LECTURES

ON THE

PATHOLOGY, DIAGNOSIS, AND TREATMENT OF BRIGHT'S DISEASE.

By GEORGE JOHNSON, M.D., F.R.S.,

Physician to King's College Hospital; Professor of Medicine in King's College, London; etc.

LECTURE VI.—*Concluded.*

IV. *Atrophy and Suppurative Inflammation of the Kidney from Retention of Urine—Symptoms and Diagnosis.*—V. *Acute Cystitis resembling Acute Bright's Disease—Symptoms, Diagnosis, and Treatment.*

IV. *Atrophy and Suppurative Inflammation of the Kidney from Retention of Urine.*—The effect upon the kidney of retention of urine varies according to the nature and seat of the impediment. It differs, too, according as the obstruction occurs gradually or suddenly. One of the most frequent causes of renal disease consequent upon retention of urine is stricture of the urethra. The urinary organs behind the stricture undergo changes of structure in proportion to the degree and the duration of the obstruction. The canal of the urethra on the vesical side of the stricture becomes dilated; its mucous membrane is frequently inflamed, and secretes pus. The muscular coats of the bladder become thickened by hypertrophy, and its mucous membrane often inflamed and sacculated. The obstruction then affects the ureters, one or both of which may have their canals dilated and their walls thickened; and at length the natural cavities of the kidney—the pelvis, infundibula, and calyces—undergo the same process of dilatation. The medullary cones become flattened out by the pressure of the retained urine. The cortical substance of the gland is expanded, and presents lobed bulgings on its surface, which correspond with the original lobes of the embryo kidney. The glandular tissue is squeezed between the distended interior cavity and the fibrous investing capsule; and the intertubular capillaries are compressed by the dilated tubes. Thus the circulation is impeded, and the result is atrophy of the gland, which may by degrees be converted into a membranous cyst, all traces of glandular structure being lost.

It is but seldom that the kidney undergoes much dilatation without the occurrence of other structural changes. The mucous membrane of the dilated pelvis often presents irregular inflamed patches, and secretes a purulent liquid; and the apices of the medullary cones are frequently ulcerated. Then, as the mischief extends, inflammatory deposits occur in the substance of the kidney, and numerous small abscesses are scattered through the cortex. One or more of the abscesses on the surface may burst through the capsule, and then the kidney may be found imbedded in pus.

When the retention of urine is the result of stricture, or of enlarged prostate, or of calculus with thickening of the walls of the bladder, or of atony of the muscular coats, both kidneys are usually affected simultaneously, but in different degrees; but when one ureter is obstructed by a calculus, or by a cancerous growth, the structural changes are limited to the corresponding kidney.

The explanation of these changes is not difficult. The secreted urine is unable to escape in consequence of the obstruction in front; there is, therefore, an accumulation, first in the ureter and pelvis of the kidney, and later within the uriniferous tubes. The tubes become distended by the retention of their own secretion, just as some tubes in the small red granular kidney, having lost their lining of gland-cells, but continuing to secrete a serous liquid, become distended and dilated into cysts. The epithelial lining of the straight tubes is disintegrated and destroyed by the pressure of the retained urine; and at length some of the tubes in the cortex, whose basement-membrane is more delicate than that of the cones, give way, and allow their contents to become infiltrated amongst the intertubular capillaries. The infiltration of acid urine may cause the immediate formation of coagula within the capillaries, and, as a consequence of localised capillary and venous obstruction, irregular atrophic puckering of the gland occur, somewhat similar to those which result from capillary embolism, to which I have before referred. But the escape of urine through the broken walls of the tubes may excite suppurative inflammation and abscess. A rapid cell-formation takes place between the tubes; and soon the glandular structure is disintegrated, and replaced by inflammatory products. The changes within and between the uriniferous tubes are a miniature representation of what happens on a larger scale when a distended urethra gives way behind a stricture, and a perineal abscess results from the infiltration of

