CLINICAL LECTURE

ON

CHRONIC BRIGHT'S DISEASE, WITH
CONTRACTED KIDNEY

(ARTERIO-CAPILLARY FIBROSIS).*

Delivered at Guy's Hospital, June 6th, 1872.

By SIR WILLIAM GULL, BART., M.D., D.C.L.,

Physician Extraordinary to the Queen; Consulting Physician to Guy's Hospital.

[From Notes by MR. HENRY CLARKE.]

It is the facts of the early stage of the disease in some cases which amply demonstrate the insignificant part which the morbid state of the kidney, when present at this stage, may then play. I repeat the early stage in some cases; for a further and greater difficulty in the due appreciation of this morbid state arises from the fact that the fibroid changes often come on early, and advance far in the kidneys, before other parts are very much affected. Still it is to be remarked that when this is so the renal change is of precisely the same nature, and has the same seat, so far as the several tissues are concerned, as when it occurs early in the capillaries elsewhere. That is, I ought to add, if the disease be the one under discussion; since, as I have before stated, there is a local as well as a constitutional fibroid change of the kidneys. And this brings me to the most important confirmatory fact, showing that mere renal destruction does not produce the state we are discussing. Hitherto it has been assumed, and generally admitted, that chronic Bright's disease, with contracted kidney, has always essentially a local origin, and is limited to the kidney in its beginnings, and that the changes in the heart and arterial system are the natural and proper sequelæ of imperfectly depurated blood. Dr. Bright says, speaking of the changes in the heart: "The most ready explanation appears to be that the quality of the blood is altered by the kidney disease. The blood in consequence affects the minute and capillary circulation so as to render greater action necessary to force it through the vascular system." This explanation has been most generally accepted since Bright's time. Dr. George Johnson, to whom we are indebted for much valuable information on renal pathology, fully endorses this opinion, and maintains that there exists a corresponding hypertrophy of the muscular coats of the capillaries compensatory of the cardiac hypertrophy, which acts as a stopcock on the minuter vessels to hinder the afflux of the unwholesome blood to the tissues.

I shall presently have to speak of this change in the smaller arteries (arterioles) and capillaries, and to assert that probably they are not hypertrophied, and that the physiological purpose here mentioned is not founded in fact. But first, as to the effect of imperfectly depurated blood—uræmia—on the heart. It seems to have been too readily assumed, in accordance with an experiment by the late Dr. John Reid, which showed that during asphyxia there is an increased pressure on the arterial walls, that a similar state of arterial tension occurs if the blood be imperfectly depurated by the kidneys, and that, this state of tension being continued, hypertrophy of the heart is the result. But is the effect of blood imperfectly depurated by the kidneys that which is thus asserted? Dr. Wilks mentions that the heart is free from hypertrophy in many cases of large white kidney. Dr. Dickinson says that simple hypertrophy of the left ventricle is rarely associated with any form of renal disease, except granular degeneration.

Dr. Grainger Stewart found the heart hypertrophied in only about four per cent. of the cases of lardaceous disease of the kidney. To these facts might be added others of a similar kind, such as scrofulous and cystic degeneration of the kidneys. Many of these forms of renal disease are slow in their progress and destructive of the renal function, and they often occur at that period of life when hypertrophy would be readily produced to meet any impediment to the systemic circulation, and yet it does not occur.

A full consideration of all the circumstances makes it, in fact, more than doubtful whether mere defective renal excretion is a sufficient

cause of cardiac hypertrophy. It may, perhaps, be objected that the hypertrophy may still depend upon some particular form of renal degeneration. In this, Dr. Sutton and myself are disposed entirely to concur, but not in the sense generally admitted. It is, we believe, when the fibroid change in the kidneys is part and parcel of a fibroid change in the capillaries of the body generally, that the cardiac hypertrophy occurs. Though associated with the renal disease, the hypertrophy is not produced by it. To prove how little mere fibroid atrophy of the kidneys, when a local affection, can produce the cardiac and other changes usually attributed to it, I might quote cases of such change in the kidneys in young subjects, in whom, however, after death, the heart was not thickened. I might refer to cases also given me by my friend Dr. Moxon; but I prefer on the present occasion to draw attention to one of such cases recorded by Dr. Murchison in the *Transactions of the Pathological Society*, vol. xxii. And I do this with the more confidence, because in all its important details it corresponds with what I have myself observed to occur from time to time in young subjects of either sex, and is not brought forward by Dr. Murchison in reference to this subject at all.

