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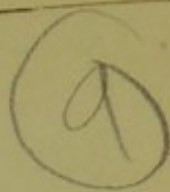
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From the Author

ON



# INTERMITTENT HÆMATURIA;

WITH

REMARKS UPON ITS PATHOLOGY AND  
TREATMENT.

BY

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FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, PROFESSOR IN UNIVERSITY  
COLLEGE, AND OF UNIVERSITY COLLEGE HOSPITAL.

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No more correct idea can be given of the special character of the disease about to be described than by quoting the reply of one of the patients when asked what was the matter with him. His answer was given in these words—"I can't tell you; but each time I get cold hands or cold feet I pass bloody urine, while my urine at other times is perfectly healthy."

In the other case the urinary symptom was not traced so much to the effects of cold as to malarial poisoning; but as it was the one which first fell under my observation, I shall consider it first.

Dr. —, a member of our own profession, after several years' residence in one of the West Indian Islands, in consequence of repeated attacks of intermittent fever, was forced to give up practice and return to England, where for the



first two years he was still liable to occasional outbursts of his old enemy. On one occasion, while consulting me regarding his case, he mentioned what he considered to be a very peculiar symptom, namely, that he occasionally suddenly passed five or six ounces of urine of a dark red or chocolate colour, a symptom which would recur once in twenty-four hours during two or three days, and then as suddenly disappear. Never having before met with such a case, I requested him to send to me, on the next occasion, a specimen of the fluid. In the succeeding November (1861) I received from this gentleman three samples of urine—one passed at 8 a.m., which was clear, pale, of a specific gravity of 1025, of an acid reaction, depositing no lithates, and containing no albumen, being, in fact, normal in every respect. Another quantity, passed at 2 p.m. of the same day, of a dark chocolate-brown colour, opaque, turbid, having a specific gravity of 1032, of an acid reaction, depositing lithates, containing a large quantity of albumen, some sugar, and a large excess of urea (3.6 per cent.). The deposit from this specimen of urine, when examined with the microscope was found to contain nucleated epithelium (Fig. A, 1), some granular cells (Fig. A, 2), and a large quantity of free granules of a brownish-red hæmatin colour, scattered among which were a considerable number of renal tube-casts. The tube-casts presented one or two remarkable peculiarities, namely, that the majority of them were short and broad, and filled chokefull with brown pigment, as represented at Fig. A, 3. Besides these there were a small number of fine, long, pale tube-casts, with only a few granules of dark pigment distributed in them (Fig. A, 4); these looked not at all unlike the renal tubes emptied of their epithelium obtained by scraping a section of fresh kidney. No blood-corpuscles were to be found in this specimen of urine. The third sample of urine sent by the gentleman in question was passed in the evening of the same day, and presented a striking contrast to that just described. It was normal in colour, contained no albumen, deposited a small quantity of ordinary coloured lithates, among which were neither tube-casts nor granular cells. The specific



FIG. A.



- |                               |                               |
|-------------------------------|-------------------------------|
| 1. Nucleated epithelium.      | 3 and 4. Granular tube-casts. |
| 2. Large granular corpuscles. | 5. Mucus-cells.               |
| 6. Free hæmatin and urates.   |                               |

gravity of the liquid was 1021. Its reaction was acid, and its per-centage of urea exactly half (namely, 1·8 per cent.) of that of the preceding specimen. These three different conditions of the urine were certainly very peculiar; for had the morning's specimen alone been brought under the notice of the physician, he could never have dreamt of the existence of any urinary affection. On the other hand, if the single specimen of urine passed four hours later had been submitted to his inspection, he must have come at once to the conclusion that there existed grave organic changes in the renal organs. Whereas neither the one nor the other of these opinions could possibly be correct.

The gentleman alluded to at the time when he passed these urines was labouring under hepatic derangement, being, in fact, slightly jaundiced, as a result, most probably, of the malarial poison from the effects of which, as before said, he had not yet entirely recovered.

The varying conditions of the three urines clearly pointed to intense congestion of the chylopoietic viscera of a transient and periodic character. Suiting the practice to the theory, mercurials and afterwards quinine were taken by this gentle-



man, in order to remove the congestion of the chylopoietic viscera, and check the periodicity of the disease. The results were most favorable, for, although four years have passed away, he has never had a recurrence of these urinary symptoms. I shall now proceed to call attention to the second case.

