

Diagnosis and treatment of lower urinary tract symptoms in the elderly by general practitioners

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Aim: We investigated the diagnosis and treatment of lower urinary tract symptoms (LUTS) by general practitioners (GPs) according to the Practical Manual for LUTS Evaluation and Treatment in the Elderly For GPs.

Methods: Using the manual, 14 GPs determined LUTS severity using the International Prostate Symptom Score, Quality of Life Index, post-void residual urine volume and the International Consultation on Incontinence Questionnaire-Short Form, then evaluated utilization of the frequency volume charts and other examinations to treat LUTS and assessed treatment effectiveness.

Results: This study included 52 men (aged 71 ± 9 years) and 37 women (73 ± 9). Voiding symptoms were more frequent in men but storage symptoms occurred similarly in both sexes. The overall severities of LUTS were similar between sexes. Of 36 men and 27 women who were treated, water restriction for polyuria and nocturnal polyuria was recommended for 17 men and 14 women, bladder training for six women, and pelvic floor exercise for three men and 16 women as behavioral therapy. Of 27 men and 25 women whose treatment effectiveness was assessed by GPs, effectiveness was judged as “fairly good” or greater in 20 men (74%) and 23 women (92%). Eleven men (40%) and 20 women (80%) were satisfied with their treatment.

Conclusion: It is suggested that GPs can provide high-quality LUTS practice when they follow the manual and use the recommended tools for evaluation and monitoring.

Keywords: general practitioners, lower urinary tract symptoms, manual.

Introduction

Homma *et al.* reported that many Japanese people aged 40 or older had some lower urinary tract symptoms (LUTS).¹ Several researchers also reported that the inci-

dence of LUTS increases with aging.^{1–5} According to our previous questionnaire survey, approximately one-third of men and women aged 50 years or older who consulted general practitioners (GPs) for medical problems had some LUTS and it was thought that they required evaluation by a GP.⁶

To improve the clinical practice for LUTS by GPs, we developed a manual for use in Japan.⁷ However, Hammond *et al.* indicated that the education strategy using pamphlets and face-to-face staff consultations had no measurable impact.⁸ Therefore, we delivered the manual to GPs around the National Center for

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Geriatrics and Gerontology (NCGG), gave lectures, and encouraged these GPs to practice LUTS treatment using the tools for evaluation and monitoring. In this paper, we describe the medical outcomes practiced by GPs and the usefulness of the manual.

Methods

A practical manual for LUTS evaluation and treatment in the elderly was developed for GPs in March 2005.⁷ After approval of the institutional ethical board of the NCGG, 14 GPs around the NCGG in Obu and Higashiura districts were included in this study. Twelve of the GPs mainly practice internal medicine and two mainly practice urology.

Two lectures regarding LUTS practice were given by one of the authors (KO) in July and August 2005.^{7,9} Between October 2005 and September 2006, the 14 GPs evaluated and treated patients with LUTS.

At the reception in the GP's clinic, the nurse asks "do you have urination problems? If so, do you want to consult our doctor regarding this problem?" When a patient answers "yes", the Japanese versions of the following questionnaires are handed out: the International Prostate Symptom Score including Quality of Life (QOL) Index (I-PSS: Appendix 1), and the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF: Appendix 2) and patients complete these questionnaires before the consultation.¹⁰⁻¹² First, the severities of I-PSS (mild, 0-7; moderate, 8-19; severe, 20-35), and QOL Index (mild, 0 and 1; moderate, 2-4; severe, 5 and 6) were determined according to the total score. Using the ICIQ-SF, the total score and the type of urinary incontinence were checked.^{7,9,12}

General practitioners interviewed and examined patients with regard to the I-PSS, QOL Index and ICIQ-SF. GPs then ordered urinalysis, urine culture and urine cytology (if necessary), and prostate specific antigen (PSA; for men only). Furthermore, GPs instructed the patients to record a urinary frequency volume chart (FVC) for 2 days. Post-void residual urine volume (PVR) was measured using a bladder scan (BVI 6100; Sysmex, Hyogo, Japan) before consultation at the second (or first) visit. PVR severity was determined as follows: mild, less than 50 mL; moderate, 50-100 mL; and severe, 100 mL or more.^{7,9}

At the second visit, GPs determined urination severity as a combination of three severities indicated by the I-PSS, QOL Index and PVR: severe, two or more "severe" ratings; moderate, one "severe", or two or more "moderate" ratings; and mild, other ratings. Finally, LUTS overall severity was determined as one level higher than the urination severity score, when the ICIQ-SF score was one or greater.^{7,9} According to the manual, some treatment is necessary when LUTS severity is moderate or severe.^{7,9}

General practitioners assessed I-PSS voiding subscore (Q1, Q3, Q5, Q6), storage subscore (Q2, Q4, Q7), PVR, FVC (urinary frequency, each and total voiding volume in daytime and night-time) and other examinations, considered the cause of LUTS, and treated with behavioral therapy (water restriction, bladder training, pelvic floor exercise) and/or drug therapy. One or two months later, GPs evaluated PVR, subjective treatment efficacy ("excellent", "good", "fairly good", "no change", "worsened") and patient satisfaction ("excellent", "good", "mixed", "fairly poor", "poor"). When PVR increased or subjective treatment efficacy and/or patient satisfaction were worsened, it was recommended that GPs should refer the patients to urologists.

