Neurourology in clinical practice - Basics, diagnostics and therapeutical options in patients with neurogenic lower urinary tract (NLUTD) and lower gastrointestinal tract dysfunction (LGITD) in Diabetes mellitus, Multiple sclerosis and Parkinson’s disease

W24, 16 October 2012 09:00 - 10:30

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Topic</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>09:05</td>
<td>Introduction of the topic</td>
<td>Ruth Kirschner-Hermanns</td>
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<td>09:05</td>
<td>09:25</td>
<td>Neurouological findings in patients with Diabetes mellitus, Multiple Sclerosis and different forms of M. Parkinson</td>
<td>Ulrich Mehnert</td>
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<td>09:25</td>
<td>09:45</td>
<td>Patient oriented diagnostic approaches for neurogenic lower urinary tract (NLUTD) and neurogenic lower intestinal tract dysfunction (LGITD)</td>
<td>Ruth Kirschner-Hermanns</td>
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<td>09:45</td>
<td>10:00</td>
<td>Success rates and risk factors for different treatment modalities in regard of underlying neurological disease</td>
<td>Nariman Gadjiev</td>
</tr>
<tr>
<td>10:00</td>
<td>10:15</td>
<td>Conservative Treatment and management in patients with neurological diseases</td>
<td>Louise Kurczycki</td>
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<td>10:15</td>
<td>10:30</td>
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<td>All</td>
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**Aims of course/workshop**

Patients with diabetes mellitus, multiple sclerosis and different forms of Parkinson's disease with NLLTD, LGITD, prolapse or BPE are often firstly seen by general gynaecologists, urologists, continence nurses and physiotherapists but not by specialized neurourologists. The goal of this course to give an overview on neurological pathophysiology with special focus on management strategies. For urinary incontinence that includes micturition timing, pelvic floor rehabilitation, bladder training, pharmacotherapy, instillation of Botulinium A toxin, neuromodulation and surgical interventions. For patients with neurogenic LGITD we will give an overview about chemical stimulants, retrograde or antegrade colonic enema and sacral neuromodulation.

**Educational Objectives**

A patient with neurological comorbidities needs special diagnostic work up and is generally accepted being the most difficult patient population to treat. Clinical and urodynamic findings as well as treatment modality can be quite different even in patients with similar diseases. Based on our own clinical experience and a thorough work up of the current literature we will first discuss diagnostic algorithms - what needs to be done and in whom, secondly we will focus on risk factors and success rates for different treatment options. We will also talk about tips and tricks especially with conservative treatment. Discussing therapeutic options with physicians with a different clinical background as well as with nurses and physiotherapists will offer a great opportunity to learn from each other. Generally this workshop will allow doctors as well as nurses and physiotherapists without specialized training in treatment of patients with neurological lesions to get acquainted with the basics of diagnostic and therapeutic measures. Our aim is to get a basic understanding of the course of pathological neurological process which in turn will improve effectiveness of specialized treatment, nursing and conservative measures.
The urinary bladder – function and innervation

- The human lower urinary tract (LUT) has two functions:
  1) low pressure continent storage of urine (96-98%)
  and
  2) periodically, self-determined and more or less complete release of the stored urine (2-4%).
The gastrointestinal tract – function and innervation

The GI tract has 3 main functions:

1) Break up food into smaller absorbable compounds/molecules (small intestine), degrade short fatty acids (colon)

2) Absorption of nutrients and vitamins (ileum), Absorption of water and salts (colon)

3) Transit of feces in distal direction and storage of feces until defecation is appropriate

Diabetes mellitus – LUT dysfunction

- Most common symptoms: Nocturia (87%), urinary frequency (78%), Hesitancy (62%), reduced stream (52%), and incomplete emptying (45%).

- Most common urodynamic findings: detrusor overactivity (48%), detrusor–sphincter–dyssynergia (31.7%), impaired detrusor contractility (30%), and impaired compliance (15%).

