NOTES OF FOUR CASES
OF
INTERMITTENT HÆMATURIA.

BY
WILLIAM H. DICKINSON, M.D. CANTAB.,
FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS; CURATOR AT ST. GEORGE'S
HOSPITAL; ASSISTANT-PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN.

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THE man who is the subject of the following report has often been under observation at St. George's Hospital, where the characters of his complaint have become well known. The notice of Dr. Harley's cases was the means of suggesting that the particulars of another might be interesting to the Society, and at Dr. Fuller's request I have endeavoured to supply them. It will not be necessary to refer to any preceding accounts of this affection. Dr. Harley has, no doubt, given sufficient details on this head to show that, though of rare occurrence, the disorder has not escaped notice.

George M—, æt. 40, is now in St. George's Hospital under the care of Dr. Fuller; he is a builder's labourer, employed chiefly in the open air, and necessarily exposed to weather. He had an attack of tertian ague when working at Whatton-in-the-Vale, in Lincolnshire, more than twenty years ago.

He recovered under medical treatment, without, as far as he knows, having experienced any change in the character of the urine. His health after that time remained good until the autumn of 1859, when he was employed in building the Broadmoor Asylum in Berkshire. At the end of October or the beginning of November, the weather at that time being very cold and damp, he was first attacked with the disorder to which he has since been subject. It began one morning with shivering, ineffectual attempts to vomit, and dull pains in the loins. When he passed water he found that it was black and apparently bloody. He learnt from a medical practitioner to whom he applied that ague was prevalent in the district, but he had no symptoms of that disease except the shivering. There was no hot stage. He left his work and got employment in London, and from that time to the present he has been often under observation at St. George's Hospital. He was first under Dr. Ogle, as an out-patient. He has since been in the house at different times, under Dr. Bence Jones, Dr. Pitman, Dr. Fuller, and Dr. Barclay, six times in all. Avoiding repetition, the general characters of his complaint may be briefly stated.

He has no constant ailment, but his health is interrupted by short attacks of hæmaturia. From the beginning of the disorder these have always been of the same character, though at first they were less severe than they afterwards became. They are brought on by no other cause than exposure to cold, and usually happen in this manner:—He gets up and goes to his work apparently well. If he chance to be exposed to cold, he has an attack of shivering and retching; he yawns, and is disposed to stretch himself; he has heavy pain in the loins, passing down the thigh, and both testicles are closely retracted. Within an hour or so he has an inclination to pass water, which is voided in considerable quantity, and is black, like porter, and turbid. The pain in the loins, which has been on the increase, now slowly subsides, and the constitutional disturbance ceases. When the attack comes on he leaves his work and goes home to bed, taking care to be very warm. Under these circumstances the urine

retains it character for two or three times of passing, and then resumes its natural appearance. The attack altogether lasts from three to twelve hours. It is often followed in the evening by pain, which is described as of a griping or colicky sort, about the umbilicus, where he states that he can sometimes feel a hardness, which passes off with the pain. Next day the only remnants of the complaint are the weakness and pallor which result from the loss of blood. I will now give a more particular account of the urine.

The urine passed during the attack has been frequently examined, and has always been found to present the same character. It is nearly black and turbid. After standing, a black powdery deposit is thrown down, leaving the upper stratum clear and of a dark reddish-brown colour. It is acid, and generally above 1020 specific gravity. Dr. Gee, who has given much attention to urinary analysis, was kind enough to examine some urine passed during a recent attack, February 20th. His account of it is as follows :

“Specific gravity 1023 ; much albumen ; the dried coagulum has a lake colour, which it gives up to alcohol and sulphuric acid.

“Colour almost opaque, in a stratum an inch thick, at least as dark as the ninth tint of Vogel, “brownish-black.”

“Urea 2·35 per cent. ; chloride of sodium ·45 per cent.”

The urea being rather above the average, but quite within the limits of normal variation.

