Urological surveillance and management of patients with neurogenic bladder: results of a survey among practicing urologists in Canada

Bertil F. M. Blok, MD, Gilles Karsenty, MD, Jacques Corcos, MD

Department of Urology, Jewish General Hospital, McGill University, Montreal, Quebec, Canada

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Objective: *To determine current trends in management and surveillance of the neurogenic bladder population by Canadian urologists who routinely work with and provide care for these patients.*

Methods: *A questionnaire was mailed to members of the Canadian Urological Association. The assessment and follow-up of upper and lower urinary tract function in neurogenic bladder patients, their optimal frequency and management of related infections were the topics of inquiry.*

Results: *One hundred and five of 602 urologists responded, for a response rate of 18%. Twenty-three (22%) of the respondents did not treat neurogenic bladder patients. Four out of five urologists who treated these patients favored a yearly renal ultrasound for routine surveillance of the upper urinary tract and routinely performed urodynamic studies for evaluation of the lower tract. Only a relatively small percentage used videourodynamics. Clean intermittent catheterization (CIC) was preferred for the management of neurogenic bladder in patients with emptying difficulties. Asymptomatic urinary tract infection (UTI) was preferably not treated. Symptomatic UTI was treated with antibiotics for 7 to 10 days by about 75% of the responding urologists, while 23% of female patients and 9% of male patients were treated for less than 7 days. Although most of the urologists had access to established treatment modalities, like CIC education and bladder augmentation, only 30% made use of botulinum toxin injections.*

Conclusions: *This study confirms that most urologists in Canada, working with neurogenic bladder patients, follow principles reported in the literature regarding the need for evaluation, surveillance, and management of the urinary tract. However, there is no consensus on the specific methods used for surveillance of the urinary system. The results emphasize the need for clear guidelines in this field of urology in Canada.*

Key Words: neurogenic bladder, spinal cord injury, multiple sclerosis, urological practice, Canadian urologists, urological survey, guidelines

Introduction

Neurogenic bladder and urethral sphincter dysfunction may be caused by a variety of diseases affecting the peripheral or central nervous system. The symptomatology depends on the level and extent of the neural injury, and can result in either bladders that fail to empty successfully and those that fail to store urine adequately. The management of bladder symptoms is important to prevent upper urinary tract deterioration, but there is no consensus regarding the optimal surveillance and management of neurogenic lower urinary tract dysfunction. Recently, the results of questionnaires on current practice patterns in urological surveillance and management of spinal cord injury (SCI) patients were reported in the United States, United Kingdom and Japan[1-3] but did not address the neurogenic bladder and urethral sphincter in general. The present data were based on a questionnaire concerning practice patterns in the surveillance and management of neurogenic bladder patients by specialized urologists who routinely evaluate and provide care to these patients. These results will be used to develop guidelines on the surveillance and management of neurogenic bladder in Canada.

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Address correspondence to Dr. Jacques Corcos, Department of Urology, Jewish General Hospital, McGill University, 3755 Côte Sainte-Catherine Road, Montreal, Quebec H3T 1E2 Canada

Materials and methods

A nine-point questionnaire, see Table 1, with subquestions was designed and sent in March 2005 to all 602 members of the Canadian Urological Association (CUA, in English) and to 128 members of the Quebec Urological association (in French). After a month, a reminder was e-mailed to anyone who did not return his/her questionnaire. When a urologist was not involved in the diagnosis and treatment of SCI patients, he/she was asked not to fill in the questionnaire but to return it. Key areas of concern were the treatment of urinary tract infection (UTI), the need for and frequency of upper and lower tract surveillance with ultrasound (US), nuclear scan, or radiography, the necessity and time interval of (video-) urodynamic study, and access to specific therapeutic tools. The survey was undertaken on a voluntary basis. No direct patient information was released. The responses were used to create a database that was then analyzed to reveal management and surveillance trends.

Results

Of the 602 urologists surveyed, 105 responded, for a response rate of 18%. The demographic distribution of the responders was as follows: 13% had been in practice for 5 years, 21% for 6 to 10 years, 14% for 11 to 15 years, and 52% for more than 15 years. About 20% of the urologists consulted neurogenic bladder patients in a specialized readaptation centre.

Type of investigation and optimal frequency

Surveillance

Neurogenic bladder patients were routinely followed up, mostly at 12 months (58%), but a considerable group was followed more frequently (3 to 6 months) (34% or n = 24).