urine into the submucous tissues. Bear in mind that the changes within the substance of the kidney are due to the retention and accumulation of the newly secreted acid urine within the tubes, and not to the regurgitation of foetid ammoniacal urine, as has recently been suggested. Without doubt, the urine in the bladder in cases of old stricture, vesical calculus, and cystitis, is often foetid from decomposition; but the regurgitation of such urine into the uriniferous tubes is a physical impossibility. If you have ever attempted to inject the tubes from the pelvis of the kidney, you will have found the task a very difficult one, in consequence of the resistance offered by the liquid and solid contents of the closed tubes. Obviously, then, during life, while streams of secreted urine are perpetually flowing through the tubes, it is impossible that urine from without can regurgitate into them. The tubes are dilated, and some of them ultimately ruptured, by the retention and accumulation of their contents, and not by the regurgitation of urine from the pelvis of the kidney. Then intertubular coagula and suppurative result, from the infiltration of urine escaping from the torn tubes amongst the intertubular capillaries and veins.

The *Symptoms* of renal disease consequent upon an impeded escape of urine are usually more or less masked by the diseased condition of other parts of the urinary organs. The mucous membrane of the bladder in cases of stricture, vesical calculus, or enlarged prostate, usually secretes pus; and there are no means by which this can be distinguished from matter derived from a suppurating kidney. For the suppurative process in the kidney rapidly destroys the tubular structure of the organ; the pus, therefore, is not moulded within the tubes, and there is no microscopic evidence of the renal origin of the pus. Chemistry, again, affords no more assistance than the microscope. The urine, which contains pus, is always albuminous. The coagulability of the urine by heat and acid is, therefore, no indication that the kidneys are implicated, except when the degree of coagulability is out of proportion to the amount of pus, and it may be blood, mingled with the urine. Chemical analysis affords little practical aid in estimating the efficiency of the kidney. The urine is usually foetid and alkaline, and much of the urea is decomposed into carbonate of ammonia while the urine is still in the bladder. A low specific gravity of the urine with a scanty secretion would be a suspicious condition, and especially so when associated with indications of uræmia, such as drowsiness, headache, vomiting, and a brown dry tongue, with an excess of urea in the blood. Pain and tenderness in the region of one or both kidneys may be severe when, with sudden retention of urine, there is great distension of the cavity of the kidney; but, in cases of long continued and slowly increasing obstruction, these symptoms bear no proportion to the amount of structural change in the kidneys; and it sometimes happens that the first indication of serious renal disease is afforded by the occurrence of alarming symptoms of uræmic poisoning, quickly passing on to fatal typhoid collapse and coma, with a low temperature. The cases are few in which the kidneys are sufficiently enlarged by distension and expansion to form a palpable tumour in the lumbar region.

V. *Acute Cystitis simulating Acute Bright's Disease.*—It has happened to me to meet with a considerable number of cases of acute inflammation of the mucous membrane of the bladder, unconnected with stone, stricture, or gonorrhœa, which, in consequence of the urine being blood-tinged and albuminous, have been mistaken for cases of acute Bright's disease. Therefore, before I proceed to describe the treatment of Bright's disease, I think it well to point out to you the distinctive features of acute cystitis. Remember that I exclude from our present consideration such obvious and common cases as cystitis from stone, stricture, retention of urine, and gonorrhœa; and I refer to cystitis not excited by any obvious mechanical cause. In a large proportion of cases—in six out of twelve of which I have notes—the disease directly followed, and was probably caused by, a chill. In four cases, dyspepsia with rheumatic or gouty symptoms had preceded the cystitis. In one, the disease came on after feasting with excess of wine. In one case—that of a physician—the symptoms commenced within a few hours after he had been impressed by a peculiar odour from the throat of a boy whom he was attending with a low form of scarlet fever. It is probable that in all these patients the immediate cause of the cystitis was some irritating material in the urine, as acute inflammation of the urethra is excited by the contact of the gonorrhœal poison. In the cases last mentioned, some poisonous product may have entered the circulation, and passed out through the kidneys without exciting disease in them, but setting up inflammation in the bladder. It is difficult to explain or to understand how it happens that exposure to cold should in one person excite acute cystitis, and in another acute desquamative nephritis. Of the twelve cases of acute cystitis which I have noted and tabulated, eight were males, and four females. The ages ranged from seventeen in a female to sixty-nine in a male.

