NON-PROSTATIC URINARY RETENTION OF THE
SENILE BLADDER.*

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WHENEVER we are confronted with an aged patient afflicted with dysuria characterized by complete or incomplete retention with or without incontinence, pollakiuria, increased ardor urinæ, or retarded urination, we are wont in text-book-like fashion to placate the lesion, either as an intravesical mechanical ob-

struction, or attribute it to a lesion of the vesical central ner-

vous system. An ever-increasing report of cases, which, however, do not fit in either category, is very evident from a perusal of the literature, and warrants a consideration of this subject, which was prompted by an experience with such similar cases.

J. B., No. 115,543, June 15, 1910, aged seventy years, was admitted to the medical service of Mt. Sinai Hospital for emphy-

sema and myocarditis. During the two weeks that he was an inmate, it was noticed that he was incontinent. For this dysuria, he was referred to the Genito-Urinary Service, with a tentative diagnosis of hypertrophied prostate.

Status Præsens.—A very aged appearing man, blunted sensi-

bility, though conscious, and somewhat deaf. The vessels gener-

ally atheromatous. Heart sounds dull and muffled and distant, and an occasional systolic murmur at the apex.

Rectal Examination.—External hemorrhoids. Palpation re-

vealed a prostate not enlarged but moderately firm and not tender. Percussion of the abdomen showed the bladder dulness reaching three finger-breadths above the pubis. The patient was unable to void. A soft (Nélaton) rubber 20 F. catheter entered easily, and 720 c.c. of clear urine were withdrawn.

* Read before the Genito-Urinary Section of the New York Academy of Medicine, October 19, 1910.
Cystoscopy.—Bladder distention 200 c.c. Diffuse trabeculation. No evidence of any prostatic enlargement and the ureters normally located. Urine in 24 hours, 1200 c.c., amber, faintly cloudy, 1016 sp. gr., faint trace of albumin; 1.4 per cent. urea (16.8 Gm.) in 24 hours. Occasional hyaline casts, few leukocytes, and some erythrocytes.

Diagnosis.—The trabeculation directed our attention to the likelihood of an existing tabes. The counsel of the neurologist, Dr. I. Abrahamson, was sought on this point in question. He reports: knee-jerks present, pupils irregular but they react. Achilles reflex present. Sensations normal in legs and body. No tabes. Furthermore the complement fixation test by the Wassermann and Noguchi systems was reported negative by Dr. J. Kaliski, thus eliminating spinal syphilis.

Treatment.—An indwelling catheter was located at first for the night; following its removal during the day, the retention continued to be a feature alongside of the incontinence. Then the catheter à demeure was placed permanently for five days with daily washings of silver nitrate 1:3000 to prevent infection, up to now foreign to the viscus. Upon the removal of the catheter on the sixth day, the patient voided in small quantity with much effort.

Conclusion: The best explanation we had to offer in the absence of prostatic enlargement and failure to establish the existence of a nerve lesion was that the bladder suffered changes like unto the heart and kidneys in consequence of senility.

In support of such a view, the following case, by way of clinical proof, is cited: In Lyon Medical, March 16, 1890, Daniel Moliere ¹ reports under the caption "Dysurie Senile" peculiar disturbances in the urination of the senile, which have much in common with prostatic hypertrophy, but they are encountered also in the absence of any gland involvement. He attributes the sudden onset of retention (dysuria) and increased ardor to an affection of the vesicoprosthetic plexus.

In the same year, 1890, Ultzman,² in the series of the Deutsche Chirurgie, says: "In advanced age the urinary insufficiency, even if a marked paresis is not demonstrable, is
nearly always the rule. That prostatic hypertrophy peculiar to advanced age constitutes a mechanical obstacle is well established. Yet we would err greatly were we to assign all cases of senile insufficiency of the bladder to this affection. Often the cause of insufficient emptying of the bladder rests upon senile changes (atrophy of the bladder)."

Launois in 1894, under the guidance of Guyon, says, that in the retention of the aged, arteriosclerosis is a factor of the first importance and the lesions of endo- and periarteritis involve not only the prostate but extend to the bladder and kidney.

In 1899 Guyon gave to us his contribution on "Prostatisme Vesicale," also spoken of as "Prostatisme Senile," and above all perpetuated as "Prostatisme sans Prostate." In a clinical sense he considers that senile dysuria is dependent, not invariably on prostatic obstruction, but is a resultant of many factors which have a common cause; this should not be styled arteriosclerosis but a trouble of nutrition which may be brought on by the inroads of years or by the failure of the organism in consequence of intoxication or premature wear and tear.

