URODYNAMIC CHARACTERISTICS IN MALES OVER 50 YRS OLD WITH LOWER URINARY TRACT SYMPTOMS

Thesis submitted in Partial fulfillment of the Master Degree

BY

MOHAMED ABDEL-FATTAH ELSAYED
M.B. B. Ch
CAIRO University

Under supervision of

Prof. Dr. AMR MAHMOUD ABDEL-HAKIM
Professor of Urology
Faculty of Medicine
Cairo University
&
Dr. ASHRAF ABOU-ELELA ELSAYED
Assistant Professor of Urology
Faculty of Medicine
Cairo University
&
Dr. TAMER ZAKARIA ORBAN
Lecturer of Urology
Faculty of Medicine
Cairo University

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بسم الله الرحمن الرحيم

﴿ قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ ﴿٣٢﴾ ﴾

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- To detect the incidence of bladder dysfunction as a cause for LUTS.
- To evaluate the role of urodynamic studies in modifying the treatment decision.
- To evaluate the accuracy of pressure flow studies in predicting the outcome of treatment.

We hope that by the end of this study we can determine the proper role of urodynamic studies in the evaluation of elderly male patients with LUTS.

Key Word:

URODYNAMIC
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Introduction

Lower Urinary Tract Symptoms (LUTS) are very common wide spread bothering problems affecting elderly males allover the world with an increasing incidence with age. LUTS have numerous causes & overlapping range of symptoms & severity *(Anderson et al, 2004)*

LUTS are a multifactorial problem with many modalities of treatment, medical or interventional "endoscopic or surgical" *(Abrams P, 1999)*

Although the main purpose of treatment is relieving the patient's symptoms & improving the quality of life, the outcome of treatment may not always meet the doctor's or the patient's expectations, due to inaccurate diagnosis of the real cause of the symptoms or lack of information about the bladder function *(Nitti et al, 1989)*

Since urodynamic studies evaluate the bladder function, capacity, compliance & contractility; thus it can provide a better anticipation of the outcome of the treatment or it may change the choice of treatment strategy *(Rodrigues et al, 2001)*

B.P.H is the commonest benign tumor affecting men above the age of 50 years The prevalence of histological B.P.H in Autopsy studies rises from approximately 20% in men aged 41- 50, to 50% in men aged 51- 60, & to over 90% in men older than 80 years *(Berry, 1984)*

Up to 25% of men older than 60 years old require some form of surgical treatment for troublesome lower urinary tract symptoms of infravesical obstruction. *(Mc Connell, 1994)*

However Trans urethral resection of the Prostate "TUR-P" is the gold standard treatment for symptomatic benign prostatic hyperplasia "BPH*" (Rutkow, 1986)*

The cause of LUTS in elderly males is very difficult to identify clinically even with the regular modalities, regarding this, urodynamics can be very helpful in accurately diagnosing the real cause behind LUTS.

The role of urodynamic studies as a part of routine work-up of elderly males with LUTS is controversial some urologists suggest that pressure flow studies "pQs" should be included in the work-up of every old male with LUTS. Others believe that it should be reserved for complicated cases or after failure of conventional treatment.

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Lower Urinary Tract Symptoms

The lower urinary tract functions as a group of interrelated structures whose joint function in the adult is to bring about efficient & low-pressure bladder filling, low-pressure urine storage with perfect continence, & periodic complete voluntary urine expulsion, again at low pressure. Because in the adult the lower urinary tract is normally under voluntary neural control, it is clearly different from other visceral organs, whose regulation is solely by involuntary mechanisms. For the purposes of description & teaching, the micturition cycle is best divided into two relatively discrete phases: bladder filling/urine storage & bladder emptying/voiding. The micturition cycle normally displays these two modes of operation in a simple on-off fashion. The cycle involves switching from inhibition of the voiding reflex & activation of storage reflexes to inhibition of the storage reflexes & activation of the voiding reflex & back again.

Significant symptoms caused by lower urinary tract dysfunction in men are common. The symptoms not only affect the individual's health & quality of life, but also place a burden on the family, health & social services. As the population ages, especially with the ever-increasing life-expectancy, it is clear that the number of patients with LUTS seen by GPs, urologists, continence advisors & other healthcare professionals is likely to increase.

The incidence of LUTS clearly increases with age. The significant healthcare problems this poses are emphasized by estimates that more than half of men aged ≥50 yrs have LUTS.

NORMAL LOWER URINARY TRACT FUNCTION

To properly understand the LUTS one has to fully understand the normal physiology & function of the lower urinary tract.

The Two-Phase Concept of Function: Filling/Storage & Emptying/Voiding

The micturition cycle involves two relatively discrete processes:

(1) Bladder filling & urine storage.

(2) Bladder emptying.

