

usually given 1 drachm in water every three or four hours. No complaint of gastric disturbances has been made. Some 50 toxæmic cases of various kinds have had their tolerance tried, but on going into their notes I found that most of them were useless to record, as, in addition to the fixed doses of bicarbonate, they had been given an indefinite quantity in barley-water to drink. They have therefore not been recorded.

Observation of Cases.

The following cases admitted to Queen Charlotte's Hospital have been under the observation of Dr. A. G. Howson, senior resident medical officer. The endeavour has been made to exclude patients who merely suffered from a transient albuminuria during labour and to include only those who had albuminuria before labour or other symptoms as well. It will be seen that the average quantity taken by mouth (exclusive of any quantity given per rectum and intravenously) in 15 cases is 45·3 g.

Table Giving Details of Cases of Pregnancy Toxæmia.

| No. | Parity. | Clinical type. | Method of delivery. | Acetone or diacetic acid. | Result. | Sod. bicarb. in grammes.* |
|-----|---------|--------------------|-------------------------|---------------------------|---------|---------------------------|
| 1 | M.4 | Albuminuria | Normal. | — | R. | 32 (a) |
| 2 | P. | Eclampsia. | Cæsarean. | ? | R. | 64 (b) |
| 3 | M.8 | „ | De Ribes's bag. | + | R. | 40 |
| 4 | P. | Albuminuria | Cæsarean. | — | R. | 36 |
| 5 | P. | Chronic nephritis. | „ | + | R. | 28 |
| 6 | P. | Albuminuria | „ | + | D. (P.) | 120 |
| 7 | P. | „ | Normal. | ? | R. | 16 |
| 8 | P. | „ | Induction. | + | R. | 72 (c) |
| 9 | P. | „ | Normal. | — | R. | 32 |
| 10 | P. | „ | Forceps. | + | R. | 80 |
| 11 | P. | „ | „ | + | R. | 48 |
| 12 | M.1 | Chronic nephritis. | Normal. | — | R. | 28 |
| 13 | M.1 | Eclampsia. | Cæsarean. | + | R. | 72 (d) |
| 14 | M.1 | Chronic nephritis. | Discharged undelivered. | — | R. | 12 (e) |
| 15 | P. | Albuminuria | Forceps. | + | R. | 16 |

Average ... 45·3

R., recovery. D. (P.), died (pericarditis).

* Amount of sod. bicarb. in grammes given by mouth before urine alkaline: (a) + 48 in previous three days. (b) + Rectal glucose and bicarb. injections. (c) Still acid. (d) + 8 g. intravenously. (e) Subsequent normal delivery.

For purposes of comparison 13 normal cases were observed, and their urine was alkaline after an average of 6·8 g. We thus get the result that the average bicarbonate tolerance of patients clinically suffering from pregnancy toxæmias is 45·3 g., compared with the average bicarbonate tolerance of 6·7 g. in puerperal cases not suffering clinically from toxæmia. Further, the fatal cases had a tolerance of no less than 120 g., compared with an average tolerance of 40 g. on the part of those that recovered. If a rough attempt is made to gauge the severity of the clinical manifestations by the method of treatment adopted, it is found that the average tolerance of those on whom it was thought necessary to perform Cæsarean section or induction was 61·7 g., compared with 33 g. of those who were allowed to deliver themselves with or without the help of forceps. Three cases in the table are marked "nephritis." This indicates that the state of the retina, the character of the urine, or the history made it probable that albuminuria existed before pregnancy, although more urgent symptoms appeared before labour. It will be seen that their average tolerance is 23 g., or lower than the primarily toxæmic cases.

One other case may be given more fully.

In August, 1920, I saw a patient with severe vomiting and albuminuria at the sixth month of pregnancy. The vomiting was incessant, even of peptonised milk, and continued in spite of her removal to a home. She was extremely ill, but had not the usual appearance or mental state of a pregnancy toxæmia patient, so I postponed interference and tried her bicarbonate tolerance. Her urine became strongly alkaline

after 12 g. had been taken, so it was again decided to watch her for a little longer. Two days later symptoms of bulbar paralysis appeared, which a neurologist diagnosed as of alcoholic origin, and it soon became obvious that she was suffering from acute alcoholic gastritis and nephritis. But for the aid given by the bicarbonate test it is probable that the case would have been regarded as one of pernicious vomiting with albuminuria.

