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ORIGINAL COMMUNICATIONS.

CLINICAL OBSERVATIONS.

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No. III. GRANULAR DEGENERATION OF THE KIDNEY, AND ITS RELATION TO SCROFULA :—PRIMARY AND SECONDARY TOXÆMIA.

In former papers, I have endeavoured to illustrate and enforce the practical importance of the recognition of two great facts with regard to albuminuria: 1. That, as regards the condition of the kidney, albuminuria is, *per se*, simply a sign of congestion; and 2. That as regards the blood, it is a sure indication of a poisoned condition, from non-elimination of excrementitious matter. When we find albumen in the urine, we may reckon with certainty on finding an abnormal amount of urea in the blood. Other poisons also may be present; for example, Dr. Garrod has recently found oxalic acid in the blood of a patient who had albuminuria and toxæmic symptoms during life, and whose kidneys, on dissection, were found to be in an early stage of granular degeneration.¹

The confused association by authors of various symptoms and morbid appearances under the term "*Bright's disease*", is much to be regretted; the more especially, as the precise sense in which even some of the most esteemed employ it, can seldom be discovered. Some seem to insinuate that albuminous urine is an essential symptom of "*Bright's disease*"; others doubt this, or assert the contrary. Some consider fatty degeneration as included under the term: and others restrict it to granular degeneration: again, times without number, we find congested or hyperæmic kidneys described as being in the first stage of "*Bright's disease*"; and Dr. C. J. B. Williams uses the term "*congestive degeneration*" as synonymous with "*Bright's disease*". Dropsy, it may be added, occupies a varying place in the scale of importance with the writers on "*Bright's disease*". I have repeatedly attended young women with sudden suppression of the menses from exposure to cold, in whom

¹ LONDON JOURNAL OF MEDICINE for July, p. 690.

there were headache, convulsions, anasarca, and albuminous urine. These cases of menstrual, secondarily complicated with renal, toxæmia, would be described by many as instances of acute "Bright's disease". In the face of so much discrepancy and confusion, is it not, therefore, unsatisfactory to use a term which most of the authors who currently employ it, shrink from defining?—a term which, from the vague ideas attached to it, obscures the meaning of authors; unless, like Dr. C. J. B. Williams, they take the precaution to state, that they employ it in a special, or restricted sense. To prevent ambiguity, therefore, and for no other reason, in the present and following papers, the term "Bright's disease" will be avoided: and the words albuminuria, granular degeneration, etc. etc., will be used simply as expressive of facts, and without any reference to theory.

By albuminuria, I mean an albuminous condition of the urine: by granular degeneration, I mean that form of cacoplastic transformation which was found in the case about to be detailed—which was seen in the case of scarlatina formerly described—and which is not an ambiguous, but a very easily recognized, change of structure. The albuminuria, *per se*, I look on, *as regards the condition of the kidney, simply as a sign of congestion: as regards the condition of the blood, as a sign of that fluid being surcharged¹ with urea, and possibly with other poisonous sanguineous excrements, or abnormal metamorphoses*—of which the oxalic acid, discovered by Dr. Garrod, is a most interesting illustration. Granular degeneration is a process which, if studied in all its stages, can be easily understood. It is caused by the exudation into and around the tubuli uriniferi of a cacoplastic fluid: this fluid, commonly called *inorganizable lymph*, or *cicatrix tissue* (in virtue of its inherent tendency to contract), causes the tubes to become obliterated, and the atrophy of the renal structure to proceed so far, as often to render it difficult to be seen, while the adventitious tissue conspicuously usurps its place. The sulci, which we find on the surface of granular kidneys, are caused by the contraction of the irregularly deposited cacoplastic lymph. Cirrhosis of the liver originates in the same way. Granular degeneration and cirrhosis are decidedly the result of toxæmia, causing a cacoplastic exudation from the blood: in both, the anatomical changes are effected by the contraction of that exudation.