Dr. Harley, who, I believe, first pointed out the increase of urea in these cases, has kindly supplied me with another estimation from a sample of urine passed during a later attack. The urea was in the proportion of 4·25 per cent., which is a decided excess.

Between the attacks the urine is natural. It contains no albumen, and nothing abnormal is to be seen under the microscope. It is always acid, of low specific gravity, varying from 1009 to 1017, lowest immediately after the seizure. The colour is rather deeper than usual. Dr. Gee, who ex-

aminated twenty-four hours' urine—a quantity not to be obtained during the attack—gives the following details.

		Average of health.
"Quantity in cubic centimètres	1728	1500
Specific gravity	1014	—
Urea (grammes)	27·65	33·18
Chloride of sodium	8·64	11·50
Phosphoric acid	2·59	2·0 to 3·0
Pigment (Vogel's standard)	13·0	5·0

"There was a slight reaction of indican. There was no trace of albumen or sugar. The most noteworthy fact about the urine was the excess of pigment, notwithstanding the diluteness of the fluid. The tint was, more brown than yellow, and remained so in spite of further dilution. It nearly corresponded with Vogel's fourth tint, 'reddish-yellow.'"

On one occasion, when the man had an unusually brief attack, I had an opportunity of observing the sudden change in the nature of the urine. The hæmaturia lasted but for one discharge. The urine then passed was of a dark brown colour, not black, as it has generally been. It was small in quantity, acid, specific gravity 1025. The microscope showed, as it always has done under the same circumstances, abundance of fine granular matter, with dark granular casts. When boiled the albuminous clot occupied a third of the bulk of the fluid, which had a rich transparent brown colour. The urine passed at the very next time was copious and watery; specific gravity 1009. It did not contain a trace of albumen, nor did the microscope show any corpuscles or deposit of any kind. It was acid, like the other.

The attacks which have been described have never continued through the night, though they have come on for several successive days. Sometimes, in continuous cold weather, he has had it three times a week for five or six weeks. He has never been seized when in-doors, even during the summer, though once it was brought on in comparatively warm weather by his washing windows in cold water. Movement has no tendency to cause it; in fact, he is better when

taking active exercise, because it keeps him warm. The earlier attacks were attended with less loss of blood than has accompanied the later seizures. About four years ago they attained their greatest severity, and were brought on with the greatest readiness. He has since been getting better in both respects. He has never passed any sand or fragments of stone, and, indeed, the history of the case is enough to show that the symptoms do not depend upon a calculus.

Whenever he has been admitted into the hospital he has had an anæmic and cachectic look. There is no permanent pain or tenderness about the loins, nor is there any other complaint of a persistent kind. The liver and spleen appear quite natural in size. The sounds of the heart are normal.

I need not dwell upon the treatment which has been adopted. Many experiments have been tried on this head. He has been cupped on the loins—has had vapour baths—he has taken quinine with perseverance, as well as gallic acid and iron in various forms; but as yet nothing has been found to affect the disorder. The hæmorrhage has always ceased on the removal of the cold which produced it, and has recurred with undiminished readiness on the next exposure.

Since the paper was sent in another experiment has been made as to treatment, which I have been allowed to insert. On the 22nd of February, when he was last admitted, Dr. Fuller determined to test the mercurial treatment, of which he had heard favorable reports. At that date, as always during the intermissions, the urine was natural, and the patient, though anæmic and sallow, was without any definite complaint. He was now ordered to take three grains of blue pill, with a quarter of a grain of opium, three times a day.

On the 2nd of March the pill was prescribed twice instead of three times a day, and a quinine draught was ordered also twice a day.

Two days later his gums were affected by the mercury, and the pill was continued only once daily, which sufficed to keep up the soreness of the month.

On March 8th, while taking the mercurial as described, and six grains of quinine daily, he had a shiver, with pain in the back, retraction of the testicles, and retching, but without any change in the appearance of the urine. This was the first time that these symptoms had come on without hæmaturia.

