ODESSA NATIONAL MEDICAL UNIVERSITY

Department of urology and nephrology

GUIDELINES
of independent work of students

Academic discipline “Urology”

The theme of independent work of students: neurogenic urination disorders; enuresis; overactive bladder; prevalence of urination disorders in the Southern region of Ukraine.

Academic discipline “Urology”
Level of higher education: Second (Master’s)
Knowledge field: 22 "Health Care"
Specialty: 222 "Medicine"
Program of professional education: Medicine

Approved
methodological meeting on the chair
28. 08. 2023
Protocol № 1
Head. Chair prof. F.I. Kostev

Odesa 2023

Subject: neurogenic urination disorders; enuresis; overactive bladder; prevalence of urination disorders in the Southern region of Ukraine.

Quantity of hours - 1.

I. Urgency of a subject.

The lower urinary tract has two function: storage of urine and expulsion of urine. The two anatomic components of the lower urinary tract (LUT) are the bladder and the bladder outlet. At patients with neurogenic lower urinary tract dysfunction (NLUTD) owing to defeat of the central or peripheral nervous system the processes coordination of pressure and a relaxation of muscles is broken.

II. Educational purposes.

To know the basic etiologic factors in patients with neurogenic lower urinary tract dysfunction (α = II).

To acquire classification neurogenic lower urinary tract dysfunction (α = II).

To be able to performe diagnostic of neurogenic lower urinary tract dysfunction (α = III).

To be able to interpret data neurophysiology researches (α = III).

To be able to appoint adequate treatment (α = III).

To know stages of operative interventions which are used at the mentioned pathology (α = III).

III. Interdisciplinary integration.

Disciplines	To know	To be able
1. The previous disciplines: Anatomy Physiology Ray diagnostics Neurofisiologic diagnostics Patanatomy	Anatomy of bodies of urinogenital system. Physiology lower urinary tract Techniques of ultrasonic, urography, Urodynamics evaluations, Histologic	To interpret the data ultrasonics, urography. Correctly to take away a material for histologic research.
2. Following disciplines: Neurosurgery, Neurology	To be able to diagnose and predict infringement urine voiding at neuralgic patients.	To define true medical tactics.

IV. The contents of a subject.

Risk factors and epidemiology.

NLUTD may be caused by various diseases and events affecting the nervous systems controlling the LUT. The resulting lower urinary tract dysfunction (LUTD) depends grossly on the location and the extent of the neurological lesion. There are no figures on the overall prevalence of NLUTD in the general population, but data are available on the prevalence of the underlying conditions and the relative risk of those for the development of NLUTD. It is

important to realize that most of these data show a very wide range of prevalence figures because of the low level of evidence in most published data and smaller sample sizes.

Brain tumours

Brain tumours can cause LUTD in 24% of patients. More recently, mostly case reports to small series have been published. In a series of patients with brain tumours, voiding difficulty was reported in 46/152 (30%) of patients with tumours in the posterior fossa, while urinary incontinence occurred in only three (1.9%) patients.

Urinary retention was found in 12/17 (71%) children with pontine glioma.

Dementia

It is not easy to distinguish dementia-associated LUTD from LUTD caused by age-related changes of the bladder and other concomitant diseases and therefore the true incidence of incontinence caused by dementia is not known. However, it has been shown that incontinence is much more frequent in geriatric patients with dementia than in patients without dementia.

Mental retardation

In mental retardation, depending on the grade of the disorder, 12-65% of LUTD was described.

Cerebral palsy

LUTD has been described in about 30-40%.

Normal pressure hydrocephalus

There have only been case reports of LUTD.

Basal ganglia pathology (Parkinson's disease, Huntington's disease, Shy-Drager syndrome, etc)

Parkinson's disease is accompanied by NLUTD in 37.9-70%. In the rare Shy-Drager syndrome, almost all patients have NLUTD, with incontinence found in 73%. Hattori et al. reported that 60% of Parkinson patients had urinary symptoms. However, Gray et al. reported that functional disturbances of the LUT in Parkinson's disease were not disease-specific and were correlated only with age. Recent, control-based studies have given the prevalence of LUT symptoms as 27- 63.9% using validated questionnaires (30-32), or 53% in men and 63% in women using a non-validated questionnaire, which included a urinary incontinence category, with all these values being significantly higher than in healthy controls. In most patients, the onset of the bladder dysfunction occurred after the motor disorder had appeared.