- Time with diabetes and peripheral neuropathy correlated with decreased emptying efficiency and incidence of urinary incontinence

- DM patients with OAB were more likely to have higher voiding symptom scores, lower peak flow rate, elevated PVR volume, and higher incidence of bladder outlet obstruction than DM patients without OAB.

- OAB symptoms are potentially secondary to diabetic vasculopathy leading to multiple cerebral infarcts. Direct detrusor damage by diabetic vasculopathy and subsequent changes on detrusor and urothelium are current hypothesis for diabetic OAB

Diabetes mellitus – bowel dysfunction

- Patients with diabetes show low resting and squeeze anal pressures, impaired rectoanal inhibitory and anocutaneous reflexes, and reduced sensitivity in rectal distention

- A increased incidence of microangiopathy and autonomic and peripheral neuropathy was significantly associated with reduced basal and squeeze anal pressures, reduced amplitude of slow waves, anal leak at smaller rectal volumes, and reduced response of the anal sphincter during anocutaneous reflex testing

- Degree of anorectal dysfunction increases with disease duration
Multiple sclerosis – LUT dysfunction

- Prevalence of LUTS in MS patients ranges between 37-99% for storage symptoms and 34-79% for micturition symptoms.
- Clinical symptoms are highly variable and correlate only infrequently with urodynamic findings.
- There seems to be a correlation between the duration of MS and presence and severity of LUTS.
- Focal neuronal demyelination and scarring (plaques) in the CNS are pathogenetic for LUT dysfunction.
- Pontine lesions (plaques) seems to be correlated to detrusor hyporeflexia (destruction of PMC) and cervical lesions seems to be correlated with DSD (decoupling from PMC).
- Site of lesion does not correlate with urodynamic findings.

Multiple sclerosis – bowel dysfunction

- Prevalence of constipation ranges between 35-54% and of fecal incontinence between 29-61%.
- Lack of postprandial increase in colonic myoelectrical activity might promote constipation.
- Impaired function of the external anal sphincter and decreased volumes of rectal distention to relax the internal anal sphincter may both contribute to fecal incontinence.
- Possible causative factors are reduced sensation of rectal filling, poor pelvic musculature contraction, reduced rectal compliance or weakness of the anal sphincter.
- The probability to experience bowel dysfunction increases with EDSS score.
- Bowel dysfunction in MS is usually accompanied by LUT dysfunction.

Parkinson's Disease – LUT dysfunction

- Prevalence of LUTS on PD ranges between 27-64%.
- Storage symptoms are most common (60% nocturia, 33-54% urgency, 16-36% frequency).
- Pre-PD LUTS and MSA might be confounding factors.
- Urodynamics: DO is most common, DSD is rare.
- PD patients have difficulties with differentiated sensory perception and processing (e.g. difficulties in dissolving the resolution of different gratings, increased thresholds for two-point discrimination).
- (partial) reversal of basal circuitry dysfunction with dopaminergic drugs or STN-DBS has been shown to improve sensory perception and processing.
- LUT dysfunction seems to correlate with neurological disability, stage of PD, and degeneration of nigrostriatal dopaminergic neurons.

Parkinson’s Disease – bowel dysfunction

- Decreased stool frequency (<3 times a week) in PD patients ranges from 20% to 81%, that of difficulty in stool expulsion in 57-67%, diarrhea in 21%, and fecal incontinence from 10 to 24%.
- Colonic transit time is increased in 80% of PD patients ranging from 44 hours to 130 hours (healthy controls: 20-39 hours) but not necessarily related to subjective constipation.
- PD may effect the ENS by decrease in dopaminergic myenteric neurons and the appearance of Lewy bodies along the proximal-distal axis resulting in motility dysfunction.
- Sacral Onuf’s nucleus is spared in the majority of PD patients; only 0-15% of PD patients have neurogenic changes in sphincteric motor potentials.
- In PD patients, both rectal and anal pressures tend to increase together but rectal contraction on defecation in PD patients is smaller than that in controls.