Walter F., aged 18, was admitted into Middlesex Hospital May 9th, and died May 13th, 1871. His father, mother, brother, and sister were alive and well. There had been no more in the family. Ten days before admission to the hospital he was seized rather suddenly with pain at the pit of the stomach, palpitations, and dyspnoea on exertion. Two hours previously he had carried a heavy tray of plates fifty yards, and had experienced no inconvenience at the time, though he attributed the attack to this cause. After this he lost appetite, and died on the 13th of the month, four days after admission. The body was well-nourished, and showed no signs of chronic disease, and he sank apparently from uræmia. The urine drawn off by a catheter on the day of his admission was limpid and colourless like water. Its specific gravity was 1007. It contained phosphates, and a decided though small trace of albumen. The apex of the heart beat between the fifth and sixth ribs rather tumultuously; the transverse dulness did not exceed an inch and three quarters. On a *post mortem* examination the "*heart and blood-vessels were healthy.*" "The only organs diseased," says Dr. Murchison, "were the kidneys, both of which were extremely small; the right weighing one ounce and a quarter, and the left three quarters of an ounce. On section, they had an uniform, pale, firm, tissue, which, on microscopic examination, showed very much the same characters as those of an ordinary contracted granular kidney."

I desire to show from this case, as I could from others of a similar kind, that in young subjects, renal degeneration from local fibroid changes in the kidney may lead to a fatal issue through defective excretion, without any hypertrophy of the heart being produced. If defective renal excretion alone led to arterial tension, as supposed, it is highly probable that, if it occurred in a young subject, in whom the nutritive conditions are active, it would, *à fortiori*, lead to cardiac hypertrophy. It may be objected, that the course of the case was too short for this result; but Dr. Murchison says, "Whatever view be taken of the renal lesion, it is quite clear that it had existed a long time prior to death." It would thus appear that fibroid renal disease alone is not a sufficient cause of cardiac hypertrophy. In the case here recorded, the pale and light urine was indicative of extreme renal degeneration. The blood was so imperfectly depurated as to cause a fatal issue. The course of the case must have been chronic; and yet the heart was entirely free from hypertrophy. But whilst, on the one hand, the heart may remain free from hypertrophy, in the long continued presence of blood so imperfectly depurated by the kidneys as at length to become fatal; so, on the other hand, daily experience shows that, at the period of life when the general fibroid cachexia is most common, cardiac hypertrophy begins and advances to its extreme limits, whilst the morbid changes in the kidney are indistinct or early; the kidneys being no more than coarsely granular, if obviously affected at all. In illustration, I might direct attention to the frequent occurrence of death by ingravescent apoplexy, at the age of from forty-five to fifty years, where the left ventricle of the heart is often extremely thickened, but the kidneys still unaffected, or, in the early stage of fibroid change, coarsely granular.

The observations which my friend Dr. Sutton has made upon the arterioles and capillaries, afford evidence that in this form of Bright's disease there is a more or less general alteration of the smaller arteries (arterioles) and capillaries throughout the body. To begin with the kidneys themselves, it would appear, in accordance with the views of many other observers, among whom I ought chiefly to name Dr. Dickinson, that the morbid change alluded to begins in the intertubular tissues, and principally in and around the smaller arteries and capillaries. The vascular coats are altered and thickened by the formation of a fibroid or hyalin-fibroid substance. This change affects the tunica

* Concluded from page 674 of last number.

intima and the external tunic of the vessels, whilst the muscular coat presents various appearances.