Cerebrovascular (CVA) pathology

Cerebrovascular pathology causes hemiplegia with remnant incontinence NLUTD in 20-50% of patients, with decreasing prevalence in the post-insult period. In 1996, 53% of patients with CVA pathology ha significant urinary complaints at 3 months. Without proper treatment, at 6 months after the CVA, 20-30% of patients still suffered from urinary incontinence. The commonest cystometric finding was detrusor

overactivity. In 39 patients who had brainstem strokes, urinary symptoms were present in almost 50%, nocturia and voiding difficulty in 28%, urinary retention in 21%, and urinary incontinence in 8%. Several case histories have been published presenting difficulties with micturition in the presence of various brainstem pathologies.

Demyelinization

Multiple sclerosis causes NLUTD in 50-90% of the patients. The reported incidence of voiding dysfunction in multiple sclerosis is 33-52% in patients sampled consecutively, regardless of urinary symptoms. This incidence is related to the disability status of the patient. There is almost a 100% chance of having LUT dysfunction once these patients experience difficulties with

walking. NLUTD is the presenting symptom in 2-12% of patients, with this finding being as high as 34% in some studies. LUT dysfunction appears mostly during the 10 years following the diagnosis.

Spinal cord lesions. Spinal cord lesions can be traumatic, vascular, medical or congenital. An incidence of 30-40 new cases per million population is the accepted average for the USA. Most of these patients will develop NLUTD . The prevalence of spina bifida and other congenital nerve tube defects in the UK is 8-9 per 10,000 aged 10-69 years, with the greatest prevalence in the age group 25-29 years, and in the USA 1 per 1,000 births. The incidence of urethrovesical dysfunction in myelomeningocele is not completely known, but most studies suggest it is very high at 90-97%. About 50% of these children will have detrusor sphincter dyssynergia (DSD).

*Disc disease.*This is reported to cause NLUTD in 28-87% of the patients (<20%). The incidence of cauda equine syndrome due to central lumbar disc prolapse is relatively rare and is about 1-5% of all prolapsed lumbar discs. There have been case reports of NLUT without cauda equine syndrome.

Spinal stenosis and spine surgery. About 50% of patients seeking help for intractable leg pain due to spinal stenosis report symptoms of LUTD, such as a sense of incomplete bladder emptying, urinary hesitancy, incontinence, nocturia or urinary tract infections (UTIs). These symptoms may be overlooked or attributed to primary urological disorders, wit 61-62% affected by LUTD. The prevalence of neurological bladder is more significantly associated with the anteroposterior diameter of the dural sac than with its cross-sectional area. Spinal surgery is related to LUTD in 38-60% of patients.

Peripheral neuropathy. Diabetes: This common metabolic disorder has a prevalence of about 2.5% in the American population, but the disease may be subclinical for many years. No specific criteria exist for secondary neuropathy in this condition, but it is generally accepted that 50% of patients will develop somatic neuropathy, with 75-100% of these patients developing NLUTD. Diabetic patients suffer from various polyneuropathies, with ‘diabetic cystopathy’ reported in 43-87% of insulin-dependent diabetics without gender or age differences. It is also described in about 25% of type 2 diabetic patients on oral hypoglycaemic treatment.

Alcohol abuse will eventually cause peripheral neuropathy. This has a reported prevalence that varies widely from 5-15% to 64%. NLUTD is probably more likely to be present in patients with liver cirrhosis. The parasympathetic nervous system is attacked more than the sympathetic nervous system.

Less prevalent peripheral neuropathies include the following:

• Porphyria: bladder dilatation occurs in up to 12% of patients.

• Sarcoidosis: NLUTD is rare.

• Lumbosacral zone and genital herpes: incidence of LUT dysfunction is as high as 28% when only lumbosacral dermatome-involved patients are considered. The overall incidence is 4%. NLUTD is transient in most patients.

• Guillain Barre syndrome: the prevalence of micturition disorders varies from 25% to more than 80%, but is regressive in most cases. The true incidence is uncertain because, during the acute phase, patients are usually managed by indwelling catheter.

Other conditions (SLE). Nervous system involvement occurs in about half of patients with systemic lupus erythematosus (SLE). Symptoms of LUT dysfunction can occur, but data on prevalence are rare and give an incidence of 1%.