It seems to me that by testing the tolerance to bicarbonate of soda in patients suffering from what is thought to be a toxæmia of pregnancy we have a method that is extremely simple and harmless. Further experience will prove whether it is of great or little value. The fact that it does not seem to have been generally tried on a large scale is my reason for bringing such a simple subject before you.

Treatment.

A brief summary of the treatment of patients suffering from acidosis may be added. Carbohydrate food is of the greatest value, and so these patients should not be put on a strict milk diet. An ounce of glucose may be given daily by the mouth or per rectum. A 2 per cent. solution of glucose has also been used intravenously. Laxatives are usually required. The deficiency in the fixed bases must be made up, and I have found Langdon Brown's mixture useful. It consists of a drachm of sod. bicarb., half a drachm of pot. cit., and five grains each of mag. carb. and calcium chloride given three times daily. Syrup of orange or other flavouring may be added as the mixture is rather unpleasant to taste. In more severe cases bicarbonate may be given in drachm doses every three hours, and rectal salines should contain bicarbonate instead of sodium chloride. It should be stopped when the urine remains alkaline. In urgent cases six drachms of bicarbonate in a pint of water may be injected into the veins and repeated every six hours while the urine remains acid. In sterilising a solution for intravenous use it should not be boiled for more than ten minutes, as sodium carbonate and hydrate tend to form; this occurs to a less degree if narrow-necked bottles are used, filled almost to the top, and stoppered soon after boiling if the solution is not to be used immediately. If an anæsthetic is required chloroform should not be used, as its administration in apparently healthy subjects is occasionally followed by symptoms of acidosis.

A NOTE ON THE ALBUMINURIA OF SMALL WHITE KIDNEY.

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THE following case of chronic nephritis is of great interest. The prolonged latent course of the disease, with slow development of arterio-sclerosis, terminal subacute uræmia, and absence of œdema, anæmia, headache, and dyspepsia, favour the presence of small white kidney. The patient was a robust, intelligent, well-developed young man of 25, first seen in November, 1916, on account of rejection by the military authorities on three occasions owing to albuminuria.

History.—His general health had always been good, but in 1907, when 16 years of age, after passing an examination for entrance into a bank, he was rejected on medical examination, and was informed that he showed a marked degree of albuminuria. This was confirmed by a general practitioner, who informed the relatives that the lad was suffering from a severe form of Bright's disease, which opinion was based on the degree of albuminuria only, for otherwise there was an entire absence of physical signs and symptoms, and general health appeared to be excellent. The past history was that he suffered from an acute attack of influenza at 1½ years, a severe attack of diphtheria at 7 years, and a mild attack of the same affection when 12 years of age. These diseases were apparently uncomplicated, for no œdema occurred at the time, and recovery appeared to be complete afterwards. Between 1907, when the albuminuria was first found, and 1916 he worked regularly as a clerk, later

becoming chief accountant to an important firm of millers, and appeared to perform the duties without any undue mental strain. General health was good, except for recurrent attacks of follicular tonsillitis on an average three times a year, when the urine would be examined on each occasion, and found to contain a large amount of albumin and always attributed to Bright's disease by his practitioner. No oedema occurred at the time of these attacks, and general health in the intervals was well maintained. His relatives had for some years observed that a little puffiness was present around the eyes in the early morning, but this passed off completely in an hour or so, whilst there never was any complaint of headache or dyspepsia. He was a life-long abstainer from alcoholic beverages, of careful habits, and had never suffered from gonorrhœa or syphilis. The family history showed that his father died at the age of 52 from bronchitis and emphysema, and one maternal uncle died suddenly at the age of 52 from angina pectoris. One sister suffered from acute nephritis at the age of 10, and appeared to have recovered completely until 15 years later, when albuminuria and oedema reappeared during pregnancy, to disappear completely afterwards.

Examination.—In November, 1916, the general state of development and nutrition was excellent, and but for a slight degree of nervous instability he was considerably above the average in intelligence and free from anæmia. Nothing abnormal was found on physical examination, except a rough systolic bruit, heard only in the dorsal posture over the precordium and probably of exocardial origin. No cardiovascular changes were otherwise evident beyond a systolic blood pressure of 160 mm. The fundus oculi was normal. The urine was of sp. gr. 1015, and on heating was almost solid with albumin, to the extent of 11 parts per 1000 (Esbach); the deposit contained some blood cells but no casts. The daily amount of urine was normal, and throughout there was no nocturnal micturition.

