

Lecture
ON THE

DIAGNOSIS OF SURGICAL DISEASES OF
THE URINARY ORGANS,

ESPECIALLY IN CONNEXION WITH THE USE OF
THE "NIETZE-LEITNER" ENDOSCOPE.

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[HAVING devoted the former part of the lecture to the best means of forming a diagnosis in ordinary cases, the lecturer continued :—]

And now having discussed the various modes of forming a diagnosis in any given case, by questioning the patient as to his symptoms, by observing his external signs, by examining the urine with tests and by the microscope, and lastly by mechanically exploring, by means of the finger and instruments, the rectum, urethra, and bladder itself, it is natural to ask—Does any further mode of inquiry exist?

At this point it has been always my custom to reply, there is still the endoscope, whatever it may be worth; an apparatus which offers the means of reflecting a ray of light from a lamp external to the body through a tube into the interior of the bladder, and so illuminating a small portion of the surface there. Of the various forms of this instrument which have been proposed from time to time by Avery, Desormeaux, Cruise, and others, not one has appeared to me capable of rendering much practical service, either in regard of diagnosis or treatment. The endeavour to improve it has, however, been steadily pursued, and not a little interest was excited some months ago by a report that, after much labour, an instrument had been invented at Vienna capable of carrying a powerful electric light into various cavities of the body, and of producing brilliant illumination there. My friend, Professor Dittel, wrote to me last spring that this was an accomplished fact, and that I should soon be able to see the new apparatus, and to work with it if I wished. I accepted his invitation, and went recently to Vienna for the purpose, and I was very glad to avail myself of his kind and assiduous services in enabling me to see it, and to use it repeatedly on the living subject, both in health and disease.

It is certainly a daring achievement to carry a platinum wire heated to whiteness into the bladder, and to use it there for some minutes in the act of research; and it is a marvellous success as regards the mechanical arrangement by which this result is effected with safety. The idea originated with Dr. Nietze, now of Vienna, but its realisation is due to the patience and perseverance of Leitner, the surgical instrument maker of that city. I will briefly describe it, and then say as fairly as I can what it appears to be able to accomplish.

The apparatus consists of a stout wooden table, containing instruments, &c. Attached to it is a light stage, several feet high, supporting a vessel of water; and on a frame near the floor is the electrical battery with its appliances. This apparatus is placed by the side of the patient, who should be recumbent on an ordinary operating table, so as to occupy a height convenient for the purpose of examination. It may be thus used in an ordinary ward, but it is more efficient in a darkened room, like that ordinarily employed for the ophthalmoscope.

The electrical current is produced by two rather large Bunsen cells, and the positive and negative conductors, two long and slender wires, are attached to a hollow silver sound of the ordinary form for examining the bladder, by means of a movable collar round its handle, one of the wires entering a small channel in the sound itself, which it traverses to the end. Arriving there it enters a cavity within the beak, and joins a platinum wire there about half an inch in length, the other end of which is soldered to

the metal of the sound, and the latter itself forms the connexion with the opposite wire or pole. The platinum, which becomes incandescent on the completion of the current, is covered by a glass plate isolating it from lateral contact. Finally, the end of the sound which contains the platinum wire has to be kept perfectly cool by special means adapted to the purpose.

The means by which this is accomplished consists in the maintenance of a constant current of cold water supplied from a reservoir, containing about two or three gallons, placed seven or eight feet above the operator. The current descends through a small flexible tube to the collar of the instrument already described, and connected there with two capillary channels in the body of the sound itself. These measure only one millimetre and a half in diameter, and pass through the whole length of the sound, coursing round the heated wire at its termination, so that the water is constantly flowing in by one tube and out by the other, to issue finally drop by drop through the returning tube into a vessel placed to receive it. The collar of the sound, then, has four flexible tubes attached to it, two for the electric current and two for the water current. Holding the collar with the left hand, the operator easily rotates the sound with his right, when on looking through a central cavity forming the axis of the sound, any portion of organ adjacent to the end of the sound is seen to be brilliantly illuminated. A small piece of gravel, a pellet of mucus, the rugæ and sinuses of the mucous lining of the bladder, of its natural tint, or with an inflammatory injection, may all be most clearly seen.

As a triumph of mechanical skill over extreme difficulties, it is impossible to admire the performance too much. But it is necessary, on the other hand, to remark that much preparation of the bladder itself is necessary; that some irritation of the organ must be regarded as a highly probable result—as, indeed, is often unavoidable from the use of this or of any other endoscope. If the urine is bloody or cloudy with mucus, nothing is visible; the bladder must be washed, and then be partially distended with clear water or with air before the instrument can be applied. If the urine is quite clear no preliminary washing is necessary, and a few ounces should be present in the bladder.