HIV. Voiding problems have been described in 12% of HIV-infected patients, mostly in advanced stages of the disease.

Regional spinal anaesthesia. This may cause NLUTD but no prevalence figures have been found.

Iatrogenic. Abdominoperineal resection of rectum has been described as causing NLUTD in up to 50% of patients. One study has reported that NLUTD remains a long-term problem in only 10%; however, the study was not clear whether this was because the neurological lesion was cured or bladder rehabilitation was successful. Surgical prevention with nerve preservation was shown to be important.

NLUTD has been reported following simple hysterectomy and in 8-57% of patients following radical hysterectomy or pelvic irradiation for cervical cancer. Surgical prevention can be used to prevent it. Neurological dysfunction of the pelvic floor has been demonstrated following radical prostatectomy.

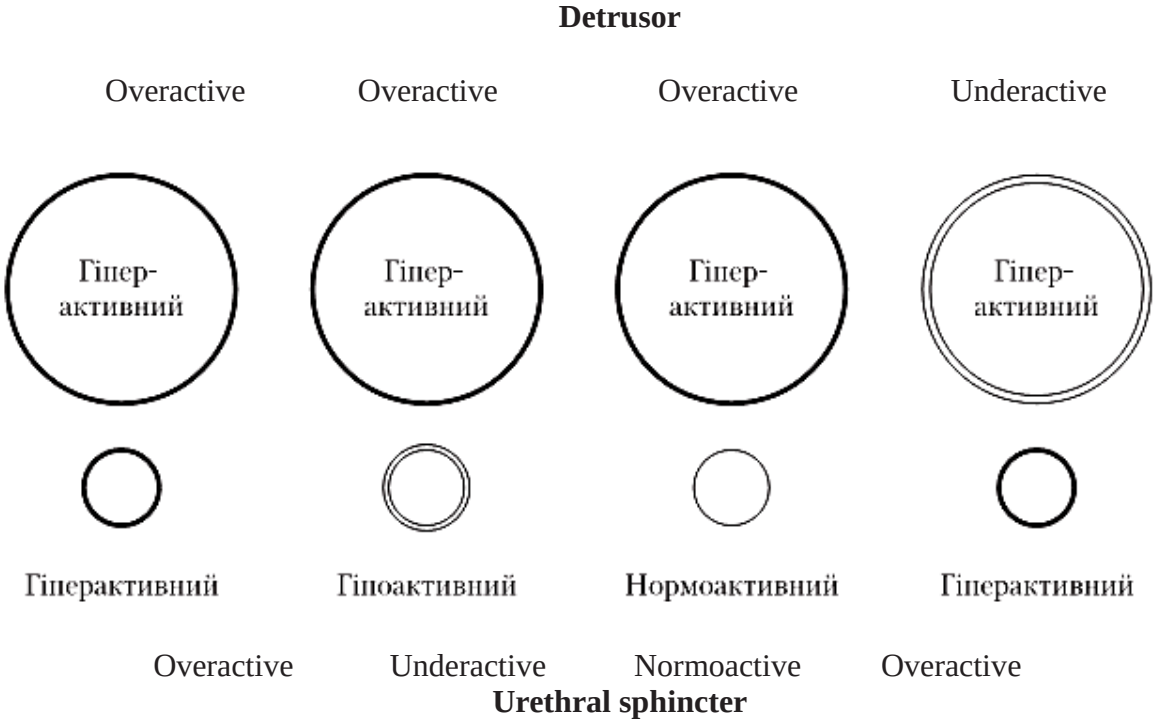
Classification. The classification of NLUTD helps to facilitate the understanding and management of NLUTD and to provide a standardized terminology of the disease processes. The normal LUT function depends on neural integration at, and between, the peripheral, spinal cord, and central nervous systems. The gross type of NLUTD is dependent on the location and the extent of the lesion: suprapontine or pontine, suprasacral spinal cord, or subsacral and peripheral.

The classification systems for NLUTD are based on either the neurological substrate (type and location of the neurological lesion), the neuro-urological substrate (neurological lesion and LUTD), the type of LUTD, or are strictly functional. Many descriptive terms were derived from these classification systems. However, they are standardized only within any specific system, have little meaning outside the system, and can sometimes be confusing.