Patient oriented diagnostic approach in patients with Diabetes mellitus, Multiple Sclerosis and different forms of M. Parkinson

Ruth Kirschner-Hermanns
Department of Neurourology,
University Clinic Bonn, Germany

28 May, 2012
**Prevalence**
(per 100000 inhabitants/year)

- Diabetes mellitus 2500
- Alcohol abuse 5000-15000
- M. Parkinson 100
- traumat. QSL 3-4 (USA)
- Apoplexy 1000
- Multiple Sklerosis 100
- Spina bifida / MMC 80-90 (UK)

**Leading symptoms for neurogenic bladder dysfunction**

- Pollakisuria > 90%
- Urgency
- Urinary tract infection
- Chronic retention
- Unability to void

**Leading symptoms for neurogenic bowel dysfunction**

- Constipation
- Stool smearing
- Incontinence for flatus, liquid stool or even formed stool

**Urinary tract infection**

- Leukocyturia > 100 Leukoc./mm³
- Bacteriuria > $10^5$

**Goal:**
1. To protect the upper urinary tract
2. To improve quality of life

- Patient history
- Medication
- Micturition and bowel diary
- Physical examination, including rectal and vaginal exam.
- Reflex status (BCR S2-3, BAR S3-4, CAR S3-5, CR L1-4, HR TH6-L1)
- Ultrasound of kidney and bladder
- Sediment (midstream urine – women preferable catheter urine)
- Createnine/Createnine Clearance
- Uroflowmetry
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cystoscopy</td>
<td>Only to exclude pathologies e.g. malignancies, stones …</td>
</tr>
<tr>
<td>I.V. Pyelography</td>
<td>Rarely necessary</td>
</tr>
<tr>
<td>CT/MRI</td>
<td>Rarely necessary</td>
</tr>
<tr>
<td>Retrograde Urethrogram</td>
<td>Rarely necessary, sometimes in men in addition to UDS</td>
</tr>
</tbody>
</table>

**Videourodynamics**

**Gold standard!!**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing Cystometry</td>
<td>When bladder neck open</td>
</tr>
<tr>
<td>Ice water test</td>
<td>to differentiate idiopathic from neurogenic DO</td>
</tr>
<tr>
<td>Urethra pressure profile</td>
<td>in OAB patients? in OAB patients? in OAB patients? in women with additional stress incontinence</td>
</tr>
<tr>
<td>Pharmacological provocative tests</td>
<td>obsolet obsolet obsolet</td>
</tr>
</tbody>
</table>

**Sacral Reflexes**

<table>
<thead>
<tr>
<th>Reflex</th>
<th>S1/S2</th>
<th>S4/S5</th>
<th>S2/S4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achillis tendon reflex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anal reflex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough reflex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blubocavernosus reflex</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Voluntary anal contraction**

<table>
<thead>
<tr>
<th>Reflex</th>
<th>Blubocavernosus reflex</th>
<th>Spinal cord Lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td>normal</td>
</tr>
<tr>
<td>+</td>
<td>+</td>
<td>Incomplete lesion</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Upper motor neuron</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td>Upper motor neuron</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>above TH6</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Lower motor neuron</td>
</tr>
<tr>
<td></td>
<td></td>
<td>below TH12</td>
</tr>
</tbody>
</table>

**Urodynamics**

**Overactive bladder – Phasic Detrusor Overactivity**

**Loss of compliance (ΔV/ Δp ml/cmH²0)**
Continuous pressure profile – OAB

Visceromotoric complete with LMNL
(“weak bladder”, areflexive bladder, Detrusor acontractility)

