853 with the more prominent symptoms of diabetes. He was then in his fifty-fifth year; he is, consequently, now seventy-one. I saw this gentleman with the late Dr. Bright. An alkaline plan of treatment was suggested, and confirmed by that eminent physician. For a year or two it was continued, with more or less advantage. Eventually, the diabetic symptoms subsided; the amount of sugar was reduced to a trace. For several years past, this gentleman has followed a laborious profession with undiminished energy; and, when I saw him last, was, at the age of seventy-one, enjoying excellent health.

The particulars of other cases of diabetes in the more advanced period of life who are still enjoying immunity from this disorder might be added; but as I do not wish to burden this communication with unnecessary repetition, I will only allude to two cases of diabetes in the earlier period of life which have derived benefit from this alkaline treatment. A gentleman, 36 years of age, formerly in the army, suffering from all the more aggravated symptoms of diabetes—such as excessive diuresis; specific gravity of urine 1038, containing from twenty to

twenty-five grains to the ounce; great and distressing thirst; a craving unsatisfied appetite; aromatic breath; preputial irritation and constipation; but without any pulmonary complication—began the treatment by ammonia and its phosphatic salt in the form above described in July last; and in December, though the proportion of sugar had only decreased to fifteen grains to the ounce, yet the nutritive functions had been so improved, that he had gained from nine to ten pounds in weight, and the more distressing symptoms had decreased. The health of a gentleman, 49 years of age, suffering from diabetes, which had not been detected till I examined the urine, became so much worse and with such serious complications, that it became necessary to advise his wintering in the south of Europe in the winter of 1867-68. In addition to the typical symptoms of diabetes, paroxysmal attacks of convulsions of an epileptic character, which had preceded the discovery of the sugar in the urine, and for which he had taken large doses of the bromide of potassium, were followed by serious indications of pulmonary disorder in the form of broncho-pneumonia, which rendered residence in a more temperate climate during the winter desirable. On his return in April of last year, the diabetic condition had rather increased than abated, although the cerebro-spinal and pulmonary symptoms had disappeared. In May, when the ammonia and phosphatic salt were commenced, the urine contained twenty-six grains to the ounce. The thirst was distressing, and the emaciation great. A moderately restrictive diet was enforced. In December last, after the treatment had been persevered in for six months, the specific gravity of the urine was 1028; it contained twelve grains to the ounce. Proportional to this decrease in the amount of sugar was the increase in weight of the patient. The thirst had decreased; and the physical debility which marked the earlier periods of the year was followed by powers of bodily exertion equal to that he had enjoyed before the decay in his health commenced; and, what was of more importance to him, the restless and fitful state of the nervous system was exchanged for powers of application and mental energy almost equal to the best periods of his life. In conclusion, I will venture to add one rule in the administration of these remedies essential to their beneficial action. It is, that they be uninterruptedly continued. It is only after long use that their remedial action becomes apparent. I will add no theoretic views as to the mode of action of ammonia and its salts. It is necessary, however, here to say that perseverance in the use of these salts is absolutely requisite. This observation is intended for the encouragement of those who are too apt to exchange one remedy for another, if the first selected be not quickly followed by remedial effects. Let the principle on which a given case is to be treated be first determined, then undeviatingly should that principle be followed, subject only to such contingent disturbances as cannot be foreseen.

CASE OF TWINS: FOLLOWED BY EPILEPTIC FITS AND DELIRIUM.

By EDWARD SANDWELL, L.R.C.P. Ed.

ON February 10th, at 1 P.M., I was called to see Mrs. S., whom I was engaged to attend in her confinement. She had gone the full period. She was having continuous but feeble pains. The membrane had broken early in the morning, the pains continuing regularly until 10.30 P.M., at which time I delivered her of a living male child, the head presenting. On making an examination, I found another bag of membranes containing another child; the head presenting as before. On rupture of the membrane, two or three sharp pains proved sufficient to expel another male child, but dead, and partly decomposed. In a few minutes I removed the placenta, quite distinct from each other. I left her doing thoroughly well at 11.30 A.M.; but, at 5.30 A.M. on the 11th, six hours afterwards, I was called hurriedly to her. I then found her in a fit of a distinct epileptic character. I ordered ice to her head, and the usual remedies. This first fit was followed by one every twenty minutes, without any conscious intermission for twenty-six hours. Then partial consciousness returned, but with it delirium, which lasted until the third day. I now prescribed a pill of four grains of calomel, and a quantity of opium; and also gave her a quantity of nourishment. She gradually improved, and took tincture of cinchona with ammonia every four hours. On the eighth day she complained of her breasts; they had filled rapidly and became somewhat nodulated. I ordered them to be rubbed with equal portions of brandy and sweet-oil, which relieved her after two applications. On the tenth day she took the child to suck, and has now had it for forty-eight hours, and both mother and child are doing as well as could be under the most favourable circumstances. No uterine symptoms have shown themselves. Mrs. S. had never had epileptic fits; she had been subject to fainting fits, but had been free from them during pregnancy. Her mother died in childbed. The whole of the family are highly nervous.