Okamura *et al.* previously suggested that the elderly should intake adequate water for daily urine volume (mL) to become below bodyweight (kg) \times 25-30 mL, to avoid pollakysuria due to polyuria and/or nocturia due to nocturnal polyuria.¹³ In this paper, polyuria was defined as 1860 mL or more in men and 1620 mL or more in women because the average bodyweights of Japanese men and women aged 65 years old are 62 kg and 54 kg, respectively. Nocturnal polyuria was defined as more than one-third of daily urine volume.¹⁴

We used the Student's *t*-test and χ^2 -test in StatView ver. 5.0 (Hulinks, Tokyo, Japan) for statistical analysis. A *P*-value less than 0.05 was considered significant.

Results

This study included 52 men and 27 women. Patient characteristics are shown in Table 1. ICIQ-SF score ($P = 0.007$), occasions of urinary leakage ($P < 0.0001$) and PVR ($P = 0.038$) were significantly different between men and women.

Table 2 shows I-PSS severity, QOL severity, PVR severity, urination severity and LUTS overall severity. There were no significant differences between sexes. Overall moderate/severe LUTS was diagnosed in 43 (83%) men and 33 (89%) women.

Urinalysis was performed in 69/89 (78%), microscopic urinary sediment examination in 41/89 (46%), urine culture 11/89 (12%), urine cytology in 5/89 (6%) and PSA test in 34/52 (65%).

Table 3 shows types of LUTS. Voiding problems were demonstrated in 32 (61%) men and 10 (27%) women and storage problems were detected in 35 (67%) men and 29 (78%) women. Between sexes, there was a significant difference in the types of LUTS ($P = 0.003$).

The causes of storage problems are shown in Table 4. Overactive bladder was seen in 24 men (69%) and 18 women (62%), polyuria in 18 (51%) and eight (28%), and nocturnal polyuria in 20 (57%) and 12 (41%), respectively. Stress urinary incontinence was shown in 21 women (72%).

Table 1 Patient characteristics

	Men (<i>n</i> = 52)	Women (<i>n</i> = 37)	<i>P</i> -value
Age	71 ± 9	73 ± 9	0.41
Total I-PSS	13.3 ± 7.0	11.4 ± 6.3	0.18
I-PSS voiding subscore	6.7 ± 4.9	5.2 ± 5.3	0.18
I-PSS storage subscore	6.7 ± 3.6	6.2 ± 3.7	0.52
QOL Index	4.1 ± 1.4	3.9 ± 1.6	0.49
ICIQ-SF score	2.2 ± 4.1	4.5 ± 3.8	0.007
Never – urine does not leak	37	10	
Leaks before getting to the toilet	9	12	
Leaks when coughing or sneezing	0	21	
Leaks when sleeping	2	2	<0.0001 [†]
Leaks on physically active/exercising	0	4	
Leaks when finishing urination and being dressed	3	2	
Leaks for no obvious reason	3	2	
Leaks all the time	0	0	
Post-void residual (mL)	49 ± 67	21 ± 49	0.038
Daytime frequency [‡]	8.2 ± 2.4	8.0 ± 1.9	0.71
Daytime urine volume (mL) [‡]	1322 ± 552	1237 ± 585	0.53
Night-time frequency [†]	2.4 ± 1.6	2.2 ± 1.4	0.58
Night-time urine volume (mL) [‡]	625 ± 314	561 ± 370	0.43

[†]Three men and two women did not answer the question. [‡]Eight men and eight women did not mark the frequency volume chart. ICIQ-SF, International Consultation on Incontinence Questionnaire-Short Form; I-PSS, International Prostate Symptom Score; QOL Index, Quality of Life Index.

Table 2 Severities of urinary problem

	Men (<i>n</i> = 52)	Women (<i>n</i> = 37)	<i>P</i> -value
I-PSS			
Mild	14	14	
Moderate	28	19	0.40
Severe	10	4	
QOL index			
Mild	3	6	
Moderate	27	16	0.26
Severe	22	15	
PVR			
Mild	39	32	
Moderate	6	2	0.40
Severe	7	3	
Urination			
Mild	9	12	
Moderate	33	21	0.20
Severe	10	4	
LUTS			
Mild	9	4	
Moderate	24	13	0.25
Severe	19	20	

ICIQ-SF, International Consultation on Incontinence Questionnaire-Short Form; I-PSS, International Prostate Symptom Score; LUTS, lower urinary tract symptoms; PVR, post-void residual urine volume; QOL Index, Quality of Life Index.

