TWO CLINICAL LECTURES ON ALBUMINURIA.

Delivered at Guy's Hospital.

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LECTURE I.—FUNCTIONAL ALBUMINURIA.

THE present lecture is the outcome of an impression that has been slowly condensing in me within the last few years, that functional, physiological, or cyclic albuminuria—whether by one of these or any other name we know the disease—is a condition much less common than has, I think, come to be accepted. I venture to think that there is a tendency in the profession of medicine—I know not if it be the same, or if, indeed, there be the same liability to it in other walks of life—to unconsciously incorporate the experience of others with our own; and thus some of us come to obtain an exaggerated notion of the prevalence of this or that disease. I suppose there are few of us who do not remember to have been painfully humbled when, thinking our experience of a particular disease to have been a fairly extensive one, we have appealed to our notebooks to find that it is but a very small part of what we had supposed it to be.

I think the affection which Dr. Pavy has denominated cyclic albuminuria—meaning by this not any case of intermittent albuminuria, but those in which there is a definite periodicity and some degree of regularity—is a good example of this. So far as I have seen, although cyclic albuminuria is very freely talked about, there are but few cases recorded since those in Dr. Pavy's original paper. I believe we are all trading on Dr. Pavy's cases, confused, it may be, with others of intermittent albuminuria, and no doubt with here and there an added case for particular observers. For myself I may say that, although I have been on the look out for such cases since Dr. Pavy first described them, I have only seen one case that has shown anything like periodicity. I therefore infer that the disease is decidedly rare, and for the present, instead of assuming, as I think we do, that the disease is well known, every such case ought to be recorded. Applying this criticism to myself, I thought it would be worth while to analyse my own observations, conducted now for some years past, on this question of functional albuminuria, and having disposed of that matter in this lecture, I propose to devote the next to one or two other points connected with albuminuria. *In limine*, it may be said that for some years past I have examined for this purpose the urine of such cases as have come to me, in as many individual instances as possible, whether men, women, or children, and in this way I have notes of examinations of some 1,500 individuals. Albumen has been noted in the urine of 272 of these, that is, in about 20 per cent. of all cases that have been examined. The various cases fall into the following groups:

Post-scarlatinal and acute nephritis	...	17
Chronic parenchymatous nephritis	...	30
Albuminuria with phthisis	...	8
The granular kidney	...	60
Congestive albuminuria	...	7
Secondary albuminuria—cardiac, etc.	...	34
From calculus in the kidney	...	12
Pyelitic albuminuria	...	7
Pyrexial albuminuria	...	15
Diphtheritic albuminuria	...	13
Acute alcoholic albuminuria	...	5
The albuminuria of anæmia	...	5
With glycosuria	...	8
With hæmaturia	...	7
Albuminuria without obvious disease	...	39
Undetermined	...	5

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Many of these headings may be allowed to explain themselves; others require a note of explanation. The first of these is the albuminuria that so frequently goes with phthisis. Many of such are due to lardaceous disease and a consecutive chronic parenchy-

matous nephritis; others, less frequent, are due to tubercular disease of the kidney, and causes such as this require no comment. But some are thought to be dependent upon some degenerative changes in the epithelial elements of the kidney from disease of and deficient action in the lung; and if this explanation be in any way true, then the change may possess an interest of its own, to which special attention will be directed presently.

As regards what I have called congestive albuminuria, all secondary albuminurias are of course congestive; but by no means uncommon is a group of cases where a bulky man or woman complains of a certain amount of ill health, and it is found that they eat and drink too much, they take no exercise, very possibly have gouty antecedents, they have a congested state of the capillaries of the face, short breath, and are fat and unhealthy looking. The urine of such as these is often of high specific gravity, and contains a little albumen. Give these people periodical purges, diet them, and make them live altogether more according to natural law, and the albumen disappears. It is impossible to call these cases nephritis, and if this were the place I would make them plead for the continued use of the word "congestion," which, although it is no doubt much abused, is not without its legitimate place in the nomenclature of pathological processes. But it is only fair to say in passing that an albuminuria of this kind is perhaps equally able to bear the construction, that it is itself due to, and affords an argument for the existence of a functional albuminuria.