At this stage it may be opportune to introduce the report of an undetermined case of senile dysuria observed with Dr. H. Goldenberg in his service and to whom I wish to make my acknowledgments for consent to report this interesting case.

G. P., No. 110,633, admitted Nov., 1909, aged fifty-five. Five weeks in medical service with pneumonia; while there, developed retention. Habit of voiding every two hours day and night for two years. Never any retention or incontinence at night until two and a half weeks ago. Since then, dribbles continuously at night. Sexual impotence for three years. No gonorrhoea or syphilis; temperate alcoholic habit; 800 c.c. urine, purulent, withdrawn.

Cystoscopy.—Fundus heavily trabeculated, few small diverticula. Mucosa injected. Trigone and ureter orifices normal, except they were so close together that they could be seen in the same field. Ureter peristalsis visible. Absolutely no prostatic enlargement. Sphincter margin a horizontal line. No sign
of middle lobe. Rectal sphincter relaxed. Prostate small, atrophic. Following instillation of AgNO₃, 1 per cent., into deep urethra, 5½ oz. of a very good stream voided. Residual urine thereafter 2 oz.

Dr. B. Sachs reported: pupils sluggish; knee-jerks present. There is a possibility that the retention is of senile origin.

*Endoscopy* (Goldschmidt).—Flattened colliculus. Nothing of the nature of a valve seen at the internal ostium.

*Capacity Test.*—350 c.c. boric solution let into the bladder; patient, while pressing on the abdomen, voids (bladder-expressibility of Zuckerkandel) 150 c.c. After injecting AgNO₃, 1 per cent., voids the remnant of 150 c.c. in a very good stream. Incontinence is not overflow but due to atony of the bladder detrusor or weakness of the muscular sphincter prostaticus, while in the daytime, the patient has control over his bladder by voluntary control of his sphincter externus. Urethra seven and a half inches in length and absolutely no resistance to catheter at introitus of bladder. No appreciation of 2 per cent. AgNO₃ in the posterior urethra. Extremes of cold and heat not complained of or differentiated. To determine whether dribbling would follow complete emptying of the bladder, this latter was done upon retiring. None the less, dribbling continued throughout the sleep, proving relaxation of the sphincter at night. Cystitis improved some; other symptoms persisted. Discharged at first with diagnosis of atrophy of prostate and senility. Subsequently asked to enter for another neurological examination. Dr. B. Sachs this time expressed himself as believing that there might be an arteriosclerosis of vessels affecting the circulation of the cord.

In 1901 Ciechanowsky⁵ by his anatomical researches, showed the influence of age on the bladder muscle. Between 40 and 50, the muscle constituted nearly three-quarters of the bladder wall, whereas amongst the aged it was hardly two-thirds or only half. And he, too, says that senile debility alone is not a question of years, that premature age can attack the bladder as well as other organs and is aided by alcoholism and other intoxications.

In the following year, 1902, Halle and Motz⁶ also admit the influence of age in these cases of "prostatisme sans pros-
tate” in causing a relative atrophy of the muscular tissue; and that sclerosis and fatty degeneration of the bladder wall are secondary to infections, intoxications, etc. On the other hand, they emphasize that total atrophy is rare, and that the quantity of muscle is superior to that which exists in normal bladders, and that as in true enlargement, muscular hypertrophy is the essential lesion.

So, too, Zuckerkandel,7 1904, says: “Senile changes or chronic distention are capable of seriously damaging the bladder muscle in its function. There are incurable forms of retention amongst the senile, in whom no mechanical or nervous cause can be determined. Whether an atrophy or degenerative muscle is out of play is not known.”

In the meantime, the removal of enlarged prostates with complete restoration of bladder function had set at naught the pronouncements of Guyon and Thompson, that the atony was irreparable.

Within the same period, Motz and Arese 8 proved, in prostatitis without a prostate, that the extirpation of a gland, which at least in appearance could not form an obstruction to emission of urine, would restore function lastingly, so in persons who had been a long time afflicted with complete retention. They consequently insisted that it was not a muscular degeneration which was the primary cause of the bladder atony, and, what is significant, the bladder in such cases was no more deficient in muscle than in cases of actual hypertrophic prostate.