A perfect classification system does not exist. Neurological classification systems, by nature, cannot describe the LUTD completely and vice versa. Individual variations exist in the NLUTD caused by a specific neurological lesion, so that the description of the NLUTD should be individualized for any particular patient.

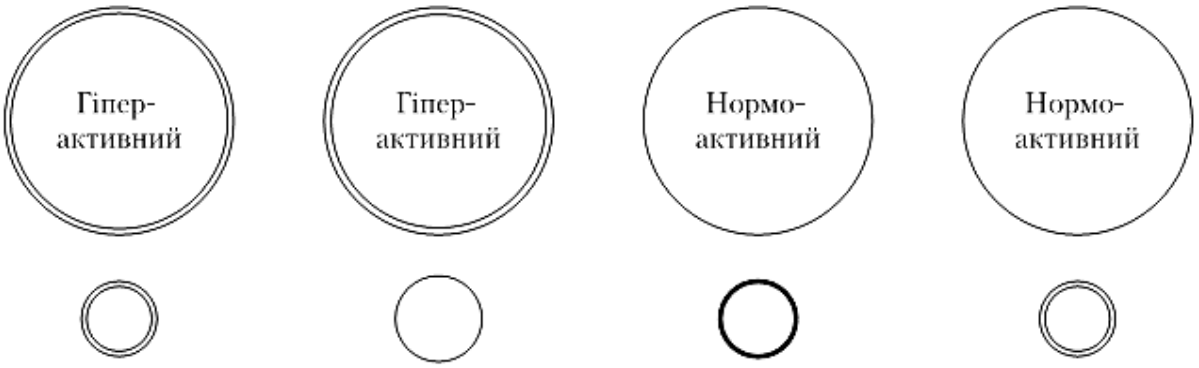
Madersbacher presented a very simple classification, which basically focused on the therapeutic consequences (Figure1.). It is based on the clinical concept that the important differentiation in the diagnosis exists between the situations of high and low detrusor pressure during the filling phase and urethral sphincter relaxation and non- relaxation or DSD during the voiding phase. A non-relaxed sphincter or DSD will cause high detrusor pressure during the voiding phase. This classification is the easiest one for general use in the clinical diagnosis of NLUTD.

Figure1. Madersbacher classification system with typical neurogenic lesions



Detrusor

Underactive Underactive Normoactive Normoactive



Underactive Normoactive Overactive Underactive

Urethral sphincter

DIAGNOSIS

Before any functional investigation is planned, an extensive general and specific diagnosis should be performed. Part of this diagnosis is specific for neurogenic pathology and its possible sequelae. The clinical assessment of patients with NLUTD includes and extends that for other LUTD. The latter should consist of a detailed history, bladder diary and a physical examination. In urinary incontinence, leakage should be demonstrated objectively.

These data are indispensable for reliable interpretation of the findings in diagnostic investigations performed subsequently in NLUTD.

General history

The general history should include relevant questions about neurological and congenital abnormalities, social factors and the patient's motivation, any previous occurrences and frequency of urinary infections, and relevant surgery. Information must be obtained on medication with known or possible effects on the lower urinary tract. The general history should also include the assessment of menstrual, sexual and bowel function, and obstetric history.

Hereditary or familial risk factors should be recorded. Symptoms of any metabolic disorder or neurological disease that may induce NLUTD must be checked particularly. Specific signs, such as pain, infection, haematuria, fever, etc, may justify further particular diagnosis.

Items of particular importance include:

• Congenital anomalies with possible neurological impact
• Metabolic disorders with possible neurological impact
• Preceding therapy, including surgical interventions
• Present medication
• Lifestyle factors, such as smoking, alcohol, or addictive drug use
• Infections of the urinary tract
• Quality of life
• Life expectancy.

Urinary history: This consists of symptoms related to both the storage and the evacuation functions of the lower urinary tract. The onset and the nature of the NLUTD (acute or insidious) should be determined. Specific symptoms and signs must be assessed in NLUTD and

if appropriate should be compared with the patient's condition before the NLUTD developed. The separate diagnostic field items should be diagnosed in as much detail as possible:

- LUTS
- Voiding pattern
- Urinary incontinence
- Bladder sensation
- Mode and type of voiding (catheterization!).

The urinary (bladder) diary gives (semi-)objective information about the number of voidings, daytime and night-time voiding frequency, volumes voided, and incontinence and urge episodes.