Table 3 Types of lower urinary tract symptoms

	Men (<i>n</i> = 52)	Women (<i>n</i> = 37)
Normal	11	6
Voiding symptoms	6	2
Storage symptoms	9	21 [†]
Storage + voiding symptoms	22 [†]	6
Storage + voiding symptoms + post-micturitional dribbling	4	2
Total	52	37

[†]One patient was diagnosed as having cystitis.

As shown in Table 5, GPs treated 36 men and 27 women. Water restriction was prescribed for 17 (47%) men and 14 (51%) women. Bladder training was prescribed for women only and pelvic floor exercise was prescribed for three (8%) men and 16 (59%) women. α -Adrenergic blocker was mainly administered to men and anticholinergics were mainly administered to women.

General practitioners subjectively assessed treatment efficacy in 27 men and 25 women. Efficacy was “excellent” in three (11%) men and four (15%) women, “good” in eight (30%) and 12 (48%), “fairly good” in nine (33%) and seven (28%), and “no change” in seven (26%) and two (8%), respectively. Patient satisfaction was

Table 4 Causes of storage problems (including duplication)

	Men (<i>n</i> = 35)	Women (<i>n</i> = 29)
Overactive bladder		
With urinary incontinence	12	14
Without urinary incontinence	12	4
Polyuria	18	8
Nocturnal polyuria	20	12
Stress urinary incontinence	0	21
Cystitis	1	1
Unknown	1	1

Table 5 Treatment

	Men (<i>n</i> = 36)	Women (<i>n</i> = 27)
Restriction of water	17	14
Behavioral therapy		
Bladder training [†]	0	6
Pelvic floor exercise	3	16
Drug therapy		
α -Adrenergic blocker	20	1
α -Adrenergic blocker + anticholinergics	4	0
Anticholinergics [‡]	2	14
Antibiotics	1	1

[†]All six were also treated with pelvic floor exercise. [‡]One woman was treated with flavoxate hydrochloride.

“excellent” in two men (7%) and four women (16%), “good” in nine (33%) and 16 (64%), “mixed” in 14 (52%) and five (20%), respectively, and “poor” in two men (7%).

Table 6 indicates differences in practice between GPs whose practice was mainly urology or internal medicine. The former treated more men and the latter treated more women. However, there was no difference in the distributions of LUTS types between types of GPs. Behavioral treatment was more adapted by the latter, and treatment efficacy and patient satisfaction was high.

Discussion

With aging, the frequency of LUTS increases.¹⁻⁵ Because one-third of people aged over 50 years consulting GP clinics have some degree of LUTS,⁶ GPs must be able to assess whether these patients need treatment. For GPs to assess patients more efficiently, we developed the Practical Manual for LUTS Evaluation and

Treatment in the Elderly for GPs.^{7,9} Urologists consider that even GPs should initially perform urinalysis for all patients complaining of LUTS, urine culture and urine cytology (if necessary), and PSA testing for men.

Total I-PSS scores and QOL Index were 13.3 and 4.1 in men and 11.4 and 4.1 in women, respectively. Furthermore, frequencies of urination (8.2 + 2.4 in men and 8.0 + 2.2 in women) and urinary incontinence (29% in men and 73% in women), mean voided volume (1322 mL in men and 1237 mL in women) in daytime or night-time (625 mL in men and 561 mL in women) and PVR (49 mL in men and 21 mL in women), and proportion of moderate or severe LUTS (83% in men and 89% in women) were similar to the findings of our previous study.⁹ In that work, we considered that patients having moderate/severe LUTS should be treated after evaluating symptoms adequately.^{7,9} Furthermore, we recommend that GPs should treat these patients after learning the appropriate methods of LUTS practice.

Sixty-seven percent of men and 78% of women demonstrated storage symptoms. Among storage dysfunction, overactive bladder (OAB) was diagnosed in 69% of men and 62% of women. Because drug therapy is very effective for OAB, it is important to identify patients with OAB. Using FVC, polyuria was recognized in 51% of men and 28% of women and nocturnal polyuria in 28% and 41%, respectively. We consider that GPs should use FVC to check polyuria and nocturnal polyuria and should instruct patients regarding adequate water intake.

However, 62% of men and 27% of women have voiding problems. Most of these men might be diagnosed as having benign prostate hyperplasia but GPs should also be aware of voiding dysfunction in approximately 30% of women.