Of pyelitic albuminuria I will only say that one might be surprised to find how much albumen a pyelitis may produce in the urine. The albuminuria of pyrexia and that of diphtheria are well known; the former has a present interest, because it may very possibly be a functional condition. Acute alcoholic albuminuria is another group of the same kind, and of which I have seen several cases. The last that I remember was a man whom I saw with my friend Mr. Wornum. He was in a semicomatose condition from morphine and whisky, and his urine was nearly solid when boiled, from the albumen that it contained. He was vigilantly nursed, and his allowance of alcohol much curtailed, and within a very few days the albumen had all disappeared from the urine. These, too, are cases that lend themselves to either argument; for while they admit of the hypothesis that there is an acute congestion of the kidney, they equally well allow of the view that arrest of the natural metabolic processes has been at work, and that the albumen arises therefrom. The albuminuria of the anæmic in like manner. Many of us must have met with cases of this sort, where the anæmia has preceded the albuminuria, and the visceral conditions in anæmia are such that abnormal transformations of various kinds might readily explain the appearance of albumen in the urine.

Lastly, there are the cases of albuminuria with glycosuria. These have been explained by the injury done to the epithelial coating of the secreting structure by the passage of large quantities of water. This may be the correct interpretation of some cases, but, to my mind, it is too mechanical to account for the frequency with which uric acid, glycosuric, and albumen storms run together or alternate with each other. It seems, therefore, that if the various groups of cases due to acknowledged disease be appealed to, a large body of evidence may be adduced to show the reasonableness of the idea that functional albuminuria is a common occurrence.

But such cases as those just alluded to are not those, so far as I know, that have been appealed to in support of the existence of a functional albuminuria; so we must now turn to those other cases of albuminuria which cannot, in even this restricted sense, be said for certain to be due to disease of the kidney, and from which the main argument is drawn. My cases number in all thirty-nine, twenty-six males and thirteen females, twenty-seven being under 30 and five others under 40. I think there is something in this disproportion between males and females. Excess of mucus in women sometimes gives a little trouble. In many such cases there is a doubt whether there may not be a minute trace of albumen, but no distinct ring or cloud is produced by the tests for serum albumen, and I always pass these by as common occurrences in female urine, and a part of this excess of mucus. The observations that have been made vary considerably for each case. In as many cases as possible when albumen has been present in the urine I have written to the medical man, or occasionally had specimens of the morning urine sent to me for several days running. In nearly all cases—thirty-two out of thirty-nine—it was quite temporary, and in most it had disappeared within

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forty-eight hours or sooner. In looking over my cases these points strike me: that two probably find an explanation in an excess of oxalates in the urine; in two others—and I am sure I have seen others of a similar kind—the urine was highly concentrated, but precipitated a quantity of albumen as well as crystals of nitrate of urea. This is an important point in treatment, for many people, and children in particular, do not get nearly enough fluid in the twenty-four hours, and are out of health in consequence. This condition is allied to the temporary albuminuria of gouty people, and also to the congestive group already mentioned. In another case the earlier history was one of hæmoglobinuria, and here, again, I think that the one case may serve to illustrate a group. This young fellow, aged 22, was reported by his medical man to have had an attack of hæmoglobinuria before I saw him, and one of his brothers had had a similar attack. He came under my notice for intermittent albuminuria, and it is not unreasonable to suppose that the latter may have been a modified form of its earlier ailment. Then come the cases in which the urine of women becomes faintly albuminous from leucorrhœal discharges, and of males in like manner from admixture with fluids from the genital passages, either seminal or prostatic. In eight cases this holds good, and I think that Dr. Moxon's observations and inferences in this field are true. Then there is another large group of cases (seventeen in number) associated with a markedly neurotic temperament. This is no explanation; nevertheless I was struck, as I looked over my notes, to see how, with no bias and no idea of definite purpose at the time the notes were made, it is stated that the patient is highly nervous, or has betrayed some pronounced fault of nervous action, and this, I think, most so in those cases which have proved the most typical cases of intermittent albuminuria. For instance, a young married lady, aged 30, whom I saw some six years ago suffered badly from headache, and was a most difficult person to deal with by reason of the nervous excitement that possessed her. All these years she has gone on, at one time passing much albumen, at another, perhaps, only a trace. And this variability has been unaccompanied by any corresponding changes in her general health. The albuminuria seemed so erratic that some urine was at one time drawn off by catheter to prevent the possibility of mistake, and it was full of albumen. I could not but think in the first instance that she had Bright's disease, and I remember well that her husband came and had a long talk on this matter. He quietly intimated that he thought my opinion worth little, for either he or some close relative, I forget now which, had been condemned years ago in like manner by Senator, Owen Rees, and others, and was yet alive. No doubt if he thinks at all on the matter he is now thinking still less of "the doctor," for his prognosis was decidedly superior to mine, his wife being, at any rate, quite recently still alive. Another case is that of a young lady of 14 or 15, who has suffered from convulsive attacks in earlier years, and who without doubt is a most nervous child. For several years she has been subject to attacks of intermittent albuminuria, the albumen being for the most part present at night, and not in the morning. To this case, then, one might apply the term "cyclic," although to do so does not in this case help much, for as much might be said of many a peripatetic albuminuric. Another case was a pale neurotic, who stammered, aged 16; another, a male, aged 25, terribly neurotic, with severe attacks of colic, which, because of albumen in the urine, I at one time thought must be a renal pain, but ultimately felt quite uncertain, the individual neurosis was so pronounced. Another was a female, aged 43, with some symptoms of Graves's disease; another woman suffered from that disease in a pronounced form, and passed at one time much albumen, at another very little, but much or little it all disappeared as she improved in health, as she did very conspicuously. Then there is the case of an exceedingly neurotic girl of 13; a male of 17; a male of 14, with a history of excess of work, worry, and alcohol, and who had had intermittent albuminuria for a year past, sometimes passing little, sometimes much; one was a case of general paralysis.