Diagnosis.—A provisional diagnosis of functional albuminuria was made in view of the long history, and in the complete absence of the usual manifestations of chronic nephritis. A reservation was made in favour of chronic nephritis on account of the degree of albuminuria and raised blood pressure.

Course of the Disease.

The patient reported himself at infrequent intervals, on an average three times a year, up to May, 1920, and general health was well maintained throughout. The urine always showed about the same degree of albuminuria, generally 10 parts per 1000, and deposit nothing of importance, and blood was not again seen after the first examination. No tonsillitis was present at the time of these examinations, and specimens of urine were submitted on many occasions apart from personal visits. The albuminuria appeared to be constant throughout the day and did not show any postural variation. From the time that he was first seen a modified proteid diet was adopted. A slight degree of thickening in the peripheral arteries was first noticed in 1918, whilst the blood pressure remained at about 160 mm. The fundus oculi was always examined and found to be normal. He gave up work in November, 1919, as he felt unequal to the strain which had been considerable during the years of war, but there was no apparent alteration in his general health. From 1907, when he was told that he suffered from Bright's disease, despite good health, he always had a lurking fear that some serious malady was present, and it was for this reason only that he gave up work with the intention of resuming after a prolonged holiday. His position for several years had been a most responsible one, and his services were much esteemed by his employers. In May, 1920, he complained for the first time of impaired vision. The general state was unaltered, but the peripheral arteries now showed distinct thickening, and the blood pressure had increased to 200 mm. The eyes were not examined on this occasion, as he was advised to see an ophthalmic surgeon, but he afterwards decided to defer this for a few weeks.

In view of the recent discussion on non-nephritic albuminuria at the Royal Society of Medicine, a specimen of urine out of a 24 hours' amount was sent for examination to Dr. R. L. Mackenzie Wallis, chemical pathologist to St. Bartholomew's Hospital, whose report was as follows:—

"A clear pale-coloured urine with very slight deposit and slight turbidity on standing. Reaction acid. Albumin present. Total protein 0.27 g. per cent. (Aufrecht). Globulin

present. A distinct turbidity on adding acetic acid in the cold, and the presence of well-marked white rings on diluting with distilled water. Globulin ratio is 2:1. The protein present in the urine behaves just like that found in cases of globulinuria. It separates out in the form of a dense flocculent precipitate, giving the appearance of a urine containing very large quantities of protein; in fact, it seems to set almost solid on boiling.

Microscopically.—No casts, except a few of a pseudo-hyaline nature. No crystals or blood cells.

Diastatic activity.—10 units (normal). The normal diastase content indicates that there is no serious impairment of renal function. Calcium lactate was recommended for internal administration, and if unsatisfactory thyroid extract was also suggested."

Terminal Subacute Uræmia.

A more favourable prognosis was now given. However, a few days later he saw Mr. D. Leighton Davies, ophthalmic surgeon to King Edward Hospital, Cardiff, who found intense albuminuric retinitis, with hæmorrhages and cedema of the retina, and gave a grave prognosis.

Patient appeared to be in perfect health, but he was naturally upset by this report of the ophthalmic surgeon, the full significance of which was not disclosed to him. On July 17th he had a bilious attack, with vomiting of bilious material, which was repeated on the two following days, and a little blood was seen in the vomit on one occasion. Diarrhœa came on and continued up to the time of death 10 days later. The mouth and fauces were dry. The tongue was dry and swollen, and covered with brownish fur. The breath had a disagreeable odour, but there was no stomatitis. Vomiting became less on the 22nd and 23rd, and was absent afterwards. Dyspnoea was present from the onset, with cough and expectoration of a blood-stained mucoid material of moderate amount, with a slight degree of cyanosis, and accompanied by universal fine crepitant râles over both lungs. The heart impulse was diffuse and extended one and a half inches outside its normal position, with physical signs of dilatation of the left ventricle, but oedema was entirely absent and there was no enlargement of the liver and spleen. The pulse gradually failed, whilst the temperature was normal or subnormal throughout. The urine was of normal amount up to two days before death, when it became suppressed, and blood was present for several days before death. There was no complaint of nausea or of headache, but restlessness, sleeplessness, and hiccough were features throughout the terminal condition. Consciousness was fully preserved up to the time of death 10 days after the onset of symptoms. Convulsions and twitchings were absent throughout. No autopsy was obtained.