On the next day but one he was attacked in the same way, but now the hæmaturia followed according to his usual experience. He had been confined to the ward. This seizure was the first he had ever experienced in-doors.

On the 14th the mercurial medicine was discontinued.

On the 18th he had a rigor, followed by headache, and the next day by a stitch in the left side and symptoms of pneumonia. He had cough, with expectoration of bloody mucus, without any marked dyspnoea. The left side of the chest was dull on percussion, particularly towards the base. The vocal fremitus could be felt to the bottom of the lung, so that it was clear that the dulness was not due to the presence of fluid, though at one time pleural frictions had been audible. The voice-sounds were bronchial, and some coarse pneumonic crepitation was heard. The patient attributed this attack to his having, as he supposed, caught cold in the hospital chapel. An ammoniated saline draught was given, and afterwards some antimonial wine. It now was found that there was a great excess of urea in the urine, the addition of nitric acid converting the whole into a mass of crystals.

The urea on the 23rd was found to amount to 4·8 per cent., and on the 28th to 4·6 per cent. This peculiarity lasted for nearly a fortnight, the specific gravity ranging from 1024 to 1028. At the same time there was a minute trace of albumen. It is known that this state of urine is the frequent result of pneumonia.

The lung symptoms passed off, but the man grew hollow-visaged and cadaverous; the pulse very feeble and rapid (120—130), the tongue brownish and dry. He wandered in his mind, and then passed into a typhoid condition, lying on his back prostrate and speechless, though he retained a look of intelligence, and would make tremulous attempts to put out his tongue

when requested to do so. The evacuations were passed into the bed. He now, under the action of wine and nourishing diet, mended somewhat, and on the 30th had a sort of misguided activity about him, often trying to get out of bed; the pulse was now very rapid (144), and as feeble as ever; he was still speechless, and somewhat delirious, but could make known his wish to pass his evacuations. From this time under stimulating treatment he slowly improved, and at the same time the amount of urea diminished.

On April 6th he had recovered his usual manner and state of mind, and his pulse and tongue were natural, but he was much emaciated. The urine was now natural in all respects; specific gravity 1016; by the end of the month, under the use of quinine and iron, he was enabled to leave the hospital, weak and thin, but otherwise in his usual state of health.

Owing to the kindness of Dr. George Johnson, I am enabled to give the outline of two similar cases which have come under his observation. Dr. Johnson's notes are as follows:

"George K—, æt. 24, a photographer, living at Chatham, admitted into King's College Hospital under my care, January 7th, 1865. A man of intemperate habits. For three months before his admission he had been subject to attacks of hæmaturia, unattended with pain, and usually excited by a chill. The patient is still in the hospital, and during his stay there the hæmaturia has recurred several times. So long as he remains in bed the urine is free from blood, and does not coagulate by heat or acid. If he sits up and becomes chilled he has a feeling of coldness and general malaise, followed by heat of skin and sometimes by sweating, and the urine now passed has the colour of porter. On microscopic examination numerous tube-casts, apparently composed of disintegrated blood, are visible, with much scattered brown granular matter; few, if any, blood-corpuscles."

"Mr. D—, æt. 43, consulted me on the 19th of January, by the advice of Dr. Woollett, of Monmouth. This gentleman has had several attacks of hæmaturia, induced always by exposure to cold. The first attack, as I learn from Dr. Woollett, was in December, 1862; then on the 7th and 10th of January, 1863.

Two attacks in January, 1864. Again in December, 1864. Three or four attacks since then. When he called on me, in January last, he had the appearance of robust health. His urine was then perfectly normal, as it has always been when free from blood. The following day he went home to Monmouth by rail; on the journey he got a chill, and when he reached home he passed some urine, which he sent back to me. It was deeply tinged with blood, and contained numerous tube-casts, apparently composed of disintegrated blood, with much scattered granular matter of a brownish-red colour. There were few, if any, entire blood-corpuscles. This gentleman always knows when an attack is coming on. He feels cold, languid, and miserable, with a continual tendency to yawn, but he has no pain. The urine now has the blood tinge; that next passed is usually less coloured, and in the course of a few hours the urine has resumed the natural appearance."