CASE OF CEREBRAL COMPLICATION OF ACUTE RHEUMATISM.

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AMONG the rarer events that occur in the course of acute articular rheumatism must undoubtedly be reckoned true cerebral complications, or those affections of the brain which, by their intrinsic gravity, acquire for the time being a substantive position. Dr. Fuller has discussed them at some length in the tenth chapter of his work; and one of Professor Trousseau's Clinical Lectures, headed "Cerebral Rheumatism," is devoted exclusively to their consideration; but, with these and perhaps one or two other exceptions, writers seem to have made their comparative infrequency an excuse for leaving the subject almost untouched. Recent observations with the thermometer, however, have imparted a new interest to these complications, an unusual elevation of temperature having been found frequently to coincide with their occurrence. Several such instances have been reported, the first, I believe, by Dr. S. Ringer, in the *Medical Times and Gazette* of October 5th, 1867. The following case, although it may not be so purely characterised as to be typical of this class, possesses one or two points of its own which seem to be worthy of notice.

M. J. W., a laundry-girl, aged 15, and looking fully that age; had menstruated, but not during the last six months. She was of sanguine temperament. Her mother was living and healthy. She had usually enjoyed good health, and had not before suffered from rheumatism, nor from any neurotic disorders. Her present illness commenced three days before admission (April 11th), after exposure to cold. The joints were attacked successively: the right elbow, at noon of the 11th; the left ankle on the same night; the left knee on the 12th; and the right knee and ankle on the 13th. There were concurrent insomnia and anorexia. She was brought into the Bath Royal United Hospital, April 14th, in a completely helpless state, having already a systolic murmur at the apex of the heart.—At 7 P.M. the temperature* in the axilla was 103 deg; pulse 128; respirations 32. She was ordered to be put into flannel, with cotton wool to the affected joints. The following draught was ordered to be taken every four hours: R potass. bicarb. ʒss; potass. nit. gr. x; aq. camph. ʒj. M. She was directed to take eight grains of Dover's powder every night, and to have low diet, with a pint of milk and a pint and a half of beef-tea.

April 15th. She had passed a good night, but complained of pain in both knees, and in the left ankle and right wrist, which presented the usual appearances. She had also uneasiness at the cardiac region, where was a very distinct soft systolic apex murmur, but no friction-sound. Perspiration was profuse, neutral in its reaction. Temperature 101.8 deg; pulse 132, rather weak; respirations 36. The tongue was moist, with a brownish fur on the dorsum. The bowels were regular. The urine was of specific gravity 1.020, feebly acid, uncoagulable by heat and nitric acid. The treatment was continued.

April 16th. She slept well in the early part of the night. The pain was rather severe in the left hand, the other joints were better. Temperature 103 deg. Urine alkaline. The treatment was continued.

April 17th. She had no sleep. There was a good deal of pain in the back and in the left arm. Temperature 103.2 deg; pulse 124; respirations 36. A systolic murmur was heard at both the base and the apex of the heart. The draught was continued, but the powder was omitted; and she was ordered to have a minim and a half of liquor atropiæ injected subcutaneously into the left arm at bedtime.

April 18th. She slept several hours after the subcutaneous injection. She had most pain now in the right shoulder. Temperature 101.2 deg; pulse 116; respirations 44; urine acid.

April 19th. She had not much sleep, though she was not in much pain. Temperature 101.8 deg. The urine was very slightly acid.

April 20th. She had a good night, with scarcely any pain; and the arthritis had for the most part subsided. Temperature 104.4 deg; pulse 116; respirations 46. The cardiac murmurs were much as before. There was dulness at the bases of both lungs, greater at that of the left, where also bronchial breathing and obscure crepitation were heard. She had profuse perspiration, with copious military eruption over the trunk. The urine alkaline. Sinapisms were ordered to be applied to the ankles.

* With this exception, the daily observations of temperature were made about 10 A.M., by the Resident Medical Officer, Mr. R. Carter, M.B.