Bowel history: Patients with NLUTD may suffer from a related neurogenic condition of the lower gastrointestinal tract. The bowel history must also address symptoms related to the storage and evacuation functions. Specific symptoms and signs must be compared with the patient's condition before the neurogenic dysfunction developed. Again, the diagnostic items should be detailed:

- Ano-rectal symptoms
- Defecation pattern
- Fecal incontinence
- Rectal sensation
- Mode and type of defecation.

Sexual history: Sexual function may also be impaired because of the neurogenic condition. The details of the

history will differ of course between men and women:

- Genital or sexual dysfunction symptoms
- Sexual function
- Sensation in genital area and for sexual functions
- Erection or arousal
- Orgasm
- Ejaculation.

Neurological history: This should concentrate on the following information:

- Acquired or congenital neurological condition
- Neurological symptoms (somatic and sensory), with onset, evolution, and performed therapy
- Spasticity or autonomic dysreflexia (lesion level above Th6).

Individuals with spinal cord injury (SCI) are often not accurate at knowing whether they have had a urinary tract infection based on their symptoms.

General physical examination

Attention should be paid to the patient's physical and possible mental handicaps. Problems may be caused by impaired mobility, particularly in the hips, or extreme spasticity. Patients with very high neurological lesions may suffer from a significant drop in blood pressure when moved in a sitting or standing position. Subjective indications of bladder filling sensations may be impossible in mentally impaired patients. Inspection of the abdominal wall, prostate palpation or observation of pelvic organ prolapse is mandatory.

Neuro-urological examination

General neurological examination: This investigates the motor and sensory functions of the body, the limbs and hand functions. A suprapubic globe should be looked for and the skin condition in the genital and perineal regions should be assessed.

Specific neuro-urological examination: This investigation is necessary in patients with NLUTD. It includes

several tests for sacral reflex activity and an evaluation of the sensation in the perineal area. Figure 3.1 shows

the different dermatomes and Figure 3.2 the associated reflexes in this area.

Specified information should become available on:

• Sensation S2-S5 on both sides of the body
• Reflexes
• Anal sphincter tone
• Volitional contraction of anal sphincter and pelvic floor.

Essential investigations

Essential investigations include:

• Urinalysis
• Blood chemistry
• Voiding diary
• Assessment of residual urine, if possible with free flowmetry. Because of natural variations, several assessments (at least 2-3) are necessary.
• Quantification of urine loss by pad testing if appropriate
• Urinary tract imaging studies.

Urodynamic tests

A bladder diary is a semi-objective qualification of the LUT. It is a highly advisable diagnostic tool. For reliable interpretation, it should be recorded over at least 2-3 days (3,14). Possible pathological findings: high voiding frequency, very low or very high voided volumes, nocturnal voidings, urgency, incontinence.

Free uroflowmetry and assessment of residual urine gives a first impression of the voiding function. It is mandatory before planning any invasive urodynamics. For reliable information, it should be repeated at least 2- 3 times. Possible pathological findings: low flow rate, low voided volume, intermittent flow, hesitancy, residual urine. Care must be taken when assessing the results in patients who are not able to void in a normal position. Both the flow pattern and the flow rate may be modified by inappropriate positions and by any constructions to divert the flow.

Filling cystometry: The only method to quantify the filling function has limited significance as a solitary procedure. It is much more powerful if combined with bladder pressure measurement during micturition and even more in video-urodynamics. This investigation is necessary to document the status of the LUT function during the filling phase.

Detrusor leak point pressure (DLPP): This specific investigation may estimate the risk for the upper urinary tract or for secondary bladder damage

Pressure flow study: This measurement reflects the co-ordination between detrusor and urethra or pelvic floor during the voiding phase. It is even more powerful in combination with filling cystometry and with video urodynamics. It is necessary to document the function of the lower urinary tract function during the voiding phase.

Electromyography (EMG): Registration of the activity of the external urethral sphincter, the peri-urethral striated musculature, the anal sphincter, or the striated pelvic floor muscles. The correct interpretation may be difficult due to artefacts introduced by other equipment used. In the urodynamic setting an EMG is useful as a gross indication of the patient's ability to control the pelvic floor.