On the 16th of December, 1864, M. N—, a dark, sallow-complexioned, careworn-looking man was kindly sent to me by my colleague Professor Fox, in consequence of his case presenting unusual characters.

The history of the patient is briefly as follows :—He is a blacksmith by trade, thirty-two years of age, and unmarried. Until two years ago he considered himself perfectly healthy, having always been able to do forge work without either difficulty or inconvenience, having, in fact, been a strong man.

Two years ago he for the first time observed that he occasionally passed urine as dark as brown old ale, while that voided at the preceding and succeeding micturitions possessed the normal colour and transparency.

Twelve months later, that is to say, a year ago, the urine for the first time assumed the colour of blood, a symptom which greatly alarmed him, as it recurred about three times a week during the whole of that winter, except during a fortnight in January, while working in the open air, when it became still more frequent, occurring about once every day.

Sometimes the attack of bloody urine lasted over two micturitions, amounting to a period of from four to five hours. In the spring of last year, as the warm weather advanced, the attacks gradually became less frequent, until from the month of May to September they entirely ceased. In September, however, they reappeared at intervals of about every ten days, the intervals gradually diminishing until a fortnight before he came under my care, when he passed bloody urine every other day, and for the last five days he has passed it every day at irregular hours varying between 10 a.m. and 6 p.m. The quantity usually emitted is about six ounces. The patient further stated that since the commencement of his illness, with the exception of the summer interval, he was



constantly under treatment by various medical men, without receiving the slightest benefit.

On his first visit to me the man brought with him two bottles containing the urine that he passed at 9 a.m. and at 2 p.m. on the previous day. The former sample was clear, transparent, straw-coloured, and normal-looking; the latter a dark purple blood-coloured fluid. On carefully cross-questioning the patient as to the origin of these liquids, he stated that the dark urine was usually passed about an hour after his feeling cold; that the urine did not invariably become clear at the next micturition: and that occasionally it did not reassume its perfectly natural colour until he had emptied his bladder three times. He stated, moreover, that he then felt cold, and that even during the time he was kept in the waiting-room he had passed four ounces perfectly similar to the bloody looking fluid which he had brought with him. He was accordingly requested to go behind the screen and make some more, which he immediately did, and produced about two ounces of a liquid of a dark purple-red colour. As he complained of feeling intensely cold, notwithstanding that he was sitting in front of a large fire, the temperature of the palms of his hands was taken, and found to be only  $60^{\circ}$  Fahr., while the temperature of my own hand was  $95\frac{4}{10}^{\circ}$  Fahr. The temperature of the patient's axilla was also carefully taken with as little disturbance to his dress as was possible; and in spite of his being well clad with warm clothing, it was ascertained to be only  $96\frac{1}{10}^{\circ}$  Fahr., a result which entirely confirmed his statement regarding his sensations of cold. He, moreover, added that he was a Londoner, and had never suffered from ague, the most that could be ascertained on this point being that on some occasions he had felt so cold as to shiver during the night, which shivering was not, however, followed by a true hot stage.

As before mentioned, the man was dark complexioned and had a sallow look; the sallowness, however, appeared to be due to some disturbance of the hepatic functions. He admitted that he was a very bilious subject, but denied having ever had any hepatic affection beyond what might be in-



cluded in the term functional derangement, but this had never at any time amounted to jaundice.

It will be observed that this and the preceding case present many features in common, the only apparent difference being that while the first could be distinctly traced to malarial poison, the second appears to be simply the result of the direct effects of cold acting upon a predisposed constitution. Such, at least, was the theory I formed of the disease; and, accordingly, the ordinary line of treatment recommended in hæmaturia was abandoned, and the plan adopted in the first case had recourse to, a course of treatment which proved most beneficial, for before twenty-four hours had elapsed the disease received a check, and by the end of forty-eight hours it may be said to have completely disappeared, for from that time until now, although fifteen weeks have elapsed, the patient has never had a single recurrence of his urinary symptoms.<sup>1</sup>

The amelioration of the condition of the patient in this case can scarcely, I think, be attributed to anything else than the effect of the treatment, as the diet and other conditions under which he was placed remained entirely unchanged. We cannot even suppose that the weather had anything to do with it, for the temperature of the atmosphere in the last two weeks of December, throughout January, February, and the beginning of March, was often lower than in any of the preceding months of this winter.<sup>2</sup> Moreover, until the very day on which the treatment was commenced the patient's condition had been gradually becoming worse and worse, while, as just said, within twenty-four hours after it was begun the disease had evidently received a check, and within forty-eight the urinary symptoms had entirely disappeared.