Dr. Frederick Cock, of Westbourne Park Terrace, has obliged me with the particulars of a fourth case, which has been more or less under his observation for eleven years.

The patient is a country gentleman, about thirty-two years of age. The complaint began eleven years ago, with an attack of hæmaturia, which lasted several weeks, and then left him free for an interval of more than two years. Since this attack the symptoms have occasionally recurred; last spring there was an attack of unusual severity, since which the patient has been almost free from the complaint. The hæmaturia is always preceded by what is described as a "severe cold"—shivering, headache, nausea, pains in the limbs, and a twinge in the loins on stooping. After these symptoms have lasted for two or three days the urine assumes a dark colour, like London porter; it froths readily, and is highly albuminous, the coagulum occupying half the bulk of the urine in the test-tube. Under the microscope Dr. Cock has found a few uric-acid crystals and a very small quantity of mucus. No blood-corpuscles have ever been detected, but there is a yellowish molecular deposit, apparently the result of their disintegration. The dark colour of the urine generally dimin-

ishes, until in a fortnight or three weeks it has its natural colour and transparency. The albumen diminishes simultaneously, until only a very minute trace remains, which in its turn passes away. The microscopical appearances of the urine in the intervals are natural, excepting that a few uric-acid crystals are generally present.

This gentleman always traces his attacks to cold, and is particularly liable during the prevalence of east winds. He is seized more often in the spring and autumn than in the winter; never in the summer.

He remains very anæmic, and has a slight systolic murmur at the base of the heart, believed to be functional. He has never had ague.

He has been left almost without medical treatment. He is able to take active exercise and to hunt without inconvenience.

As to the pathology of the disorder, the cases are as yet too few to allow much to be said. From the abundance and character of the casts it is clear that the blood comes from the kidneys. From the small size of the cylinders and the rare occurrence of renal epithelium in them, it must be inferred that the blood flows from the Malpighian bodies, while the tubes retain their natural lining. The rapid restoration of the natural characters of the urine, and its total freedom from albumen in the intervals, would seem to suggest that there is no rupture of the vessels. If this be allowed, we must conclude that the disintegration of the blood-corpuscles has taken place within the vessels, and not subsequent to extravasation. We may believe that the impalpable amorphous material may transude without any opening such as would be needed to give exit to the entire corpuscles. Under these circumstances the disease must be regarded rather as connected with the blood than of primarily renal origin. We know that the same state of urine has been observed during typhus, and that it has followed, both in man and animals, the inhalation of arseniuretted hydrogen (Neubauer and Vogel 'On the Urine,' p. 310).

There are some points which the disorder has in common with

ague. The rigors, the yawning and stretching, the epigastric pain, the increase of urea during the attacks, are points of resemblance to the cold stage of an ague fit; but in only one of the four cases had there been ague in its usual form, and then it was obviously distinct from the hæmaturia. The attacks in all the cases were without any periodical tendency, and where the experiment was tried they were unaffected by quinine.

In the present state of our knowledge we must be content to regard the disorder as something *sui generis*, and assign the blood itself as the seat of the primary change.

There is little reason to believe that any treatment can do more than mitigate the effects. It was perfectly evident in the case of M— that the recurrence of the hæmorrhage was not retarded by any of the medicines he took, though sometimes he went for a long time without any attack. The symptoms which followed the use of mercury were not such as to encourage a repetition of the experiment. It will be remembered that while under its action he had, for the first time, an attack without leaving the house. Considering the anæmic state to which these patients are reduced, it would seem unwise to give them a drug of which one effect is to produce that condition. The variable length of the intervals between the attacks—in one instance more than two years—must make us cautious in attributing their absence to medical treatment.