Urethral pressure measurement: This investigation has only a very limited place in NLUTD. There exists no basic consensus on parameters indicating pathological findings.

Video-urodynamics: This combination of filling cystometry and pressure flow study with imaging is the gold standard for urodynamic investigation in NLUTD. Possible pathological findings: All as described under cystometry and pressure flow study, plus morphological pathology of the LUT and the upper urinary tract.

TREATMENT

The primary aims for treatment of NLUTD and their priorities are:

1. Protection of the upper urinary tract
2. Improvement of urinary continence
3. Restoration of (parts of) the LUT function
4. Improvement of the patient's quality of life.

Non-invasive conservative treatment

Assisted bladder emptying

Incomplete bladder emptying is a serious risk factor for UTI, developing a high intravesical pressure during the filling phase, and incontinence. Methods to improve the voiding process are practised in patients with NLUTD.

Third party bladder expression (Crede): Regretfully, this method is still applied, foremost in infants and young children with myelomeningocele and sometimes in tetraplegics. Because of the high pressures that may be created during this procedure, it is potentially hazardous for the urinary tract.

Voiding by abdominal straining (Valsalva): The considerations mentioned under Crede above also apply to the Valsalva manoeuvre. For both methods of emptying, long-term complications are hardly avoidable and the already weak pelvic floor function may be further impaired, thus exacerbating the existing incontinence.

Triggered reflex voiding: Stimulation of the sacral or lumbar dermatomes in patients with UMNL can elicit reflex contraction of the detrusor. Morbidity occurs more often during the first decades of treatment. Strict urodynamic control is therefore required.

Lower urinary tract rehabilitation

Behavioural modification techniques: These are used to improve continence and include prompted voiding, timed voiding (bladder training), and lifestyle modification.

Pelvic floor muscle exercises: These aim to improve continence. They may be helpful in selected patients with NLUTD.

Pelvic floor electrostimulation: This technique may help to improve the effect of pelvic floor muscle exercises, or to teach the patient how to contract the pelvic floor, or to improve the patient's compliance with the exercises (11,22,23).

Biofeedback: This method can be used for supporting the voiding pattern modification.

Drug treatment

A single optimal medical therapy for NLUTD is not yet available. A combination of therapies is currently the best way to maximize outcomes (Level of evidence: 1a, Grade of recommendation: A).

Anticholinergic agents are the most useful medications available for neurogenic detrusor overactivity (NDO) (Level of evidence: 1a, Grade of recommendation: A). As these drugs bind to muscarinic receptors, they are also termed muscarinic receptor antagonists. Anticholinergic agents are used to reduce detrusor overactivity and to improve bladder compliance (Level of evidence: 1a, Grade of recommendation:

A).

Neurogenic patients may need a higher dose of anticholinergics than patients with idiopathic detrusor overactivity (Level of evidence: 1b, Grade of recommendation: A). However, this may lead to early discontinuation of therapy because of adverse events (Level of evidence: 1b, Grade of recommendation: A).

Oxybutynin (Level of evidence: 1a, Grade of recommendation: A), trospium chloride, tolterodine (Level of evidence: 1a, Grade of recommendation: A) and propiverine are established effective medical treatments. These drugs are well tolerated and safe, even during long-term treatment. They have diverse tolerance profiles so that a different anticholinergic agent may be prescribed if a patient experiences adverse effects or if the therapeutic effect is not sufficient.

Recently, darifenacin and solifenacin have been introduced, but as yet no clinical experience with these drugs in neurogenic bladder overactivity has been published.

Phosphodiesterase inhibitors demonstrated significant effects upon detrusor overactivity in pilot studies and may become a future alternative or adjunct to anticholinergic treatment.

Additional treatment with desmopressin might improve the efficacy of the treatment.

Electrical neuromodulation

A strong contraction of the urethral sphincter and/or pelvic floor, but also anal dilatation, manipulation of the genital region, and physical activity reflexly inhibit the micturition. Whereas the first mechanism is affected by activation of efferent fibres, the latter ones are produced by activation of afferents. Electrical stimulation of the pudendal nerve afferents produces a strong inhibition of the micturition reflex and of the detrusor contraction. This stimulation might then support the restoration of the balance between excitatory and inhibitory inputs at the spinal or supraspinal level. It might also imply that patients with incomplete lesions will benefit, but patients with complete lesions will not.