<sup>1</sup> The patient was a regular attendant at the hospital during the whole winter months, coming once a week, no matter how cold or wet the day was, up to the time the warm weather set in, when, by permission, he ceased his visits.

<sup>2</sup> The patient was at no time taken into the hospital, but made to come, as already said, once a week, no matter whether the day was wet or dry cold or fine.



At page 756, vol. i (third edition), of Dr. Watson's 'Lectures,' it is mentioned that when quinine, given alone, fails to cure an ague, a few grains of calomel, followed up with quinine, will often entirely check the disease, a fact which rather goes to support the view that even the second case might be due to a modified form of malarial poisoning.

These notes might almost be allowed to end here; but as I consider that the pathology of such cases as have just been described is of great clinical value, I shall say a few words more regarding the condition of the urine, as by so doing it will not only be seen on what grounds I founded my diagnosis, but perhaps aid the labours of some future inquirer, who may have the good fortune to throw more light upon the nature of these cases than the data I have at present at command enable me to do.

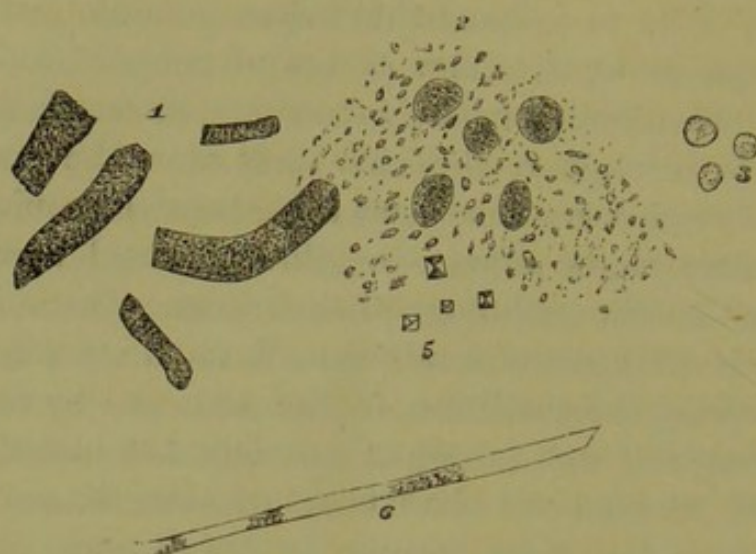
The man was ordered to preserve all the urine he passed during the forty-eight hours after I first saw him, and to put what was passed at each micturition into separate bottles.

On examination it was found that the specimen passed at 8.30 a.m. was normal in colour, devoid of any sediment, six and a half ounces in quantity, acid in reaction, and of a specific gravity of 1010; it contained 1.75 per cent. of urea, traces of sugar, but no albumen.

That passed at 2 p.m. was dark red, almost black-looking, six ounces in quantity, acid in reaction, of a specific gravity of 1017, and on standing deposited a copious precipitate of dark-coloured urate of soda, leaving the supernatant liquid quite clear, and of a fine rich port-wine colour. This urine contained 2.5 per cent. of urea, was highly coagulable by heat and nitric acid, and gave evidences of traces of sugar. On examining the deposit from it under the microscope, although scarcely a single blood-corpuscle was to be found, it contained a great abundance of granular tube-casts (Fig. B, 1), large granular cells (2), free granular matter of a hæmatine colour (4), and among the urates a few octahedral crystals of oxalate of lime (5). It will be seen that this urine presents a striking resemblance, both in its chemical and micro-



FIG. B.