What the exact meaning of this association of the neurotic temperament with albuminuria may be, and in what way the symptom is produced are questions difficult to answer. Several suggestions might be made. It is possible that some may be oxaluric from a neurasthenic dyspepsia. It is possible that there might occur some visceral flux, comparable to that which takes place and is so well known about the surface of the head and neck and hands of the neurotic woman. I will even go further and say it is probable that surface and deep parts suffer together under such circumstances; and it would seem not unlikely that a

condition which subjects the circulation of the skin to alterations so rapid as to determine an instantaneous sweating, as is the case in many of these neurotics, would, if the viscera suffer in any similar fashion, be a cause of some temporary stress to them. And I suppose that it must have been some such temporary flux as this, although probably produced by more mechanical means, that led, or leads, to the temporary albuminurias to which attention was first prominently drawn by Dr. George Johnson, where this symptom is produced by sudden and violent exertion and by cold bathing.

But within this group of neurotic albuminurias not only are there oxalurics and such cases as I have just told of, but there are cases where the abnormal constituent is derived from the urinary passages. Some people have described a disease "spermatorrhœa." There is no such malady. What has been thus called is a physiological condition in the chaste; in some more, in some less, and more or less, in some measure, depending on the "tone" of the individual, but present more or less in all healthy, continent men; it is only a disease in the mind of the quack; but I have no doubt that candidates who have been working hard for the public examinations—many anxious nervous men, many whose nervous structures are easily excited to discharge themselves—supply in this manner a proportion of these functional albuminurias. And to show that this is no mere visionary idea, I may mention that not very long ago a man was asking my opinion on this very point. He was one of first-rate intellectual power, and engaged in hard intellectual work, and he came because, and told me spontaneously of the fact, that as sure as he devotes himself to an afternoon of an original work, so surely will he have a seminal emission during his night's sleep. He not knowing the physiology of the matter was worried about it, but surely the reading of the fact was this: that when his brain went to work the entire nervous system participated in the excitement, and that when at last the upper centres slept the lower, the subordinate ones, remained active, or may be passed into the state of dreaming. This was not disease; it might have indicated an overwrought or a too easily fatigued nervous system, but nothing more.

But however all this may be, this association of some fault of nervous action—this state of nervous erethism, shall we call it?—with the production of an albuminuria that is not due to nephritis, is a feature to my mind of great interest, because it harmonises with the observations made years ago by Dr. Clifford Allbutt, and the truth of which many can supply evidence of in their own experience, that the granular kidney seems sometimes to owe its origin, or date its existence from some period of anxiety or worry. I may also refer to the observations of Dr. Broadbent on similar lines that an increase of tension of the pulse is to be met with in certain states of nervous excitement, in hysteria, and other diseases of the brain and spinal cord. Observations of this kind seem to suggest that the temporary albuminuria of the neurotic may possibly furnish examples of the beginnings of insidious changes in the kidney, which however innocent at their commencement, if unchecked, may have a serious, even if remote, ending.