Striking Features of the Case.

(1) Prolonged latent course over a period of at least 13 years. (2) Intense degree of albuminuria throughout this period of time, with a high globulin content. (3) Absence of any evidence of postural albuminuria. (4) Preservation of good health and nutrition until the beginning of the terminal event, indicating that there was no evident impairment of renal function. (5) Entire absence of headache. (6) Digestion was perfectly performed until the onset of uræmia. (7) Slow progress of cardio-vascular changes of moderate degree with increased blood pressure. (8) Early onset of uræmia after the detection of albuminuric retinitis. (9) Uræmia of the subacute type with gastro-intestinal disturbance and pulmonary oedema.

Probable Presence of Small White Kidney.

The clinical features conform more closely to chronic nephritis of the small white kidney type as described by Sir John Rose Bradford in Allbutt and Rolleston's "System of Medicine," Vol. IV., Part 1. Although the type of uræmia was more that seen in chronic parenchymatous nephritis in contradistinction to the acute fulminating uræmia with epileptiform convulsions usually seen in cases of small white kidney, yet the prolonged latent course with the slow development of arterio-sclerosis, and the presence of albuminuric retinitis with hæmorrhages towards the close, and the entire absence of oedema, anæmia, headache, and dyspepsia are entirely unlike the usual course of chronic parenchymatous nephritis, and are much more in favour of the presence of small white kidney. Upon this assumption does not the report suggest that cases of small white kidney would be disclosed long before the

usual first and final manifestation of acute uræmia, if by any chance the subject of the disease presented himself for life insurance, or for entrance into the services, when probably the urine would be found to contain a considerable amount of albumin? The case throws little light upon the ætiology of the condition except, perhaps, to suggest that small white kidney arises from arterio-sclerosis, with particular incidence upon some part of the renal vascular apparatus induced by one or other of the acute specific fevers, recurrent tonsillitis, or from causes of congenital origin. Congenital cystic disease of the kidneys and syphilitic nephritis were carefully considered in the case under discussion and can be absolutely excluded.

Conclusion.

The case is of great importance from the standpoint of the insurance medical officer, for despite the failure of the tests for renal function to incriminate the kidneys in these latent cases of albuminuria, when the latter is constantly present in appreciable amount chronic nephritis probably exists. The publication of this case may stimulate further interest in a subject which of late has received considerable attention, and in which much valuable work has already been done. Without doubt, sooner or later, a complete record of the pathology and clinical course of small white kidney will be established.

I am much indebted to Dr. Mackenzie Wallis and to Mr. Leighton Davies for their reports; to Dr. J. Bowen Jones, of Cardiff, for permission to publish the particulars of the termination, and to Dr. George Grant, of Cardiff, for valuable information of the early history of the case.

THE DANISH TREATMENT OF SCABIES.

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DURING the last ten years a form of scabies treatment with a new ointment has been brought into use in Denmark. It has proved so much of an advance upon all other treatments that it is now almost the only one in use all over this country. One single inunction suffices; after 24 hours the scabies is cured, and relapses are never seen. The cutaneous irritation is but slight. The treatment can very well be ambulant. It was first used in 1911 by Professor Ehlers in the hospital of the city of Copenhagen. The ointment was composed by Mr. Marcussen, at that time a chemist of the same hospital. Professor Ehlers made his first publication of the results obtained in 1912 in a Danish medical paper, *Ugeskrift for Læger*.

Method of Application.

In my department the application takes place as follows. The patient receives an ordinary cleansing bath, wipes himself thoroughly, and afterwards rubs the whole of his body, except the head, carefully with the ointment, which is almost of the consistency of butter. A nurse or another patient helps him with the back. The ointment must cover all the skin, but hard rubbing is neither required nor desirable. The patient ought then to wait for a quarter of an hour, to give the ointment time to get into the skin; after this he can go to bed. The next day at about the same hour he receives a second bath and fresh underclothing and the cure is finished. Meantime, all his clothes have been disinfected; I doubt, however, if this is absolutely necessary. All statistics seem to prove that this very simple treatment is as absolutely reliable as it is comfortable for the patient. But as statistics of scabies treatment in a civil population must, for obvious reasons, always remain incomplete in certain particulars, I think it of a special interest to study the results obtained with the treatment in the Danish Marine Hospital, in which hospital all scabies patients from the Danish navy have been treated since April, 1915. A possible relapse would hardly escape attention.