The subject of toxæmia is so very extensive, and the space which can be afforded to any one theme in a periodical miscellany, is necessarily so limited, that it becomes imperative to treat in a fragmentary manner of topics, which, to do justice to the author and his views, ought to be discussed at length, and in immediate juxtaposition. On the present occasion, all that is proposed, is to add a little to what was formerly said in the first of this series of Clinical Contributions, with regard to scrofula and albuminuria. At p. 462, the following remarks were made: "There is a great proneness to renal congestion in scrofulous children, even when little out of their usual degree of health; this is evidenced by the frequency of albuminuria in them. I have repeatedly found the urine albuminous in the febrile attacks of strumous children: and in a case of tabes mesenterica, with dropsy, which I lately cured (by steady mild

¹ Even normal blood contains traces of urea. DR. GARROD, etc.

purging, cod-liver oil, and syrup of the iodide of iron), the urine, at the commencement of the treatment, was intensely coagulable by heat and nitric acid. In the diseases of children of scrofulous taint, (especially when the skin is harsh and scaly), the urine ought always to be tested for albumen; and, in a large number of cases, it will be found to contain it, but will often cease to do so, on the exhibition of a smart purgative. Dangerous cerebral diseases may thus be very often averted."

That form of toxæmia, to which we give the name of scrofula, is particularly apt to cause granular degeneration of the kidneys. The simple congestion is apt to pass into that more advanced stage of disease, in which there is an exudation of cacoplastic lymph around, and often into, the tubuli uriniferi. Dr. Madden, in his "*Thoughts on Pulmonary Consumption*"—a work of no ordinary merit—in speaking of degeneration of the kidney, says: "The kidneys were found tuberculized only in about one-sixth of Louis' cases. In about a fourth of the whole number, they were redder, and of harder consistence than natural. In one case, these organs had undergone the fatty degeneration. Other observers, Dr. Christison among the number, have noticed the occurrence of granular degeneration of the kidney, during the progress of phthisis pulmonalis; and it is well known, that a scrofulous state of the constitution powerfully predisposes to that urinary disease." (p. 183.)

In assigning to the poison of scrofula, the tendency to induce granular degeneration of the kidney, it must be remembered, that it is not the only blood-disease to which this power belongs. It has already been shown, in the case of L. H. D., formerly described (p. 454), that the poison of scarlatina may originate granular degeneration of the kidney: and this will fall to be more particularly illustrated in future papers. It must also be remembered, that an accidental cause may be the first in the morbid series. For example, drinking rum or whiskey, and exposure to cold, may induce renal congestion, and, as a consequence of this, may result impaired function of the kidney. The blood then becomes imperfectly purified from its excrement, and toxæmic phenomena ensue. As the consequence of congestion, and simultaneously with the constitutional symptoms induced by it, a structural change may take place in the kidney; and this structural change, except in its first stage, can hardly be cured or arrested, though very much may be done to palliate symptoms, and prolong life.

My object in relating the following case, is to show how the toxæmia may not only induce the granular disease, but, when induced, how that structural change of the kidney may itself become a source of additional toxæmia of another kind. We shall see the original or hereditary poison inducing impaired nutrition, and a specific change in the kidney: we shall also see this change in the kidney inducing cerebral and spinal phenomena, such as ordinarily arise from non-elimination of effete matter from the blood. We shall have, therefore, a case in which one group of symptoms were caused by the primary, and another by the secondary toxæmia: and in which, the structural change in the kidney causing the secondary, was the result of the primary toxæmia.

CASE OF H. C. G. On the 21st September, 1846, I was hastily summoned to visit a young gentleman who, I was told, had two hours

previously appeared to be in his usual health, though apparently dying when the messenger left him—in twenty minutes from which time I arrived: the patient was then dead. The mouth was distorted, and the lips quivered convulsively: but there was neither breath nor pulse. I was told that on the previous day (Sunday) he had attended church, and that on the morning of the day of his death, he had appeared to be in his usual state of health. Between eight and nine o'clock, when engaged with his tutor, he became very unwell, and was seized with vomiting. Under the impression that the illness was a "bilious attack", he was made to rest on a sofa, and a dose of four grains of ipecacuanha was administered—as the emetic effects of this medicine had relieved him on former occasions, when he seemed to be similarly affected. He was not, at first, worse than he had often been before; and it was not till an attack of convulsions supervened, that alarm was taken, and that I was sent for: it had been ushered in by a drowsy condition, very naturally ascribed to exhaustion from the vomiting. The illness terminated in death at 11 A.M., within three hours from the first symptoms which he exhibited of being out of his ordinary degree of health. I never saw the patient in life: but Mr. Cooper, of Brentford, his ordinary medical attendant, informed me, that though always weak and ailing a little, yet he had never attended him for any definite or severe symptoms. A coroner's inquest was summoned, and, in accordance with the evidence adduced, the verdict was to the effect that the deceased had died from natural causes. The coroner did not conceive himself justified in putting the county to the expense of an anatomical examination; but the connexions of the diseased wishing to ascertain the cause of death, requested Mr. Cooper and me, to dissect the body: which we did with great care. The following is a copy of the report which we delivered to the relatives.