Such, then, have been, in my experience, the main groups of "functional" albuminuria; and I may remark in passing, that Dr. Ralfe also has observed that many of these cases are found in nervous subjects. But there are a few exceptional cases—I should say they were quite the exception—where the health is apparently perfect. Such a case I had in Guy's a few years ago. A young man of about 21 was sent to me by Mr. Watts Parkinson, of Wimborne, because he had been refused admission to a bank on account of albuminuria. He appeared to be in perfect health, but no doubt the urine contained a small quantity of albumen. I took him into the hospital for further observation, thinking that here there might be a "cyclic" case. He was in the hospital several weeks, and his urine throughout contained albumen, but except this single feature there was no other fault to be discovered. I had some urine from this case the other day, and it is still albuminous; and he tells me that two years ago he was examined and it was so then, but that the doctor said the amount was so small that it was hardly appreciable. He was in Guy's Hospital in 1886, and it seems likely that the albuminuria has persisted since that date. He tells me that he is still in the best of health.

I do not pretend to explain such cases; I only say that they are quite uncommon; but I allude to them here because, admitting as I do that they cannot be said to be due to nephritis, they allow me to demonstrate the weakness of the argument in favour of functional albuminuria, that is, based upon them.

It is urged that these cases go on too long to be due to

structural change. But, admitting the difficulty, the argument is none the less a weak one, as the following case will show: A youth aged 16 had had scarlatina at the age of 7. It was a mild attack, and no dropsy followed; but within three to four months afterwards albumen was found in the urine in some quantity, and, with some variations in this latter respect, so it has continued ever since. He was seen in the early stages of the disease by Dr. Heslop, of Birmingham, and under his directions was kept on a milk diet for six months without any appreciable good accruing, and two years later Sir William Gull, who was consulted, was inclined to look unfavourably on the boy's future. He had of late been at Charterhouse, and, having had a cold there and lost ten pounds in weight, he was sent to me for an opinion upon his prospects and on what was to be done with him. I found a boy to all outward seeming in perfect health; his heart was quite natural; his pulse not hard; and his urine, although it contained a quantity of albumen, was yet of specific gravity 1022, and I could find no casts.

Now, with the history of scarlatina that existed here and the appearance of albumen a short time afterwards, I cannot think that the disease can be anything else than a nephritis, notwithstanding that the boy still seemed in perfect health. And, as I peer into the mists of my patient's future, I think I see a slowly-creeping parenchymatous nephritis nibbling up his margin—probably, as I think, a disease of patches, leaving considerable portions of the organ free and structurally sound. But, by-and-bye, the margin consumed, his capital account will be so restricted that his establishment will be reduced; and then the pinch of poverty will not only be felt within but become evident to those around him. Who does not know this? Call it what you like—"compensation" or what not—for brain, heart, lungs, liver, kidneys, the same rule applies, and most, if not all, of us have a margin, the possession of which adequately explains the absence of symptoms in so many cases of so many diseases for long periods.

Nor would I retire from the position that this boy has a nephritis even if the albuminuria should ultimately disappear; for why should not the kidney grow out of its even chronic inflammations, just as the skin grows out of its scars, but takes an unconscionably long time about it? Indeed, I think that this must be so from the long time that albuminuria will persist sometimes and then disappear.

And here I would note two other occasional features of Bright's disease, which may well make us cautious in predicting its absence: First, the change of clinical type that is by no means uncommon in children, both in acute and chronic disease. I think that the course or clinical type of the various forms of nephritis is perhaps more regular in adults; but in childhood, at any rate, it is not so very unusual to find acute nephritis run its course without any dropsy from beginning to end; and perhaps less common to find chronic nephritis where no one would have suspected renal disease had the urine not been examined. I have seen two very remarkable cases of this kind, but I shall give them in detail in the next lecture when I come to speak of the vagaries of renal disease. On the other hand, I have met with two cases of chronic parenchymatous nephritis associated with dropsy in children of 4 or 5 years of age, where the disease, remaining stationary for some months, and the child's general condition having even degenerated, and when we had even begun to give up hope, a turn occurred, and the symptoms disappeared so rapidly that I was compelled to ask myself how it was possible for any advanced nephritis to exist such as I had supposed. This question has, indeed, an interest apart from the one of albuminuria, for the matter of treatment is to some degree dependent upon the doubts to which it gives rise.