In some cases there has been more or less of vesical irritation for a few days before the acute attack, but in most instances the onset has been sudden and severe. The chief symptoms are frequent micturition, with more or less of uneasiness or pain in the region of the bladder. The calls to pass urine may occur every half-hour, or even oftener; and micturition is usually attended with an increase of pain and a sense of scalding in the neck of the bladder. The vesical irritation is increased by exercise, by exposure to cold, and by alcoholic liquors. The urine quickly becomes turbid with puriform mucus, and often blood-tinged. In one case there was a puriform discharge from the urethra as well as from the bladder, though the disease was certainly not the result of gonorrhœa. Usually the urine has an acid reaction; but, if there be much admixture of blood, the acidity is lessened by the alkali of the blood. It contains an abundance of albumen, partly derived from the puriform secretion, partly from the blood. On a microscopic examination, pus-cells and blood-corpuscles are seen in abundance, but no tube-casts. Although the local symptoms are distressing, there is little or no constitutional disturbance. The nights are disturbed by frequent calls to micturate, and the broken rest is attended with a sense of fatigue and nervous exhaustion; but there is little fever, and no vomiting. If, within a few days from the onset of the symptoms, the patient be subjected to appropriate treatment, the disease usually subsides as rapidly as it came on. If, on the other hand, the symptoms be negligently or erroneously treated, the disease may become chronic, and cause prolonged and severe suffering. The urine becomes alkaline, ammoniacal, and foetid; there are perpetual pain and annoyance; and ultimately the disease may extend backwards through the ureters to the kidneys, and so set up a fatal pyelo-nephritis.

Diagnosis.—The distinction between acute cystitis and acute Bright's disease is sufficiently obvious if you bear in mind that the local symptoms are all referable to the bladder, while dropsy, vomiting, and other renal symptoms, are absent. The urine is usually secreted in normal quantity, and of normal specific gravity. It is albuminous only in direct proportion to the amount of blood and pus which it contains, and the most careful microscopic examination discovers no tube-casts.

Treatment of Acute Cystitis.—In the treatment of this form of cystitis, you have to bear in mind that the inflammation of the lining membrane of the bladder is kept up and increased by contact of the acid and irritating urine. The main object of treatment is to diminish as much as possible the irritating qualities of the urine; with this object in view, the patient must be confined to bed or to a sofa in a warm room, and be kept on liquid food without stimulants. If there be no special reason in the peculiarity of the patient's stomach to forbid it, milk, cold or tepid, may serve as meat and drink—as a rule, milk is easily digested, and, at the same time, it acts as a diluent. If milk disagree, soup, beef-tea, mutton- or chicken-broth may be given, with the addition of some farinaceous pudding, and any simple diluent drink. Pure cold water is as efficacious, though not so pleasant, as aerated or Seltzer water. In addition, the urine is to be kept neutralised by citrate of potash, given every six hours. A warm hip-bath should be given night and morning; a dose of morphia at bedtime, to allay irritation and procure sleep; and an occasional seidlitz powder as a laxative if necessary. Under this plan of treatment, the acute symptoms usually subside with great rapidity; the pain and irritation pass away, and the urine regains its normal characters. After a few days, the citrate of potash may be discontinued, and the tincture of perchloride of iron given in twenty minim doses two or three times a day after food. So long as any mucus appears in the urine, even though the local uneasiness may have passed away, the patient should be kept under observation and treatment. If a chronic catarrhal condition of bladder remain after the acute symptoms have subsided, copaiba balsam often effects a rapid and complete cure. One capsule may be given an hour or two after food three times a day; and, if the stomach will bear it, the dose may be increased until six and even nine capsules are taken in three doses in the twenty-four hours. In one case which had been of a year's duration, the urine being turbid with blood and pus, and smaller doses of copaiba having failed to cure, at the suggestion of Sir William Fergusson, who saw the patient with me, the dose was increased to three capsules three times a day, and the result was a complete and permanent cure within six weeks; the urine at the end of the treatment being of natural sherry colour, transparent, and without a trace of mucus. Quite recently I have seen a young lady in whom acute cystitis from cold had left a vesical catarrh after a period of six weeks. I prescribed one capsule three times a day, and, in less than a week, the urine was entirely free from mucus, and the cure was complete. I have seen equally good results in other cases. It is probable that the remedy, being excreted by the kidneys, has a local curative action on the mucous membrane of the bladder. The copaiba sometimes brings out a transient erythematous rash.