1. Granular tube-casts.
2. Large granular cells.
3. Mucus-corpuscles.

4. Free hæmatin.
5. Oxalate-of-lime crystals.
6. Fine hyaline tube-cast.

scopical character, to that of Dr. —, being of high specific gravity, coagulable by heat and nitric acid; containing a large excess of urea, abundance of granular tube-casts, and scarcely any blood-corpuscles.<sup>1</sup>

The urine passed at 6.30 p.m. was five and a half ounces in quantity, slightly smoky in colour, with a moderate deposit of pale urate of soda, a specific gravity of 1016, and acid reaction; it contained 2 per cent. of urea, and was slightly coagulable by heat and nitric acid. The deposit, when examined by the microscope, was found to contain only a few granular tube-casts, one very long one (Fig. B, 6), with some granules in it; a few mucus-cells, no crystals of oxalate of lime, no blood-corpuscles, and only small collections of pigment scattered among the amorphous urate of soda.

The urine passed at 9 p.m. was about six ounces in quan-

<sup>1</sup> For all practical purposes one may say that there were no blood-corpuscles in the urine, for out of sixteen of the gentlemen attending my practical class only two found any, and even then there were only one or two in the field of the microscope; while, had the case been one of ordinary hæmaturia, the absence of blood-corpuscles would have been the exception, not the rule.



tity, perfectly normal in colour, without any sediment ; had a specific gravity of 1016 ; acid reaction ; contained 1·84 per cent. of urea, and not a trace of albumen.

The urines passed on the following day were all normal in colour except one, namely, that passed at 10 a.m., which was of a slight brownish-red tint ; it deposited a copious sediment, coagulated freely on the application of heat and nitric acid, and contained 2·05 per cent. of urea. In the sediment of this urine were found a number of granular tube-casts, but nothing like the quantity in that of the well-marked specimen. This specimen presented, in fact, the last appearance of the disease, for from then until now the urine has never again become either albuminous or of a dark colour, and only twice, on the 12th and 20th of January, has it deposited any precipitate. On the first occasion the patient suspected a recurrence of his old disease, a suspicion which, fortunately for him, was not verified, for, on testing the urine, it was found to become perfectly transparent on the application of heat, and to be entirely devoid of albumen or tube-casts, the turbidity being simply due to the presence of urate of soda. The second specimen was exactly similar.

There are one or two points regarding the condition of these various urines requiring special notice.

1. The presence of the granular tube-casts clearly points to congestion of the renal organs, but their appearing and disappearing in the course of a few hours at the same time, proves that it was not an ordinary case of renal congestion.

2. The almost total absence of blood-corpuscles, notwithstanding the hæmorrhagic appearance of the urine, stamps the case as being entirely different from ordinary hæmaturia, and shows its resemblance, in this particular, to that variety of non-intermittent hæmaturia in which the contents of the blood-corpuscles alone pass into the urine.

3. It cannot be regarded as a sample of simple inter-mitting albuminuria ; for although the protein substance coagulable by heat and nitric acid has been hitherto spoken of as albumen, it differed very materially from the albumen of



blood-serum in its ready solubility in an excess of acid. In making the analysis it was found necessary to be exceedingly careful with regard to the amount of nitric or acetic acid employed, for after the coagulable point was arrived at the addition of a single drop more of either of these acids instantly redissolved the coagulum, and set the colouring matter free, a circumstance which, taken in conjunction with the uniform diffusion of the pigment and the coagulable matter in the liquid, leads to the conclusion that it was not simply the albumen of the blood-serum, but the hæmato-globulin itself, which was excreted by the kidneys.

4. The case was not one of urobæmaturia, such as I have elsewhere described,<sup>1</sup> for two reasons—first, on account of the urine being coagulable by heat and nitric acid; and, secondly, from the fact of the addition of acids diminishing instead of increasing the dark tint of the urine.

5. The bilious appearance of the patients in both cases would lead to the belief that the attacks were in some way or another connected with the disturbance of the hepatic function, which, at least in one case, was distinctly traceable to malarial poisoning.

6. The copious deposition of urates, as well as the excessive elimination of urea, which takes place during the attack, points to considerable general constitutional disturbance.