Dr. George Johnson has expressed the opinion that the alteration in the muscular coat is simply one of hypertrophy, and is due to a continued stimulus in the vessels to meet the increased action of the heart, according to the views above quoted. Dr. Beale, who has referred to this matter, thinks, with ourselves, that the thickening of the vessels has been too hastily assumed to be one of hypertrophy. Dr. Beale's views on this part of the subject—I mean as regards the vascular changes in the kidneys—are entirely in accordance with what has been seen both by Dr. Sutton and myself. We have found the muscular nuclei often indistinct, and in some cases hardly to be recognised; and, although there may be an appearance of hypertrophy in some parts of a vessel, it is, as Dr. Beale states, associated with great change and degeneration of the normal tissue in adjacent parts. In confirmation of this, Dr. Beale goes on to say (Dr. Beale *On Kidney-Diseases*, pages 71-72): "The new tissue added is completely destitute of the properties characteristic of a healthy structure. It is true that we speak of *hypertrophy* of the muscular coat of the intestine and of the bladder, although the tissue may have lost all contractile power; but it is obvious that the word *hypertrophy* is inapplicable, and ought to be restricted to those cases in which there is not only increased bulk but an increased development of a tissue without impairment of function. In *hypertrophy* of the heart and of the muscles of the limbs, there is increased formation of healthy muscular tissue, and a corresponding increase of muscular power; but in the case of these thickened arteries, thickened bladder, intestine, etc., there is an increase of substance depending upon the formation of an abnormal tissue with impaired action or *loss of healthy function* altogether. In the case of the thickened arterial coats there is an increased bulk with altered structure, not simply increased bulk without change in structure (hypertrophy). Careful observation leads me to remark, in the first place, that the muscular fibre-cells are much less distinct than in the normal state. The oval nuclei are to be readily distinguished, and are often increased in size and number, but the contractile tissue has degenerated into mere fibrous tissue, which possesses no contractile power whatever. Secondly, the connective tissue external to the muscular fibre-cells is often enormously thickened, and all indications of the delicate nerve-fibres, which ramify in this situation in health, are lost. Thirdly, the calibre of the small arteries is considerably reduced, partly perhaps from deposit taking place internal to and amongst the muscular fibre-cells; partly to the reduced quantity of blood traversing them, but mainly to the increased deposition of new material externally in what was the areolar coat of the vessel."

So far, therefore, as the vascular morbid changes in the kidney go, there is some unanimity amongst observers as to their character, and there is further some agreement as to their being primary and not secondary to morbid changes in the secreting epithelium, as was supposed by Dr. Bright, and is now maintained by Dr. G. Johnson. The early change in the renal epithelium, upon which so much stress has been laid, appears to be largely, if not entirely, due to passive transudation from the vessels, in the act of dying, since similar or even identical appearances are common in the renal epithelium in kidneys otherwise healthy. It is certainly by no means confined to Bright's disease; and it is usual to find it in kidneys which present no signs of lesion, except merely mechanical venous congestion.

We believe that the changes in the secreting epithelium will be found to be secondary to the intertubular changes around the vessels, and not, as Dr. G. Johnson believes, primary and essential. This view is confirmed by the condition of the capillaries in other organs. In the lungs, in the stomach, in the skin, in the spleen, in the heart, in the retina, and in the membranes of the brain, the arterioles and capillaries have been found in an abnormal state, from a formation of fibroid or hyalin-fibroid substance similar to that which occurs in the arterioles of the kidney. This morbid change in the vascular system, more or less throughout the body, varies much, however, in different cases, both as to its prevailing extent in any organ, and as to the organ primarily or chiefly affected by it. In some cases, and in probably the great majority, the kidneys are much altered, whilst the heart is at the same time hypertrophied, and the minute arteries and capillaries are proportionately thickened. In others the kidneys may be but little affected, whilst the heart is much hypertrophied, the systemic arteries and capillaries being at the same time thickened by fibroid change.

It is this wide-spread change in the vessels, together with a tendency to atrophy of the surrounding structures, which constitutes, we believe, the essential pathology of "chronic Bright's disease with contracted kidney."

It is a change, as before remarked, which occurs chiefly at or after the middle period of life. And yet the age of a patient is not com-

monly to be estimated by years. Hereditary predisposition, habits of life, and other circumstances which may lower the vitality of the tissues may induce at a much earlier period than forty-five conditions which do not usually supervene till many years later.