In the period from April, 1915, to April, 1920, 678 cases were treated in the said way without a single relapse. Dermatitis was only observed in two patients, treated on the same day by some ill-prepared ointment which caused an alkaline cauterisation of the skin. One of these patients stayed 7, the other 21 days (see below). The detailed results of this period were as follows:—

| Year. | Number of days in hospital. | | | | | | Total. |
|-------|-----------------------------|-----|----|-----|---|----|--------|
| | 1 | 2 | 3 | 4-6 | 7 | 21 | |
| 1915 | 26 | 5 | 2 | 0 | 0 | 0 | 33 |
| 1916 | 67 | 12 | 4 | 1 | 0 | 0 | 84 |
| 1917 | 105 | 28 | 5 | 2 | 0 | 0 | 140 |
| 1918 | 250 | 36 | 2 | 0 | 1 | 1 | 290 |
| 1919 | 93 | 19 | 2 | 1 | 0 | 0 | 115 |
| 1920 | 15 | 0 | 1 | 0 | 0 | 0 | 16 |
| Total | 556 | 100 | 16 | 4 | 1 | 1 | 678 |

Briefly, a cure carried out in this way is absolutely reliable, rapid, comfortable, and cheap—the ointment required for an adult patient costing 3s. or 4s.

Preparation of the Ointment.

The preparation of the ointment is a little complicated, demanding a certain amount of care and practice to obtain a perfect result. The detailed technique of the preparation (Marcussen) is here given:—

- (1) 1 kg. of sublimated sulphur is dissolved at a gentle heat in 2 kg. of a 50 per cent. solution of potassium hydroxide. This makes a clear, yellow solution.
- (2) 225 g. of vaseline and 225 g. of water-free lanoline are carefully mixed, without heating.
- (3) To this mixture 375 g. of the solution of sulphur in potash-lye mentioned above, is added.
- (4) Fresh zinc hydroxide is prepared in mixing 28 g. $ZnSO_4$ and 40 g. 20 per cent. sodium hydroxide, and this is afterwards added to the ointment.
- (5) Liquid paraffin is added to obtain a total weight of 1000 g.
- (6) 5 g. of benzaldehyde is added to check the somewhat disagreeable smell of sulphuretted hydrogen.

The high sulphides of potassium are the capital element of the ointment, upon which its activity depends, a production of sulphuretted hydrogen taking place when the ointment is placed upon the skin.

Sarcopticide and other Properties of the Gas.

The sarcopticide power of this gas is very strong. If the hand of a scabies patient is brought into an atmosphere containing 25 per cent. of this gas, after $\frac{1}{2}$ –1 hour all the adult mites in the skin are killed. As could be expected, the eggs have considerably more resistance. Unfortunately, the resorption of the gas by the skin takes place rather rapidly; if the whole body, apart from the head, is brought into an atmosphere containing this percentage of sulphuretted hydrogen symptoms of intoxication appear after from 10 to 20 minutes, as I have experienced by exposing myself to this treatment, in the hope of finding in this way an absolutely clean and comfortable method of treatment. The unpleasant odour of the ointment is its only drawback; but this odour is not very persistent, and, moreover, after a few hours decreases to a minimum. Before undergoing the treatment, patients should remove from their persons and from the room all objects of copper, silver, &c., or the latter will be discoloured by the gas. The greatest advantage of the treatment is probably the fact that it is very suitable for ambulatory use. Under these circumstances the patient has to rub himself just before going to bed. In the morning he can wash his hands and carry out his daily work. The next evening he must give his hands a new treatment and take the final bath on the following morning, after 36 hours. With reference to disinfection, for most patients a change of underclothing and of bedsheets will suffice, but for poor patients a thorough disinfection must be recommended. At Copenhagen ample arrangements have been made along these lines for ambulatory treatment on a very large scale in out-patient departments, thus avoiding all treatment of scabies within the hospitals. It is quite free to all inhabitants, and is successful in every respect.