Although electrical stimulation of the posterior tibial nerve afferents has been used for neurogenic patients, there is no current evidence suggesting this therapy has any benefit in NLUTD patients

Minimal invasive treatment

Catheterization

Intermittent self- or third-party catheterization is the gold standard for the management of NLUTD. It is effective in patients with:

• Detrusor underactivity or acontractility

• With detrusor overactivity, provided the overactivity can be controlled.

Sterile IC, as originally proposed by Guttmann and Frankel, significantly reduces the risk of UTI and/or bacteriuria, compared with clean IC introduced by Lapides et al. However, it cannot be considered a routine procedure. Aseptic IC is an alternative, which provides a significant benefi in reducing the potential for external contamination of an intermittent urinary catheter. Insufficient patient education and the inherent greater risk of UTI in patients with NLUTD are contributing factors. The

average frequency of catheterizations per day is 4-6 times and the catheter size should be 12-14 Fr.

Less frequent catheterization results in higher catheterization volumes and a higher risk of UTI. More frequent catheterization increases the risk of cross-infections and other complications.

Bladder volume at catheterization should be lower than 400 mL.

The prevalence of complications can be limited by adequate patient education, use of nontraumatizing techniques and adequate precautions to prevent infections.

Indwelling transurethral catheterization and, to a lesser extent, suprapubic cystostomy are significant and early risk factors for UTI and other complications. Silicone catheters are preferred because they are less susceptible to encrustation and because of the high incidence of latex allergy in the NLUTD population.

Intravesical electrostimulation

Intravesical electrostimulation enhances the sensation for bladder filling and urge to void and may restore the volitional control of the detrusor. Daily stimulation sessions of 90 minutes with 10 mA pulses of 2 ms duration at a frequency of 20 Hz (103,104) are used for at least 1 week . It appears that patients with peripheral lesions are the best candidates, that the detrusor muscle must be intact, and that at least some afferent connection between the detrusor and the brain must still be present.

Botulinum toxin injections in the bladder

Botulinum toxin causes a long-lasting but reversible chemical denervation that lasts for about 9 months. The toxin injections are mapped over the detrusor in a dosage that depends on the preparation used.

Balloon dilatation: although favourable immediate results were reported (124), no further reports since 1994 have been found. Consequently, this method is no longer recommended.

Sphincterotomy;
Bladder neck incision;
urethral Stents;
Increasing bladder outlet resistance;
Urethral inserts.

Surgical treatment

GUIDELINES FOR SURGICAL TREATMENT

1. Detrusor

• Overactive

- Detrusor myectomy is an acceptable option for the treatment of overactive bladder when more conservative approaches have failed. It is limited invasive and has minimal morbidity (Level of evidence: 2, Grade of recommendation: B).

- Sacral rhizotomy with SARS in complete lesions and sacral neuromodulation in incomplete lesions are effective treatments in selected patients (Level of evidence: 2, Grade of recommendation: B).

- Bladder augmentation is an acceptable option for decreasing detrusor pressure whenever less invasive procedures have failed. For the treatment of a severely thick or fibrotic bladder wall, a bladder substitution might be considered (Level of evidence: 2, Grade of recommendation: B).

• Underactive

- SARS with rhizotomy and sacral neuromodulation are effective in selected patients (Level of evidence: 2, Grade of recommendation: B).

- Restoration of a functional bladder by covering with striated muscle is still experimental (Level of evidence: 4).

2. Urethra

• Overactive (DSD): refer to guidelines for minimal invasive treatment (see Section 4.3.6)

• Underactive

- The placement of a urethral sling is an established procedure (Level of evidence: 2, Grade of recommendation: B).

- The artificial urinary sphincter is very effective (Level of evidence: 2, Grade of recommendation: B).

- Transposition of the gracilis muscle is still experimental (Level of evidence: 4).

V. Materials of methodical maintenance of employment.

Materials of the control for a preparatory stage.

▼ Which basic neurogenic lower urinary tract dysfunction.

▼ the Basic symptoms Neurogenic lower urinary tract dysfunction.

▼ the Basic methods of diagnostics.

▼ Methods of treatment of a Neurogenic bladder dysfunction.

▼What surgical methods of treatment of patients wiyh lower urinary tract dysfunction.

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Recommended literature.
Basic:

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Information resources:

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1. https://uroweb.org/
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