Visceromotoric complete with UMNL
(“spastic Reflex bladder”, neurogenic Detrusor overactivity)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Detrusor</th>
<th>DSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>60% / +</td>
<td>?</td>
</tr>
<tr>
<td>Guillain-Barre</td>
<td>? / +</td>
<td>?</td>
</tr>
<tr>
<td>M. Parkinson</td>
<td>45-95% / +</td>
<td>11%</td>
</tr>
<tr>
<td>Traumat. QSL</td>
<td>50-90% / 10-50%</td>
<td>30-40%</td>
</tr>
<tr>
<td>Apoplexy</td>
<td>82% / +</td>
<td>+</td>
</tr>
<tr>
<td>Multiple Sklerosis</td>
<td>70% / 20%</td>
<td>40%</td>
</tr>
<tr>
<td>Spina bifida / MMC</td>
<td>30-50% / 10-20%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Parameter  high pressure system  low pressure system
(Hyperreflexia, low compliance, reduced cap)  (Hypo- / Areflexia, overflow)

| Compliance (ml/cmH2O) | <20 | >50 |
| Voided volume (ml)    | <200| >400|
| pDet -filling phase (cmH2O) | >30 | <20 (20) |
| pDet max (cmH2O)      | >60 (f) | >80 (m) |
| pDet LPP (cmH2O)      | >40  | <30 |

• To minimize artefacts
  – No urinary tract infection HWI
  – Contrast medium (30%ig; 38°C)
  – Vmax 15 to 20ml/ min
  – Comfortable position
  – Relaxed atmosphere
Neurogenic lower urinary tract symptoms

<table>
<thead>
<tr>
<th>Symptom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgency</td>
</tr>
<tr>
<td>Hesitancy</td>
</tr>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>Urinary Incontinence</td>
</tr>
<tr>
<td>Incompleteness</td>
</tr>
</tbody>
</table>

ANTICHOLINERGICS

NO conclusions suggesting BENEFIT from anticholinergic usage could be drawn from the analysis.

Multiple sclerosis: treatment modalities

PHARMACOLOGIC TREATMENT

- ANTICHOLINERGICS
- A-BLOCKERS
- DESMOPRESSIN
- INTRAVESICAL AGENTS/BOTULINUM TOXIN

CONSERVATIVE TREATMENT

SURGICAL METHODS

- NERVE STIMULATION
- TRANSETHRAL SPHINCTEROTOMY IN DSD
- URETHRAL STENT IMPLANTATION
- AUGMENTATION
- ILEOVESICOSTOMY
- ILEAL CONDUIT

MS PHARMACOLOGIC TREATMENT

**ANTICHOLINERGICS**

41% improvement in flow rate
26% reduction of PVR
54% decrease in IPSS

Oriordan et al, J Urol 1995

**A-BLOCKERS**

58% reduction in UTI, 53% increase in time to 1-st desire

Werfer, 2009

**DESMOPRESSIN**

Decrease in nocturia by mean 0.5 to 1.5 episodes per night


**BOTULINUM TOXIN**

Increase of uninterrupted sleep by mean 2 hours

Nicholas RS et al, Cochrane Database Syst Rev 2009

"Success rates and risk factors of different treatment modalities in regard of underlying neurological diseases“
**Neurogenic lower gastro-intestinal tract symptoms**

1. Conservative treatment
2. Pharmacologic treatment
3. Surgical treatment

**Type 1 diabetes**
“diabetic cystopathy” occurs in 43% to 87% of patients

**Type 2 diabetes**
“diabetic cystopathy” occurs in 79% of men and 59% of women

**Diabetes mellitus**

- **Glycemic control**
  - No specific treatment has been described

- **Muscimol/neminimetics**
  - Bethanechol
  - Carbachol

- **Acetycholinesterase inhibitors**
  - Dystigmine
  - Neostigmine

- **There is no drug with evidence of efficacy for UD**
  - EUA Guidelines 2012

**Urinary retention in multiple sclerosis female patients can be successfully and safely managed with sacral neuromodulation.**

**SNM is a good option in the treatment of voiding dysfunction in patients with MS in a medium to long-term follow-up.**

**Urinary retention in multiple sclerosis female patients can be successfully and safely managed with sacral neuromodulation.**