NOTES OF THE APPEARANCES FOUND ON EXAMINING THE BODY, seventy-two hours after death, on September 24th, 1846.

External Appearance. The surface of the body evinced the following marks of putrefaction:—the face and neck were enormously swelled; the hair was scarcely adherent to the scalp; and the integument was of a mixed green and purple colour, of varied intensity, from the head to the hips; below this, there were large livid patches, mixed with portions exhibiting the ordinary appearances of a recently dead body. From the nose was issuing profusely a foetid and frothy discharge, which seemed to consist of decomposed blood and *pus*—possibly *mucus*. The cavities of the chest and abdomen were greatly distended with gas. The head was observed to be large, and unsymmetrical.

Head. The encephalon generally was soft; the firmest parts were the optic thalami and the pons Varolii. The vessels were greatly distended with blood;—part of this distension, however, being evidently caused by the gases evolved from the contained decomposing blood. The lateral ventricles were distended to more than twice their natural volume by serous fluid. Within the sac of the arachnoid, there was a large quantity of fluid. The brain was carefully searched for an abscess, but no trace of *pus*, nor any abnormal cavity, could be found. The petrous portion of the right temporal bone, when struck with the back of the knife, yielded a hollow sound. This was especially noticed,

by contrasting it with the sound elicited on striking, in the same way, the corresponding part on the left side. The petrous portion of the right temporal bone was also obviously larger than its fellow. The saw cut through it with unnatural ease; and in some parts it yielded to the knife. The bony ridges on the internal surface of the cranium were generally unusually sharp, and in some parts of the anterior of the base, their spiculated feeling was very striking.

Chest. After two ligatures had been applied around the great vessels, the lungs and heart were removed. The lungs filled the whole cavity of the chest, and were in no part adherent to the parietes. The left pulmonary pleura presented posteriorly some loosely adherent flocculi of lymph. Both lungs were gorged with blood, and when cut into, had a solid aspect, and feeling. In one or two parts, there was a crackling elicited by pressure, depending obviously on the gaseous products of the decomposed blood. The heart was quite empty, of a pale and flaccid fibre, and offered very little resistance when torn. The cavities of both pleuræ contained bloody serum. The quantity we estimated at above a pint.

Abdomen. The stomach was empty. The stomach and intestines appeared to be natural. The liver was twice the normal size: it was soft and friable throughout; the left lobe was pale and waxy; the right seemed to be pretty much in the same condition, but was dark in colour, from sanguineous engorgement. The gall-bladder contained a considerable quantity of apparently healthy bile, which by moderate pressure was made to flow into the duodenum. The left kidney had a hard, rough, and granular texture, which when cut into, presented a dirty white appearance. The examination of the right kidney was accidentally omitted.

The CONCLUSIONS to be drawn from the history and post-mortem appearances are:

- 1st. The granular degeneration of the kidney was the result of the scrofula-poison in the blood.
- 2nd. The granular degeneration of the kidney impeded normal sanguineous depuration by that organ, and thereby occasioned secondary toxæmia, from accumulation of excrementitious matter within the blood.
- 3rd. A sudden increase of this secondary toxæmia was the proximate cause of death.
- 4th. The cerebral disease, indicated by symptoms during life, and by lesions found on dissection, was caused partly by the primary, *i. e.*, the scrofulous toxæmia, and partly by the secondary, *i. e.*, the renal toxæmia.

In a subsequent paper, evidence will be given of renal toxæmia proving rapidly fatal by hydrocephalus, coma, and convulsions, before there was time for any structural change to take place in the kidney—at least before anything except sanguineous engorgement could be discovered, upon the most careful examination.

Essex House, Putney, July 1849.