CLINICAL LECTURE

ON A CASE OF

PARALYSIS OF THE DIAPHRAGM.

By C. HANDFIELD JONES, M.B. Cantab., F.R.S.,
Physician to St. Mary's Hospital.

CASE.—E. H., aged 30, servant, was admitted January 14th, 1873. He had dark hair, and was of medium height, fairly well made. He had been ill, off and on, seven or eight years. When admitted, he had been ailing two months. He was very subject to headaches. He had had several severe falls, the first six years ago; he was insensible after the last for an hour, not after the previous ones. His father had hæmoptysis, and died four years ago, much emaciated; a sister had no hæmoptysis, but was affected like the father. The patient had had hæmoptysis himself. He was not anæmic. His aspect was distressed. Pulse 80, regular, steady. There was great hyperæsthesia of the surface; a cold hand applied made him start. The apex-beat of the heart was in the fifth left intercostal space, within or at the vertical nipple-line. The area of cardiac dulness was not increased. No *bruits* were heard with the heart's sounds; they were very weak at the midsternum, more distinct at the apex. The rhythm was quite regular. The first sound was of good length at the apex. There was no murmur at the xiphoid cartilage. The jugulars were not full. The upper ribs moved considerably, and the whole chest was drawn upwards in inspiration; the lower ribs expanded very little; the abdomen scarcely moved at all. There was good percussion all over the front of the chest. Air entered freely in both lungs in front during deep inspiration. The breath-sounds were rather harsh. Resonance was fairly good throughout the back, and air was heard entering the lungs fairly well. He complained of shortness of breath, of inability to lie down, and of being put out of breath by the least exertion. He had not had an hour's sleep at night for two months; he dozed a little towards morning. He complained very much of aching and shooting pain in the left side, which, as well as the dyspnoea, prevented his sleeping. There was no cough or expectoration, nor any swelling of the legs. He had no appetite, and was thirsty. He was ordered to have simple diet, beef-tea and milk; and to take twenty grains of saccharated carbonate of iron three times a day, and to have ten grains of chloral hydrate at bedtime, to be repeated if necessary. On the 15th, he had slept from 12 to 2 in the night, and again this morning. He was almost free from pain in the left side when visited, but had it badly a short time since. He had much headache and vertigo. He passed urine with difficulty and pain; he said that he had not passed any till to-day since the 12th. The urine was full-coloured, pretty clear, of specific gravity 1030, not albuminous. Pulse 64; temperature 100.—January 16th. He slept five hours last night, and felt better. The left side was tender when I percussed over it. There was no movement over the abdomen; the upper ribs played too much. The chloral was repeated, and he was ordered to have the following draught three times a day. *R* Ammonia carbon. gr. iv; ferri ammonio-citratis gr. viii; tincturæ nucis vomicæ ℥x; tincturæ calumbæ ℥x; aquæ ʒi.—January 17th. He had slept very well last night. Tongue clean. He had no pain in the side now at all. Temperature 98.6.—January 18th. The bowels had been freely opened; much fecal matter being brought away, with much relief. He had a good night without chloral, and felt better than he had done for two or three years.—January 20th. He slept well, and felt much better. The abdomen at the upper part fell in ten divisions of Dr. Sibson's stethometer in deep inspiration.—January 24th. The breathing now was quite normal. The abdomen while he was recumbent rose fully in inspiration, and fell in expiration; this was the case with the upper part, which a few days before fell in during inspiration. The upper ribs moved a little—not more than normal.—February 6th. He had been an out-patient ten or twelve days, and was going on very well. Pulse steady and good, 80. The upper ribs in the recumbent posture moved slightly; the lower more; the abdomen still more. A trace taken January 17th was tolerably normal. The rise was low, and rather sloped; the apex bluntness; the descent long and gradual, with one well marked notch, and several minute ones.

REMARKS.—The symptoms in this case were by no means plain to read—at any rate, at first. Subsequently, and chiefly by observation of the effects of remedies, they became more intelligible; and, on retro-