In this study, behavioral treatment such as water restriction, bladder training and pelvic floor exercise were adopted beyond drug therapy. Most female patients with stress urinary incontinence received instruction in pelvic floor exercise by GPs. For drug therapy, anticholinergics were mainly administered to women, while α -adrenergic blocker was administered to men. In 25% of men and 14% of women, PVR of 50 mL or more was demonstrated. It is reported that some elderly patients have PVR in addition to OAB.¹⁵ GPs are encouraged to avoid inappropriate administration of anticholinergics.

Finally, we compared practice between clinics where internal medicine and urology were mainly performed. It is interesting that behavioral treatment was prescribed more frequently in the former and that treatment effectiveness and patient satisfaction were greater than those in the latter. Although more frequent behavior treatment in the former was mainly caused by a difference in the patient sex distribution between the two groups, two more causes for greater patient satisfaction are suggested: (i) patients consulting the former may be generally satisfied with additional LUTS practice of GPs

Table 6 Differences between clinics that mainly practice urology or internal medicine

	Urology (n = 18)	Internal medicine (n = 45)
Background		
Men : women	15:3	21:24
I-PSS	15.8 ± 6.4	11.6 ± 6.6
QOL index	4.7 ± 1.1	3.9 ± 1.5
ICIQ-SF score	2.4 ± 4.9	3.4 ± 3.9
PVR (mL)	38 ± 38	37 ± 67
Normal	0	6 (13%)
Storage problems	5 (28%)	15 (33%)
Voiding problems	3 (17%)	4 (9%)
Storage + voiding problems	8 (44%)	15 (33%)
Storage + voiding symptoms + post-micturitional dribbling	2 (11%)	4 (9%)
Treatment		
Restriction of water	5 (28%)	26 (58%)
Pelvic floor exercise	0	13 (29%)
Bladder training – Pelvic floor exercise	0	6 (13%)
α-Adrenergic blocker	13 (72%)	7 (16%)
α-Adrenergic blocker + anticholinergics	2 (11%)	3 (7%)
Anticholinergics	2 (11%)	13 (29%)
Antibiotics	0	2 (4%)
Treatment efficacy		
Fairly effective or greater	9 (50%)	34 (89%)
Patient satisfaction		
Fairly satisfied or greater	8 (44%)	24 (61%)

Treatment efficacy and patient satisfaction were evaluated in 14 and 38 patients who were treated by doctors practicing mainly urology and internal medicine, respectively. ICIQ-SF, International Consultation on Incontinence Questionnaire-Short Form; I-PSS, International Prostate Symptom Score; PVR, post-void residual urine volume; QOL Index, Quality of Life Index.

in charge; and (ii) the demands of patients consulting the latter may be higher.

In this study, we developed a record sheet so that GPs could more easily conduct LUTS examination and data analysis could also be easily performed. The manual, lectures, questionnaires, bladder scan, FVC and record sheet allowed GPs to provide superior LUTS practice. The author (KO), being a urologist, thinks that GPs are capable of performing LUTS practice as well as urologists can. However, it is necessary to refer patients to urologists when the treatment efficacy is not very good or patient satisfaction is low.

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Appendix 1

International prostate symptom score (I-PSS) and quality of life index (QOL index)

	Not at all	Less than 1 time in 5	Less than half the time	about half the time	More than half the time	Almost always	
Over the past month, how often have you had a sensation of not emptying your bladder completely after you finished urinating?	0	1	2	3	4	5	
Over the past month, how often have you had to urinate again less than 2 hours after you finished urinating?	0	1	2	3	4	5	
Over the past month, how often have you stopped and started again several times when you urinated?	0	1	2	3	4	5	
Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5	
Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5	
Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5	
Over the past month, how many times did you most typically get up to urinate from the time you went to bed at night until the time you got up in the morning?	None 0	1 time 1	2 times 2	3 times 3	4 times 4	5 times 5	
	Delighted	Pleased	Mostly satisfied	Mixed – about equally satisfied and dissatisfied	Mostly dissatisfied	Unhappy	Terrible
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	0	1	2	3	4	5	6

Appendix 2

International Consultation on Incontinence Questionnaire Short-Form (ICIQ-SF)

1. How often do you leak urine?	
Never	0
About once a week or less often	1
2 or 3 times a week	2
About once a day	3
Several times a day	4
All the time	5
2. How much urine do you usually leak?	
None	0
Small amount	2
Moderate amount	4
Large amount	6
3. Overall, how much does leaking urine interfere with your everyday life?	
Please ring a number between 0 (not at all) and 10 (a great deal)	
0 1 2 3 4 5 6 7 8 9 10	
Not at all	a great deal
4. When does urine leak?	
Never – urine does not leak	
Leaks before you can get to the toilet	
Leaks when you cough or sneeze	
Leaks when you are asleep	
Leaks when you are physically active/exercising	
Leaks when you have finished urinating and are dressed	
Leaks for no obvious reason	
Leaks all the time	