I felt it my duty to make, as carefully as I could, an appreciation of the new instrument, and to report upon it; and I shall further have an opportunity shortly of showing it to you here, that others may form a judgment also. I may add that it is very easily used in the rectum, and that it has also been introduced into the stomach without difficulty, which it equally illuminates; the bladder being the most difficult organ to deal with, on account of the narrowness of the channel which leads to it.

Now it is with great deference to the opinion formed by high authorities at Vienna, who are very sanguine as to the value of this instrument for the purposes of diagnosis, that I venture to express in cautious terms my own views as to its use. First, I do not regard it as likely to help us in cases of difficult stricture or retention of urine. Nor do I conceive that it can be required to explore a bladder for any remaining fragments after the operation of lithotripsy. I think all that is necessary to be done in such circumstances can be as well done by the methods at present commonly employed, and that the use of the endoscope for such would generally involve additional and unnecessary interference. At the same time I do not say that such a case may not occasionally be met with, in which the instrument might render some service. On the other hand, there are some morbid conditions the existence of which we sometimes suspect, but cannot positively affirm to exist, whose presence may now be ascertained through the agency of the new endoscope. I refer to the identification of sacculated stone as the cause of persisting and unrelieved symptoms; to the detection of pedunculated growths and of villous disease of the bladder, removable by operation; and, lastly, to the investigation of the nature of foreign bodies, other than calculi, which have become lodged there. I have lately seen a fatal case of vesical growth which might have been easily removed by operation; and in such a case, as well as in the rare contingency of a foreign body, the new endoscope may possibly render essential service. A precise knowledge of the nature, size, and position of a foreign body might enable us to devise a safe and certain means of removing it, in place of a tentative, uncertain, and hazardous proceeding. All these cases, however, are more or less rare; nevertheless it is our duty to be provided with every resource, whatever

it may be, which enables us to deal more effectively than heretofore with conditions on the management of which grave issues depend.

Clinical Lecture

ON

CASES OF IMPEDED CIRCULATION.

Delivered in St. Mary's Hospital,

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GENTLEMEN,—The subject we are about to consider is one which has been greatly elucidated of late years, and is still receiving the attention of some of our best workers. Let me ask you to make it the subject of your careful study, and in this you may be materially aided, I venture to think, by the cases and comments I proceed to bring before you.

CASE 1. *Bronchial catarrh; dropsy; double aortic murmur; fatal syncope; dilatation of aorta; aortic valves competent; kidneys atrophied moderately.*—G. G. M.—, aged forty-nine, admitted April 19th, 1876. His chest has been weak, and he has had bad cough for three or four years. Says he has been out of health five or six months. He got fresh catarrh three months ago, and has not been able to work since. His legs are very much swelled; have been so about a month. Pulse 100, feels full, large, jerky. Loud double murmur at mid-sternum and xiphoid, and at upper sternum. Loud diastolic murmur at nipple line in fifth space. Lies down well. Breath markedly urinous in fetor. Temperature 98°. Ordered compound jalap powder, one drachm every morning; citrate of potash mixture one ounce, nitrate of potash five grains, three times a day; warm bath.—20th: Breathing in both backs very feeble, especially at lower parts; much mucous râle heard in upper backs, weaker râle in lower. Face pale. An attack of semi-syncope occurred some time before, and a second during the visit. His pulse while lying down seemed good and full, but while sitting up to be examined it became very small and weak. He had spit up some small masses of blood. Ordered solution of perchloride of iron ten minims, tincture of digitalis twelve minims, compound spirit of sulphuric ether half a drachm, water one ounce, three times a day. He rallied from this faint, and became very comfortable. Another attack, however, came on, and he died 1.15 A.M. on the 21st. No note, unfortunately, has been preserved of the state of the urine.

Post-mortem.—A large amount of turbid serum in right pleural cavity. Left lung tolerably healthy. Right contained near apex a block of extravasated blood as large as a walnut or small apple; the rest of this lung was cedematous. In the apex of left lung there was a mass of old cretaceous tubercle of pea size, enclosed in a thick envelope of fibroid tissue; there was also cretaceous matter in glands about the bronchi, but there was no appearance of miliary tubercle anywhere. The heart weighed 24½ oz.; its right cavities were full of black clot; the right valves were healthy. The left sigmoid valves appeared competent when tested by pouring water into the aorta; the mitral were less efficient, but showed no notable thickening; the mitral orifice only admitted three fingers. The aorta was very much dilated at its origin, and in all its thoracic extent; at one part, a little below the termination of the arch, its posterior outer wall was bulged considerably, forming a sort of elongated pouch, on the interior of which was seen (when the vessel was laid open) a deposit of pigmented fibrine. The coats of the aorta were highly atheromatous. The heart's muscle was of a good red colour, and showed no sign of fatty degeneration. The liver weighed 61 oz., was highly nutmeggy and fatty; its cells formed a perfect plexus of fatty columns. Spleen rather small and dark, weighed 6½ oz. Kidneys looked small and lobulated; each weighed 4¼ oz.; surface after removal of capsule was slightly granular. The renal tubes