Lastly, the transitory condition of the urinary symptoms show that, whatever might be the nature of the disease, the exciting cause could not be in constant operation, unless we admit that it required distinct periods of incubation, as in ague, which we know is liable to assume an almost endless variety of forms. In conclusion, I have only to remark that it is of great clinical importance to be able to make a correct differential diagnosis between cases like the present and those of ordinary hæmaturia, for without it it will be utterly impossible to treat them with much chance of success.

<sup>1</sup> "Course of Lectures on the Urine, and Diseases of the Urinary Organs;" 'Med. Times and Gaz.,' September, 1864.



The last quoted case is, indeed, a striking illustration of the truth of this remark, for, notwithstanding the patient having been at different London hospitals, under the care of men of high professional standing, he failed to obtain relief, in consequence of the orthodox line of treatment laid down for ordinary hæmaturia having been adopted.

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## APPENDIX.

Although many urologists have referred to cases of intermittent hæmaturia, Rayer, as far as I can find, is the only one who has made any special mention of this particular subject; none of the cases which he relates, however, seem to have fallen under his own observation. The cases he alludes to are the following.

CASE 1.—On the 24th November, 1832, a man suffering from diseased heart and ague came into University College Hospital, under the care of Dr. Elliotson. “The singular circumstance, however, in this rare disease was, that when his paroxysms came on he discharged bloody urine . . . . . at first pure blood, and afterwards less and less, and this he said was invariably the case—hæmaturia every time the cold fit came on. This circumstance, however, made no difference in the treatment, and I gave him . . . . . ten grains of sulphate of quinine three times a day till he became perfectly well, so far as his aguish symptoms were concerned. He lost the rigors, he lost the cold fit, and he lost the bloody urine.

“The bloody urine was intermittent, like the rigors; that is an interesting circumstance; I never met with an instance of a similar description. There can be no doubt of its truth, because the man showed his urine, and the blood was abundant in it. He was presently quite well so far as this was



concerned, and the symptoms arising from hypertrophy of the heart were much diminished. Having had aguish fever, however, in the severe form, which he suffers whenever the east wind blows or he is exposed to cold and wet, or commits any error in diet or is guilty of any debauchery, he will be liable to a return of the disease.”<sup>1</sup>

CASE 2.—“M. Gergerés was called to a young man, a captain in the navy, who generally enjoyed good health, but who for two hours had been seized with severe shivering fits, which were followed by great heat; during this period the patient felt a desire to make water, but, instead of urine, he passed a large quantity of blood. A few hours after, an improvement took place, and the patient thought himself cured. On the following day, at the same hour, the same feverish symptoms occurred, accompanied by the elimination of blood. M. Gergerés prescribed an emollient treatment, both internally and externally. The symptoms disappeared again at the same hour as on the first attack. On the third day the same phenomena appeared, with even more violence. From this time, towards the end of the attack, a dose of twenty-five grains of quinine was administered, and this method prevented any return of the symptoms.”<sup>2</sup>

CASE 3.—(The original report of this case I have not been able to refer to.—G. H.) “Stewart<sup>3</sup> had a patient labouring under a periodic hæmaturia, which was unsuccessfully treated antiphlogistically during eight months, and which disappeared after a further three months’ course of quinine and tonics.”

In none of these cases, unfortunately, is any mention made of the chemical constitution or microscopic appearances presented by the fluid passed; and although it is just possible, from the circumstance of Dr. Elliotson employing the term “pure blood,” that the case he describes might be one of the

<sup>1</sup> ‘Lancet,’ 1832, p. 500.

<sup>2</sup> ‘Gazette Médicale de Paris,’ March, 1838, p. 151.

<sup>3</sup> ‘Rayer,’ vol. iii, p. 370.



ordinary forms of intermitting hæmaturia, I think it highly probable that it is the exact counterpart of those I have described, and that the term "pure blood" is due to a mistake arising from the imperfect means of observation existing at that time. We must not forget that the microscope was comparatively little heard of three and thirty years ago.

However, this is a point scarcely worth discussing, for it is to the cases of the future, not to those of the past, that we must look to for the true explanation of the pathology of this disease. And I have little doubt that we shall not require to wait long before the subject is fully elucidated, for, now that some of the more striking features of the urine have been pointed out, such as the presence of granular tube-casts, the absence of blood-corpuscles, the increase in the amount of the urea, &c., plenty of similar cases will soon be diagnosed and reported.