The conclusions at which Dr. Sutton and myself have arrived, are briefly these. 1. That there is a diseased state coming on about the middle period of life, which is characterised by a morbid formation of fibroid or hyalin-fibroid tissue in the arterioles and capillaries. 2. That this is accompanied with atrophy of the adjacent tissues in varying degrees. 3. That this morbid change commonly begins in the kidneys, but may begin primarily in other organs. 4. That the contraction and atrophy of the kidneys is not a cause of the disease, but only part and parcel of the general morbid state. 5. That hypertrophy of the heart is due to changes in the arterioles and capillaries, whereby their elasticity is diminished and so the blood retarded. It is not due to a morbid condition of the blood itself. 6. That the blood may be fatally affected by disease of the kidneys, without producing any change in the heart, provided the morbid condition of the vessels alluded to is absent. 7. That the causes which lead to these vascular changes are not yet fully elucidated. 8. That they have an alliance with senile conditions, though probably they are in their nature distinct.

If we turn to the therapeutical bearings of this subject, the discussion of its true pathology does not lessen in importance. At the present time there is a dominant idea in respect of chronic Bright's disease with contracted kidney, that the various functional disorders and lesions which occur in its course are chiefly, if not entirely, connected with a *matæries morbi* in the blood, to which such disorders and lesions are chiefly referrible. The therapeutics of the day are largely directed according to this idea. Like most theories respecting the *matæries morbi* of different diseases, whether we regard the elimination of the poison of cholera, the neutralisation of an acid in the blood in rheumatism, the destruction of it by colchicum in gout, or the antidote to some septic poison in fever, the theory that all or most of the symptoms in chronic Bright's disease are due to uræmia is frequently fraught with dangerous and destructive effects in practice.

I call vividly to mind the unhappy results of treatment so directed; the vapour-baths and antimonials of former times for eliminating through the skin; the compound jalap powder and elaterium, to call forth the vicarious functions of the intestinal mucous membrane, *et cætera similia*—such or similar treatment tended no doubt to exhaust the already failing nutritive powers.

Although, in respect of the uræmic state, the faulty condition of the blood and its treatment by eliminants cannot be neglected, still it must be admitted that there is an important distinction between the uræmic state and its consequents, and that general fibroid cachexia (?), which exhibits itself in the arterioles and capillaries of the different organs, as now under discussion. The two may no doubt be combined, and, indeed, are often combined, in the same individual; but still, for therapeutic purposes, it is of no small importance to the sick man that as exact a perception as possible of the distinction here insisted on should be acquired.

Whilst we cannot leave out of consideration the changes in the blood, neither can we safely forget that there are important antecedent and concomitant tissue-changes which are independent of mere uræmia.

I have not time fully to discuss, even if it were my duty to do so on this occasion, all the clinical bearings of this subject. My colleagues, your present teachers, are as fully alive to the necessity of extending our views on this subject as I myself can be. They will, I am sure, tell you, that many of the diseases of the brain, of the lungs, of the heart, and of the stomach, are associated with, and form part and parcel of, this great malady. When treating of apoplexy, they will say that, over and above the cerebral affections which are due to uræmia, and which were first of all so well described in this place by my late colleague, Dr. Addison, the brain-tissue is liable to subacute or chronic lesion, from disease of its capillary vessels: that acute pneumonia, or bronchitis, at the period of life of which I have spoken, is often due to already commencing vascular disease: that dyspepsia, and especially the so-called gouty dyspepsia, is not the result of a *matæries morbi* floating in the blood, but of a subacute or chronic degeneration of the mucous tissue.

Here, as elsewhere, in the therapeutics of disease, the limitation of our thoughts to the conditions of the moment, or to the special organ affected, cannot but be productive of either fruitless or dangerous practice. It is always dangerous to rest in a narrow pathology; and I believe that to be a narrow pathology which is satisfied with what you now see before me on this table. In this glass you see a much hypertrophied heart, and a very contracted kidney. This specimen is classical. It was, I believe, put up under Dr. Bright's own direction, and with a view of showing that the wasting of the kidney is the cause of the

thickening of the heart. I cannot but look upon it with veneration, but not with conviction. I think, with all deference to so great an authority, that the systemic capillaries, and, had it been possible, the entire man, should have been included in this vase, together with the heart and the kidneys; and then we should have had, I believe, a truer view of the causation of the cardiac hypertrophy, and of the disease of the kidney.