We, too, have experienced the complete restoration of bladder function after prostatectomy in a number of cases that proved to have small prostates at operation. One such case, however, with an unfavorable outcome is herewith narrated:

J. G., aged sixty-seven, No. 112,844, Jan., 1910. Denies gonorrhea and syphilis. Alcoholic habit temperate, obstinate obstipation. Bilateral rupture (?). Within the last two weeks these hydroceles (ruptures?) grew larger, coinciding with which urinary frequency and ardor increased. Soon complete retention set in, necessitating catheterization for twelve days prior to admission. Great thirst.
Status Præsens.—Pale, flabby, very ill, low tension, pulse regular, no murmur, signs of emphysema. Abdomen: rigid, distented from corprositation. Tenderness over suprapubic area in which region bladder dulness extended half way up to the umbilicus. Genitals: distention of scrotum by the two large hydroceles on either side caused disappearance of penis, and owing to tension of large amount of fluid, the testes were difficult to discern. By rectum: prostate felt, but not considered enlarged. Soft catheter enters bladder easily, 900 c.c. urine withdrawn; alkaline, 1012, purulent.

For three days catheterization was performed twice a day without any return of function, and then for one week the indwelling catheter brought no betterment. Pyuria precluded cystoscopic examination. On the eleventh day, the bladder was opened by a suprapubic incision. A trabeculated bladder felt, and a small, hard, annular prostatic enlargement felt, with very small posterior lip about one-half inch in height. Finger gripped at introitus. Another week of drainage and then a small overhanging lip was removed. It measured 1 x 3/4 cm. Dr. F. Mandelbaum, pathologist, reported that the specimen was hypertrophic, not carcinomatous. At the end of six weeks, the suprapubic fistula was completely closed. The cystitis necessitated treatment, whereupon the introduction of a catheter, Nélaton F. 18, meeting with obstruction, a sound was occasionally passed. The patient was able to void 150 c.c. of AgNO₃ introduced into his bladder. After five months, the fistula of bladder opened again and has done so on and off eight months after operation. He has retained all of his symptoms. Residual urine 8 oz., can void 8 oz., and urine is purulent.

Cystoscopy.—Nitze enters easily. Bladder trabeculated, and near the outlet two translucent folds are to be seen.

Epicrisis.—But for the findings of the pathologist that the glandular tissue removed and examined was hypertrophic, we would as a last analysis place this case as an instance of atrophy of the prostate, to which diagnosis we are disposed by the cystoscopic findings of folds in front of the neck of the bladder which are described and pictured by English* in his description of atrophy of the prostate. These three cases narrated can at the best only be placed in a category of retention without mechanical obstruction.
This very topic was the order of the day at the First International Congress of Urology at Paris in 1907. On this occasion, Albarran exhaustively treated this subject. His introductory remarks were to this effect: “Until recently, it was the belief that the mechanical obstruction of prostatic hypertrophy alone could not explain retention, and the onus was put on the degenerated muscle. We know now that this also has been abandoned.” He then proceeded by numerous examples, experimental and above all clinical, to elaborate the theory promulgated by Janet five years previously as “Inhibition Vesicale.” Thus Albarran says: “When the neck is free and the prostate of small volume, one cannot quite think of a cervical urethral obstacle which could awaken the possibility of a retention, independent up to a certain point of the macroscopic form of hypertrophy. Reflex inhibition of the bladder causing retention is a part of prostatic hypertrophy and is present in all forms of prostatitis, acute or chronic.” In this category he places “the cases of retention accompanying prostatitis described by Janet and Genouville (l. c.), and the form of prostatitis cystoparetica of Goldberg, Notthaft (l. c.), and the chronic hypertrophic prostatitis of Albarran (l. c.). At times these prostatitides go on to cure by fibrous transformation and then in turn the reparative process gives rise to retention without creating a veritable obstruction. Such he believes to be the case in Chetwood’s “Contracture of the Neck of the Bladder,” in which there is neither hyperplasia of the muscular elements of the sphincter nor of the adenomatous tissue, but rather a fibrous stenosis of the vesical orifice (most often of gonorrhoeic origin), a description identical with that of Keyes, Sr. Furthermore, there is neither enlargement of the prostate nor increase in length of the canal. Albarran (l. c.) says he himself has seen similar cases only recognized at operation. Strictures of the urethra of large calibre are known to give rise to complete or incomplete retention.