Upper tract evaluation

Regarding routine upper tract imaging for patient follow-up, 78% favored once every 12 months, 17% thought that once every 24 months was appropriate, and 5% preferred once every 6 months. Ninety-three percent (n = 74) of respondents believed that an US was the diagnostic study of choice for routine surveillance of the upper tract, 6% (n = 5) favored a yearly intravenous urogram (IVU) instead of a renal US, and 1% would choose renal scan.

Lower tract evaluation

With respect to the lower urinary tract, 75% (n = 60) of respondents undertook urodynamic study, and 11% (n = 9), videourodynamic study. This was performed annually or every other year. The remaining 14% (n = 12) did not consider routine urodynamic study necessary. One-third of the urologists performed the urodynamic study themselves.

Management

Clean intermittent catheterization (CIC) was the most common modality selected to manage neurogenic bladder in patients with emptying difficulties (96% or n = 79). Long-term indwelling catheter drainage was used by only a few urologists (5% or n = 3). Patients on CIC with asymptomatic UTI were routinely administered antibiotics by only 7% (n = 6) of the urologists. The majority of symptomatic UTIs (73% of women and 83% of men) were given antibiotics for 7 to 10 days, while 23% of female patients and 9% of male patients were treated for less than 7 days. Seven per cent favored treatment for 2 or 3 weeks.

About 80% of the urologists made use of surgical modalities, such as bladder augmentation and continent diversion, 60% had access to artificial urethral sphincters, and 44%, to urethral stents for sphincter dyssynergia. Only 28% (n = 23) had access to botulinum toxin injections, 20% (n = 16), sacral neuromodulation, and 4% (n = 3), sacral neurostimulation (Brindley).

Discussion

This survey was designed as a need assessment before starting the process of producing Canadian guidelines on neurogenic bladders, as decided by the Guidelines Committee of the CUA. In our experience, it was the first time that we surveyed Canadian including Quebec urologists by using electronic mailing lists of the two associations. We have sent around 700 surveys (considering those who are members of both associations) and received only 18% responses. The response rate cannot be compared with previously published surveys, since these were exclusively on spinal cord injury and surveyed only urologists with a specific interest in functional urology[1] or spinal injury.[2,3] However, it is possible that the relatively low response introduces some bias in the results towards urologists with specific interest in the treatment of neurogenic bladder. The low response rate may be explained by the usual lack of interest in neurogenic bladder dysfunction by urologists, most probably because they are not aware of recent developments in this fascinating subspecialty. The point by itself is an encouragement to develop guidelines.

TABLE 1. **Survey results**

Question 1. Do you see and manage patients with neurogenic bladders?
Yes: 81 No: 22 No answer: 1
Adults: 43 Children: 5 Both: 11 No answer: 22

Question 2. Do you see neurogenic bladder patients?
a. In a readaptation centre: 4 In your hospital: 57 Both: 11 No answer: 11
b. As a single practitioner: 45 Part of a multidisciplinary clinic: 13 No answer: 23

Question 3. In patients with voiding difficulties, what is your first choice of treatment?
Indwelling catheter (urethral): 2 Indwelling catheter (suprapubic): 2
Clean intermittent catheter: 78 Other: 1

Question 4. Do you routinely treat asymptomatic UTI in patients with:
Indwelling catheter?: Yes: 0 No: 81
Intermittent catheterization?: Yes: 6 No: 75

Question 5. For how many days do you routinely treat UTI in patients with neurogenic bladders?

In men		**In women**	
No. of days	Responders	No. of days	Responders
5	6	3-6	10
5-10	1	5	11
7	40	7	37
7-10	6	7-10	4
7-14	1	7-14	1
10-12	16	10	10
14	4	14	2
21	1	21	1
No answer 5		No answer: 2	

Question 6. How frequently do you perform routine follow-up in these patients?
3 months: 6 6 months: 24 12 months: 41 24 months: 2

Question 7. Regarding routine upper tract imaging for patient follow-up:
a. How frequently do you perform it?
3 months: 0 6 months: 4 12 months: 61 24 months: 13

b. What upper tract imaging do you request?
US: 74 IVP: 5 Renal scan: 1

Question 8. Regarding urodynamic testing for patient follow-up:
a. How frequently do you perform it?
3 months: 0 6 months: 4 12 months: 61 24 months: 13

b. Do you routinely perform:
Multichannel urodynamic study?: 60 Videourodynamic study?: 9

c. Do you do it yourself? Yes: 23 No: 54

d. Do you use rectal catheter for abdominal pressure? Yes: 65 No: 3

Question 9. Which of these specific therapeutic tools do you have access to?
CIC education: 76 Botulinum toxin injections: 23
Urethral stents (Urolume, other): 36 Artificial urinary sphincter: 49
Bladder augmentation, continent diversion, lower urinary tract reconstruction: 64
Sacral neuromodulation: 16 Neurostimulation (Brindley): 3