**Existing information is not enough to recommend this on a routine in MS patients.**

**No specific treatment has been described.**

**Implantable**
- Sacral nerve stimulator
- Pudendal nerve stimulation

**Percutaneous**
- Posterior tibial stimulation
- Penile/clitoral nerve stimulation

**3. Surgical treatment**

**4. ileovesicostomy**

useful option in patients with lower urinary tract dysfunction who are unable to perform clean intermittent catheterization. Leads to reduction of antibiotic usage

**Surgical methods**

**Urethral stent implantation**

- *After treatment of DSD by a temporary urethral sphincter stent, 70.7% of patients subsequently require a permanent urethral sphincter stent.*

**Transurethral sphincterotomy in DSD**

- *In those cases, refractory to conservative therapy, transurethral external sphincterotomy followed by condom catheter drainage is recommended.*
  - *Existing information is not enough to recommend this on a routine in MS patients.*

**Bladder augmentation**

Improvement in urethral continence and reduction of UTIs after surgery

**Urodynamics last resort**

Option for patients with symptoms refractory to other measures

**Sacral neurostimulation**

Fecal incontinence was greatly improved with chronic SNS immediately after implantation

**Antegrade continence enema – (MACE)**

Antegrade washouts delivered by this route produce complete colonic emptying and thereby prevent soiling. Follow up – 8 years, Success rate ~100%

**Dynamic graciloplasty**

Success with DG achieved only in 62% of non-stoma patients

**Artificial anal sphincter**

Implantation of an artificial bowel sphincter is of uncertain benefit and may possibly harm many patients.

**Sexual function**

**REFERENCES**

**EVIDENCE**

<table>
<thead>
<tr>
<th>INTERVENTION</th>
<th>INDICATION</th>
<th>ENDPOINT</th>
<th>EVIDENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbachol/diazepam 2 mg each vs alfuzosin 2.5 mg vs placebo, all ×1 oral</td>
<td>treatment of AUR after general surgery</td>
<td>voiding within 2 h after medication</td>
<td>No significant difference between groups</td>
</tr>
<tr>
<td>Number of p-s 249</td>
<td>Burger DH, J Am Coll Surg 1997</td>
<td></td>
<td>2b</td>
</tr>
<tr>
<td>Bethanechol 4 × 50 mg daily oral + intravesical PGE 2</td>
<td>women with persistent high residual urine but no sign of ND or BOO</td>
<td>residual urine</td>
<td>No statistically significant reduction with placebo</td>
</tr>
<tr>
<td>Number of p-s 19</td>
<td>Hindley RG, BJU Int 2004</td>
<td></td>
<td>1b</td>
</tr>
<tr>
<td>Bethanechol 25 mg x 1 oral vs placebo for 2 weeks in cross-over design</td>
<td>treatment of UUO</td>
<td>residual urine, max detrusor pressure and urinary flow</td>
<td>Significant reduction of residual urine and increase in max urinary flow vs placebo</td>
</tr>
</tbody>
</table>
Sacral neural modulation

**Main studies of sacral neural modulation for urinary retention**

<table>
<thead>
<tr>
<th>Study</th>
<th>Nx</th>
<th>Success rate of test phase</th>
<th>Success rate of permanent phase</th>
<th>Follow up (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White et al. (2008)</td>
<td>40</td>
<td>70 (28/40)</td>
<td>86 (24/28)</td>
<td>Mean 40</td>
</tr>
<tr>
<td>Datta et al. (2008)</td>
<td>60</td>
<td>NA</td>
<td>72 (43/60)</td>
<td>Mean 48</td>
</tr>
</tbody>
</table>

**Sacral anterior root stimulation (SARS)**

Stimulation of the efferent nerves (anterior roots) produces a contraction of detrusor muscle. Grade of recommendation B

**Bladder covering by striated muscle**

Microneurovascular free transfer of latissimus dorsi muscle to functionally restore a deficient detrusor muscle has proved to be successful for the three patients in our study.