From all these facts it is necessary to conclude that in small hypertrophied prostates, hypertrophic prostatitis, and large strictures, the obstacle is insufficient to explain the retention for which one cannot make the spasm responsible when
the catheter shows it to be absent. Therefore it is necessary to admit, perhaps an inhibition of vesical contractility, perhaps the loss of the inhibitory power we possess over the external sphincter, i.e., to relax it.

In conclusion Albarran (l. c.) adds: “We could furthermore give numerous observations of vesical retention, complete or incomplete, in patients beyond fifty years of age in whom the cause of vesical insufficiency cannot be disclosed on the aforesaid or any other ground. They are the prostatics without prostates. Several present a slight prostatic lesion, and one could attribute their retention to phenomena of inhibition, arising from the prostate, but in others the prostate is healthy.” Then follows the recital of a case like unto the last one mentioned by us. The history is as follows:

Patient, aged sixty. Since two years difficulty of micturition increased until he came with complete retention. For six months he has been instilled. Minute examination of the urinary apparatus and of the nervous system reveals nothing abnormal. The prostate in particular is normal. No projection in the neck by cystoscopy. The patient demanded prostatectomy in spite of advisement to contrary. A suprapubic operation was performed for the removal of the prostate. Microscopic examination, healthy gland. Recovery from operation, but complete retention persists.

In 1909, Asch,14 of Strassburg, at a medical meeting reported that he saw five males afflicted with retention, dribbling, and tenesmus, in whom no mechanical obstruction or central nerve lesion could be made out. By cystoscopy the bladder was made out to be trabeculated. These trabeculae are due to the secondary muscular hypertrophy, following a primary degeneration of the muscle, or the degeneration is traceable to diseased nerves of the bladder or of the ganglionic centres of the bladder. A trabeculated bladder is therefore of myogenic or neurogenic origin. A second variety of trabeculated bladder is due to extension of destructive inflammatory processes, associated with scattered areas of true muscular hypertrophy. In a third class of cases with above symptoms, four males, the bladder is void of trabeculae but incapable
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of concentric contraction. These bladders, infiltrated in part, atrophic in others, have to be differentiated from carcinoma; they are likely inflammatory.

Within this year Casper,\textsuperscript{16} 1910, reported a case of a man sixty-eight years of age, with unusually protracted retention (complete), of eight years' standing, in whom there was no urethral or vesical obstruction, and an absence of nerve lesions. He regards the case as one with degenerative bladder changes characterized by sclerosis (Guyon).

In 1909, in their recent text-book, Desnos and Minet\textsuperscript{16} add their testimony thus: "We meet with senile individuals in whom urination is hesitating or slow at the beginning, with a diminished stream and increased frequency at night. They are impressionable to all congestions; later on they will be subject to retention and incontinence and act as veritable pros-tatics. They present, however, neither hypertrophy of the prostate nor any modification of the neck, but the muscle is degenerated."

\textbf{CONCLUSION.}

From the history of cases instanced and elucidated by the authorities cited, we must admit that a class of cases exist in which the stigma resides essentially in the muscle insufficiency, though what is the fundamental cause for this atony remains undetermined. For we have to choose from a muscle degenerated by arteriosclerosis, or sclerosed secondary to infections, or primarily atrophic following a peripheral nerve lesion, or secondarily so, as an atrophy that follows every hypertrophy. Tersely stated, the atony is of vascular, myogenic, neurogenic, or infectious origin. Finally, in some cases all these factors operate towards the same end.

It is therefore commendable in singling out cases for operation to take cognizance that these borderline cases be not subjected to operations, and that the cystoscopic examination be resorted to as a routine in aiding to determine for or against this.

There then but remains the cases of contracture of the neck of the bladder \textit{in so far as they occur in the aged(?)}. Could they be diagnosed by other than autoptic findings
at the moment of opening the bladder, they would be suitable for operation along the lines laid down by Chetwood. Albarran (l. c.) admits encountering these cases at operation only.

This interesting chapter in urinary retention is sub judice. Consequently operations of any kind undertaken therefor can only be vindicated as being exploratory. The alternative of operation is a catheter life.

As a befitting conclusion to this essay, I cite the words of our esteemed nestor of American urology, Dr. Jno. W. Gouley from his recent "Surgery of the Genito-urinary Organs: "Vesical dilation, even when there is no obstruction to urination, is not uncommon among elderly men. Post-mortem examination of such bladders showed the absence of any mechanical obstruction."

LITERATURE.

1 Moliere: Dysurie Senile, Lyon Medical, 16 March, 1890.