The early prognosis of patients with neurogenic bladder depends on associated complications as well as the level and degree of neural lesions. However, long-term prognosis depends on regular and close follow-up to detect complications and coexistent urologic conditions, combined with proper management. Management and surveillance should focus on prevention of high detrusor pressures and UTI related to post-voiding residuals. In neurogenic patients, those with detrusor leak point pressure (DLPP) greater than 40 cmH_2O are at significantly greater risk of upper tract deterioration compared to those with DLPP less than 40 cmH_2O.[4] The primary objective in the care of neurogenic bladder patients is the prevention of complications by establishing effective urinary drainage, and, ultimately, preservation of renal function. Consistent with the guidelines of the European Association of Urology,[5] close urological follow-up of the upper urinary tract is necessary and favored by most urologists. The majority of physicians prefer renal US over renal scan as a reliable imaging modality for surveillance of the upper tract in neurogenic bladder patients. CT scan and IVU are not performed routinely and are selected in cases of urosepsis, stone disease, new-onset hematuria, or recurrent UTI. It is not known from our investigation whether these other types of evaluation would be more effective because our study sought to ascertain common practice patterns and not the efficacy of different management protocols.

To protect the upper urinary tract, CIC is favored in patients with emptying difficulties. It has been reported that, in contrast to CIC, chronic indwelling catheters may result in low-compliance bladders and contribute to renal deterioration in SCI patients.[6] Low-compliance bladders are associated with vesicoureteral reflux, radiological upper tract changes, and stones. In accordance with these study data, 96% of respondents favor the use of CIC in these patients. Unfortunately, in some patients, urethral trauma from repeated catheterizations and mechanical problems related to manual dexterity may exclude CIC, and continuous urinary drainage must be instituted. In select cases (only 5% of those surveyed favored long-term indwelling catheter drainage), long-term urethral or suprapubic indwelling catheters are an option, but close monitoring is necessary with periodic cystoscopy for the detection of bladder cancer.

It has been shown in patients with incomplete SCI that neurogenic bladder is frequently present despite near total neurological recovery.[7] Salient deterioration in bladder dysfunction is not uncommon in these patients. Furthermore, patients considered to have stable urinary tracts without voiding symptoms can present significant pathology verifiable on urodynamic examination.[8] Videourodynamic study is ideal to establish urinary tract status and to determine detrusor pressures and associated reflux. Yearly routine urodynamic evaluation is favored by 75% of Canadian urologists. Our survey demonstrated that only 11% of respondents performed videourodynamic study on a routine basis.

There is a relative consensus (93%) that asymptomatic bacteriuria in neurogenic bladder should not be treated, but Canadian urologists do not agree on the duration of symptomatic UTI treatment in these patients. The majority of symptomatic UTIs are treated with antibiotics for 7 to 10 days, with 23% of female patients and 9% of male patients being treated for less than 7 days. Recently, a survey on the evaluation and management of bacteriuria in spina bifida and neurogenic bladder clinics in the United States showed a lack of consensus consistent with the present results.[9]

Our present survey reveals a wide acceptance of invasive surgical methods, like bladder augmentation and continent diversion, to lower detrusor pressure and prevent vesicourethral reflux, but less than 30% have access to minimal invasive methods, like botulinum toxin injections in the detrusor wall. Outlet resistance-lowering procedures, such as Urolume stent placement and botulinum toxin injections, may be used in men with detrusor external sphincter dyssynergia (DESD) to decrease DLPP to an acceptable level and prevent reflux. In previous studies, stent placement seemed to be accepted, since about 45% of respondents indicated that there was a selective place for urethral stents in the management of DESD, but botulinum toxin injections in the external urethral sphincter were used by a small minority of urologists.

Conclusions

The need for prolonged, careful upper and lower urinary tract follow-up in neurogenic bladder patients to reduce the incidence of complications and the progressive loss of renal function has been clearly emphasized by us and other authors. Our survey results demonstrate that, among urologists involved in the care of neurogenic bladder patients, about 75% agree on routine follow-up and surveillance of the lower and upper tract, although there is no consensus regarding methods for evaluating the lower urinary tract. There is also no clear consensus on how long antibiotics should be continued in symptomatic UTI

and whether minimal invasive methods need to be used to lower detrusor and urethral pressures. Guidelines on neurogenic bladder and sphincter dysfunction must be undertaken to address these issues. To our knowledge, this is the first survey on the issue of practice patterns in neurogenic bladder patients. □

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