HIPPOCRATES: HIS LIFE AND WRITINGS.

*An Inaugural Address delivered before the Royal Medical Society of Edinburgh on the 8th of November, 1872.**

By J. WARBURTON BEGBIE, M.D., F.R.C.P.Ed.

I SHALL now quote rapidly a few of the Aphoristic statements from the different sections of this book: there are in all seven. "Ubi somnus delirium sedat, bonum est": When sleep puts an end to delirium it is a good symptom. "Non satietas, non fames neque ilud quicquam bonum est quod naturæ modum excedat." "Neither repletion nor fasting nor anything else is good when it exceeds what is natural." The first of these affords a good example of the *observation* of Hippocrates, while the simple wisdom displayed in the latter commends the aphorism to our judgment. Very many subjects of importance in symptomatology, in prognosis and therapeutics, with but little attention to order or arrangement, are treated of in this section. "Ubi fames non oportet laborare:" "When hungry, undertake no laborious duty." A very important subject is handled in the third section chiefly; namely, the temperature and general character of the seasons, and the relation of prevailing diseases to these. "Hieme vero Pleuritides, Peripneumoniae, Lethargi, Gravedines, Raucedines, Tusses, Dolores Pectorum, Lumborum, Vertigines, Siderationes" (apoplexies). Several of the aphorisms in this section relate to the alvine discharges, particularly to stools characterised by the presence of black bile and blood. "Dysenteria si ab atrâ bili inceperit lethalis est." Of dysentery arising in the same way, Galen writes in at least two places; referring, moreover, to the opinion thus expressed by Hippocrates: "Dysenteriam siquidam quæ ab atrâ bili incipit, mortiferum pronunciat Hippocrates;" and again, "Unde dysenteria si ab atrâ bili incipit lethalis est ut inquit Hippocrates." Section fifth contains chiefly diagnostic and prognostic rules in various maladies. The disease called epilepsy (in Greek, "ἐπιληψία" or "ἐπιληψία", a seizure) is by Latin writers styled "Morbus Comitialis", because its occurrence on the day of the Comitia or assembly of the people broke up the meeting (the disease being considered as "divine", a special infliction of the offended god). "Quibuscumque morbi comitiales ante pubertatem fiunt transmutationem habent. Quibuscumque vero viginti quinque annos natis fiunt hi plerumque commoriuntur." A reference to the text-books on medicine, or an appeal to the experience of medical men who have seen much of this sad disease, will satisfy you of the truth of this remark. With the changes which the system undergoes at puberty, epilepsy is sometimes not unfrequently indeed overcome. After twenty-five years of age, the prognosis in this disease is much more unfavourable. The following aphorism requires little or no comment. "In persons who cough up frothy blood, the discharge of it comes from the lungs." The presence of bubbles of air in expectorated blood may serve to distinguish its origin from the blood of a hæmatemesis. "Diarrhœa attacking a person affected with phthisis is a mortal sign." How very commonly in our day, is diarrhœa one of the last symptoms—how often, indeed, is the colliquative diarrhœa the fatal symptom—in this disease. "If a woman with child be bled, she will have an abortion; and this will be the more likely to happen, the larger the fœtus." That a degree of more than ordinary caution is required in drawing blood from the arm of a pregnant woman who suffers from an inflammation, even the most heroic phlebotomist will readily admit. The too strict notion of the Hippocratic school on this head was, however, overturned before the time of Celsus—that is, in the earliest years of the first Christian century. We find Celsus, in his discussion of bloodletting as a remedy, after referring to the old idea as expressed in the Hippocratic precept, which he also combats, thus concluding: "At firmus puer, et robustus senex, et *gracida mulier* valens tuto sic curantur."

"Hæmoptysis in a woman is removed by an eruption of the menses."