One can succinctly summarize these processes from a conceptual point of view as follows:

Bladder filling & urine storage require:

1. Accommodation of increasing volumes of urine at a low intravesical pressure & with appropriate sensation.
2. A bladder outlet that is closed at rest & remains so during increases in intra-abdominal pressure.
3. Absence of involuntary bladder contractions.

Bladder emptying/voiding requires:

1. A coordinated contraction of the bladder smooth musculature of adequate magnitude & duration.
2. A concomitant lowering of resistance at the level of the smooth & striated sphincter.
3. Absence of anatomic (as opposed to functional) obstruction.

However Lower Urinary tract Symptoms can be simplified as follows:

- Urinary frequency
    - The need to urinate frequently during the day or night (nocturia), usually voiding only small amounts of urine with each episode.
    - Interrupted sleep to urinate at night.
- Urinary urgency
    - The sudden urgent need to urinate quickly.
    - The sensation of imminent loss of urine without control.
- Hesitancy
    - Having to stand at or sit on the toilet for some time prior to producing a urinary stream.
    - Difficulty initiating the urinary stream.
    - Hesitant, interrupted, weak urinary stream.
- Incomplete bladder emptying
    - The sensation of incomplete evacuation of urine from the bladder.
    - The feeling of persistent residual urine regardless of the frequency of urination.
- Straining - The need strain or push (Valsalva maneuver) to initiate & maintain urination in order to more fully evacuate the bladder.
- Decreased force of stream - The subjective loss of force of the urinary stream over time.
- Dribbling - Dribbling small amounts of urine due to a poor urinary stream.

(LUTS) stands for lower urinary tract symptoms which represent symptoms of dysfunctional voiding This symptom complex is nonspecific & is identified by many eponyms, including the currently favored nonspecific term *lower urinary tract symptoms* (LUTS) & the traditional term *prostatism,* implying an established etiologic relationship.

As emphasized by Blaivis, the clinically recognizable bladder response to various stresses or pathologic changes can be the result of overactive (frequency, nocturia, urgency, urge incontinence) or underactive (hesitancy, intermittency, weak stream, urinary retention) detrusor activity. Blaivis states that BPH symptoms are essentially caused by prostatic obstruction-induced impaired detrusor contractility, detrusor instability, or sensory urgency.

Patients with LUTS suggestive of benign prostatic obstruction (BPO) presents with two types of symptoms: of voiding (e.g. hesitancy, weak stream, intermittency, abdominal straining & incomplete bladder emptying) & of storage (e.g. frequency, nocturia, dysuria, urgency & urge incontinence). While voiding "obstructive" symptoms are more common yet the storage "irritative" symptoms are more bothersome & interfere more with daily activities. Thus they have a considerable effect on quality of life & are the main reason that patients seek medical advice *(Hald, 1989).*

Lower urinary tract symptoms (LUTS) increase with age & moderate to severe LUTS occur in approximately 25% of men over 50 years old. Thus many patients look for a urologist due to their urinary symptoms & the inconvenience they cause. Consequently, the objective of any treatment is to relieve the symptoms & evaluate the role they perform in the efficacy of the treatment.

Besides improving urinary flow rate, treatment for LUTS should provide relief of both the common voiding LUTS & the more bothersome storage LUTS.

It is obvious that a full understanding of the disease processes & their treatments are required so that an economic & effective treatment protocol can be developed & so that an informed discussion can take place between the physician & the patient.

Table (1) Voiding Dysfunction: Goals of management

Upper urinary tract preservation or improvement Absence or control of infection Adequate storage at low intravesical pressure Adequate emptying at low intravesical pressure	Adequate control No catheter or stoma Social acceptability/ Adaptability Vocational acceptability/ Adaptability

Causes of LUTS

LUTS are a multifactorial problem possibly involving cardiac, renal or neurological abnormalities in addition to, or instead of urological causes.

The cause for these symptoms largely differs according to the sex of the patient, the age of the patient, history of other diseases, drugs taken, history of trauma.

The pathophysiology of LUTS is multifactorial, Bladder outlet obstruction (BOO) is one of the main causes of LUTS in elderly males; but detrusor factors such as detrusor instability & impaired contractility can contribute to the development of LUTS. Nevertheless, in view of the lack of correlation between symptoms, prostate enlargement & BOO, the effect of the symptoms in the lower urinary tract remain controversial. There is a strong tendency in the world literature not to associate symptoms with the presence of obstruction.

The urinary symptoms commonly seen in men with LUTS are not specific. Urinary tract infection, urethral stricture disease, bladder cancer & primary bladder disease may mimic the symptoms of BPH. In most cases, the differential diagnosis can be ruled out by the medical history or the basic evaluation. In some cases, further diagnostic evaluation is warranted *(McConnell, 1996*).