were not broken up, but were often much infarcted with granular fatty epithelium. The arterioles of the subcutaneous tissue of the calf of the leg appeared to have thickened walls, and sometimes a dense outer fibrous investment, but I could not determine whether they were simply contracted or sclerosed.

Remarks.—That the disorder in this case was to a great extent of uræmic origin can hardly be doubted. Yet I do doubt whether this expresses all that is to be said of its causation. For cases are common where uræmia has long existed without producing such effects as were witnessed here. Some other factor besides the uræmia must, I think, have concurred with it to produce the results. However this may be, the history affords a very remarkable example of the effects produced by obstruction of the circulation in its periphery. The hypertrophy and dilatation of the heart, whose muscular tissue was not degenerated, the general dilatation of the aorta, which was so great as to render its valves incompetent, the local bulging of a part of the aortic wall, and, finally, the death by syncope from cardiac exhaustion, all indicate the existence during life of a great increase of peripheral resistance and consequent backward pressure. The exact seat of the obstruction cannot be determined, but it may be remarked that microscopic examination did not show sufficient ground for affirming it to be in the arterioles.

CASE 2. *Dropsy; ascites and anasarca; albuminuria; cordy pulse; great improvement; recurrence of symptoms; death; autopsy.*—W. H.—, aged fifty-six, labourer, admitted July 20th, 1877, states that he was in St. Mary's some years ago with similar symptoms, but recovered and remained well until six months ago. He was then taken ill with short breath, some cough, mucous expectoration, and some anasarca. There is now much collapse of lower chest-walls in inspiration, especially when deep. No dulness in either back. Air entered well in upper half of left; more weakly, with crepitations, in lower. Same state nearly in right back. Breathing full and free in all right front, not so much in left, but no morbid sounds in either. Heart's dulness area appears about normal. Impulse not perceptible to hand or eye. Sounds rather weak at mid-sternum, and apex in fifth space, rather more distinct at xiphoid. Pulse 100, small and weak, but cordy. Abdomen measures 36½ inches over umbilicus. The depending parts of both flanks are notably dull on light percussion. The hepatic dulness extends fully four fingers' breadth below the right ribs. Urine is rather scanty, sp. gr. 1025, moderately albuminous, deposits a scanty white sediment, containing a very few slender homogeneous casts. Ordered milk, beef-tea; solution of muriate of iron twenty minims, oxymel of squills one drachm, tincture of digitalis five minims, in an ounce of water, three times a day.—26th: Is mending fast. Abdomen measures 35½ inches. Urine pale, sp. gr. 1015, contains the faintest trace of albumen. Lower ribs expand in inspiration. Legs now quite free from cedema. Arm veins full as on admission.—August 2nd: Breath not short; gains strength every day; very little expectoration; good breathing in both backs. Pulse as cordy as possible. Veins large and full in both arms. Urine notably albuminous. Abdomen measures 31½ inches; resonant all over. Goes out. Continue medicine with the exception of tincture of digitalis.

He was readmitted Sept. 18th, 1877. Abdomen measured 37½ inches. There was considerable dropsy of the legs and belly; breath very short; he expectorated a good deal of mucus. Temperature up to Oct. 5th was about, or a little below, the normal. He had taken carbonate of ammonia, decoction of senega, bitartrate of potash electuary, until Oct. 1st; then solution of perchloride of iron, oxymel of squills, tincture of digitalis, and spirits of chloroform. On the 4th the pulse was very weak, as it had been several times before. The artery, though full and rolling distinctly under the finger, and traceable a long way up the arm, was yet quite compressible. The urine contained a good deal of albumen. He brought up in twenty-four hours about four ounces of muco-purulent expectoration. There was no dulness in the backs, but the air entered very imperfectly in the lower half, or rather more, of each lung. The veins of the arms were full, and those of the neck, and regurgitation was very evident in the anterior jugular. The heart's dulness-area did not seem unduly extensive; its impulse was not apparent; the sounds were normal; the rhythm regular. He had broth and eggs and custard. On Oct. 8th the dose of solution of perchloride of iron was raised from twenty minims to one drachm. He had an oblique right inguinal