"In a woman where there is a stoppage of the menses, a discharge of blood from the nose is good." There are some quaint and curious aphorisms scattered throughout the book. The forty-second is as follows. "A woman with child, if it be a male, has a good colour; but if a female, she has a bad colour."—a diagnostic rule upon which I scarcely think our learned friend Dr. Matthews Duncan would depend, but which, in justice to Hippocrates, it is right to remember, still enjoys the confidence of women in different parts of the country, and which Ambrose Paré, the distinguished French surgeon in the middle of the sixteenth century, approvingly quotes.

The *sixth* section of the Aphorisms relates principally to a class of cases which, in the ancient system of prognostics, were called "Super-venientia"—literally, a disease or symptom supervening on a previously existing disease. But, besides these, there are many other statements relating to subjects of great practical value; for example: "In dropsical persons, ulcers forming on the body are not easily healed." "It is not a good sign for an erysipelas spreading outwardly to be determined inwards; but for the disease to be determined outwards from within is good." "Persons are most apt to be attacked with apoplexy between the ages of forty and sixty"—a fact which may be held as settled by modern statistical inquiry, and which the investigations of Rochoux more especially have satisfactorily explained. "We must look to the urinary secretions, whether they resemble those of persons in health." The attention paid by Hippocrates to the condition of the urine in disease was very great; and, in the course of his writings, many valuable and suggestive remarks are made upon it. He had noticed the fact of bubbles of air resting long on the surface of some limpid urines, and had connected such urine with intractable disease of the kidneys—a really wonderful generalisation. If, gentlemen, you agitate albuminous urine in a glass vessel, and then allow it to repose, you will find the froth remaining on the surface of such urine for a lengthened period; while it speedily disappears from non-albuminous urine which has been similarly treated. I venture to say that no nearer approach was made to the great discovery of Dr. Bright than that of Hippocrates, if we exclude the recognition of albumen in the urine by the application of a high temperature; and that was only established by Blackall at the commencement of the present century.

The last aphorism in the whole book is a very remarkable one. Its authenticity has, however, been questioned. "What diseases medicine does not cure, iron (the knife) cures; those which iron cannot cure, fire (the cautery) cures; and those which fire cannot cure are incurable."

Passing from the book of Aphorisms, let me observe that one of the most instructive and interesting of the whole Hippocratic collection is that entitled *On Air, Waters, and Places* (Περὶ Ἀέρος, ὕδατος, καὶ τόπων), *De Aeribus, Aquis, Locis*. The perusal of this work reveals the fact that, in regard to the effects which might be attributed to atmospheric changes—to coldness, heat, dryness, and moisture, the direction of the winds, the quality of the waters used by man, and the situations for the dwellings of the people—Hippocrates paid the greatest attention, counting such subjects of extreme interest, and specially deserving the attention of the physician. "Whoever wishes to investigate medicine properly," says he, "should proceed thus: in the first place, consider the seasons of the year, and what effects each of them produces; for they are not all alike, but differ much from one another in regard to their changes; then the winds, the hot and cold, especially such as are common to all countries, and such as are peculiar to certain localities. We must also consider the qualities of the waters; for, as they differ from one another in taste and weight, so also do they differ much in their qualities. In the same manner, when one comes into a city to which he is a stranger, he ought to consider its situation, how it lies as to the winds and as to the rising sun; for its influence is not the same, whether it lies to the north or to the south, to the rising or setting sun. These things one ought to consider most attentively; and concerning the waters which the inhabitants use, whether they be marshy and soft, or hard and running from rocky situations; and then if saltish and unfit for use in cooking; and the general nature of the ground, whether it is naked and deficient in water, or wooded and well watered; and whether the city lies in a hollow confined situation, or is elevated and cold; and the mode in which the inhabitants live, and what are their pursuits; whether they are fond of eating and drinking to excess, and given to indolence, or are fond of exercise and labour, and not given to excess in eating and drinking." But a few years ago, gentlemen, it might have been argued that a work treating of such subjects as are mentioned in the passage I have quoted, little concerned us as physicians or students of medicine; but at the present day, when so large a share of professional attention is given to sanitary economics, and now that public hygiene is rapidly assuming the dignity of a distinct and important branch of human knowledge, I feel sure you will

* Concluded from page 677 of last number.