But I would not dismiss the subject quite yet, for there are facts which do admit of the explanation implied in the term "functional" albuminuria, although I am far from thinking that they admit of no other. The curious intermission in the output of albumen is one of these. The suddenness with which albumen will come and go is such that one may well find a difficulty in attributing it to local conditions, and least of all to anything inflammatory, for no inflammation *per se* could explain it. Then I have already alluded to the occasional occurrence of an alternation of albumen storms of this kind with uric acid storms; and I am not sure that the frequent coexistence of albuminuria and glycosuria does not point in the same direction. Such cases do rather suggest the sudden unlocking of abnormal metabolic processes, which to some minds might seem to afford the

better interpretation. But, on the other hand, intermission of the output of albumen is a well-known feature in many a pronounced case of nephritis; and, if we consider the matter, intermission is not worth much as an evidence against the existence of nephritis, for most diseases, even those due to structural change, are remittent more or less. There are oscillations in pathological processes and formations, as much as there are in the normal body heat, for example, notwithstanding that our power of gauging them is less or *nil*; as much as there are intermissions of all visceral function. All Nature sleeps or ebbs and flows, and pathology, although abnormal, is yet within the bounds of life. And it is no unphysiological vision this of the diseased kidney with its times of sleep and activity, be they but faradaic current-like, and these oscillations of activity and repose must be determined immediately by the local circulatory condition which in its turn depends upon that of the entire organism.

Such, then, are some of the arguments for and against a physiological albuminuria. To sum up: in the various ways I have mentioned, through congestion of the viscera, over-concentration of the urine, oxaluria, hæmoglobinuria, the admixture of albuminous products in the lower passages, after the urine has passed the secreting structure—and how much albumen may thus be exuded let many a case of pyelitis bear witness—a large proportion of the cases of albuminuria "adolescent," "functional," "physiological," by whatever name we know it—comes about. Some of these, and most of the remainder, are included in another group which I will call the albuminuria of the neurotic, the direct cause of which is open to question, but which, if on the one hand they can be attributed to functional conditions of no great moment to the health of the individual, on the other are equally well explicable by the disturbed conditions of the circulation which have been brought about by nervous influence. And such conditions may be but the first commencement of chronic disease, for cases are not wanting to suggest that this is really the case in some instances.

In my experience the few other cases of intermittent albuminuria that I have seen have been so persistent that there seems to me sufficient ground for their being regarded with grave suspicion as cases of actual nephritis.

My rule of practice, therefore, is this: if a case presents itself for examination, and albumen be found in the urine, it is a case for further investigation. If it be in a young person, and the observation has been made on the early morning urine, the albumen will probably have disappeared at the next examination, or within a very short time, and it is a condition of no importance. If the albuminuria is in any quantity, and its presence persistent or its reappearance frequent, it must be regarded, to use Dr. Gairdner's apt expression, as a danger signal to be watched, and for my own part I believe that some of these cases, at any rate, are due to an irregularly distributed nephritis.

On the whole, I consider that the terms "functional" and "physiological" have little warrant when applied to albuminuria, and ought to be discarded, but that "intermittent" might well be retained; for although intermittency is by no means wholly absent in cases of pronounced nephritis, it may serve to distinguish a group of cases about which it may still be said that some uncertainty exists.

One word about tests. During the last few years I have habitually pitted nitric acid against picric acid, and also against ferrocyanide of potassium and citric acid. Of late I have discarded picric acid because of the frequency with which it causes a difficulty with the administration of quinine; although I think that it is the reagent of the three which makes most show when the albumen is in minute quantities only. Of the other two, notwithstanding that I have steadily investigated this question ever since it was first mooted, I can only find one case in my notebooks in which, albumen being present, I have been able to detect it by the ferrocyanide, and not by cold nitric acid. With this one exception out of hundreds of cases, I have never failed to obtain a distinct reaction with nitric acid when I have got it with the ferrocyanide. And I think that often the film of albumen at the junction of the nitric acid and urine was the more decided of the two. Nothing better than cold nitric acid and heat can be requisite for home purposes, and for travelling I always take Dr. Pavy's pellets of ferrocyanide of potassium and citric acid. They are very delicate, and are free from any noteworthy objection.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The date of the annual dinner of the above society at the Criterion has been postponed to Wednesday, June 11th, at 7 for 7.30 P.M.