**Sakakibara R, 2010**

**EUA Guidelines  2012**

**Constipation** in 15.0%

**Diarrhea** in 5.3%

**Fecal incontinence** in 11.2%

**ANTEGRADE CONTINENCE ENEMA – MACE**

For patients with severe fecal incontinence

**ARTIFICIAL ANAL SPHINCTER**

Liquid continence up to 70%

Patient selection is needed

**DYNAMIC GRACILOPLASTY**

Possible option in dedicated centers

**COLOSTOMY**

**LAST RESORT**

**PARKINSON’S DISEASE**

- **Prevalence:** LUTS – 27 – 70%
- **Onset after** motor symptoms in majority patients

**LUTS:**

- Nocturia – 60%
- Urgency – 33–54%
- Frequency – 16–36%
- Urinary incontinence – 26–28%
- Voiding symptoms 28– 70%

**Sammour ZM, 2009**

**Sakakibara R, 2001**

**Chaudhuri KR, 2006**

**PD:**

**Treatment modalities**

**A. No specific treatment exist**

**B. Treatment modalities depend on major symptoms**

**C. Thoroughly evaluation before treatment**

- Validated symptom questionnaires
- Urodynanmic study

**Voiding symptoms**

- Detrusor underactivity – may correlate with progression of disease
- High resting urethral pressure due to medications and their metabolites suggested
- Intravesical obstruction due to BPH in men

**Stocchi F, 1997**

**Sakakibara R, 2010**

**Nocturia**

- Exclude other recognized reasons
- Antimuscarinics do not appear to be efficacious for nocturia
- Antimuscarinics may be effective for nocturnal voids due to urgency
- Treatment of nocturia with α1-blockers and/or anticholinergics is not generally effective
- Antidiuretic therapy (desmopressin) is recommended as first–line treatment
- Surgical treatment are reasonable option for men with prostatic obstruction

**Urgency, Frequency**

I. No clinical controlled trials found for treatment of detrusor overactivity in patients with Parkinson’s disease

II. General clinical recommendation should be applied

III. Oral anticholinergics should be prescribed as first line treatment

**Weiss JP, 2011**
Urgency, Frequency

In refractory cases intravesical injections of botulinum toxin A may be applied. 100–500 U BoNT/A may be used.

Daytime and nighttime urinary frequency, and the number of daily urinary incontinence episodes were significantly decreased at 1, 3 and 6 months.

1. PTNS was effective to acutely relieve patients with pseudodyssynergia, which is known to be common in PD.
   
   Kulaksizoglu H, 2010

2. This data should be verified with a prospective multicenter study, before it is introduced to the routine clinical practice.
   
   Kabay SC, 2009

BOTULINUM TOXIN

In refractory cases intravesical injections of botulinum toxin A may be applied. 100–500 U BoNT/A may be used.

Daytime and nighttime urinary frequency, and the number of daily urinary incontinence episodes were significantly decreased at 1, 3 and 6 months.

Percutaneous tibial nerve stimulation

1. PTNS was effective to acutely relieve patients with pseudodyssynergia, which is known to be common in PD.
   
   Kulaksizoglu H, 2010

2. This data should be verified with a prospective multicenter study, before it is introduced to the routine clinical practice.
   
   Kabay SC, 2009

Take home message:

1. Treat the patient, not the disease
2. Management of a patient with NLUTS and/or NLGITS is always a multi team work
3. Remember: stepwise approach — from conservative, drug therapy to surgery is a pledge of treatment success
4. Never hesitate referring the patient to dedicated surgery center

Definition

Conservative treatment is any therapy that does not involve pharmacological or surgical intervention

Includes:
- lifestyle & behavioural interventions
- physical therapies
- scheduled voiding regimens
- complimentary therapies
- aids and appliances
- catheters

Caring for patient / carers / other family members

PD Neurogenic lower gastro-intestinal tract symptoms

- Onset often before motor symptoms
- Prevalence – 20–81%:
  - Decrease stool frequency (less than 3 times a week)– 20–81%
  - Difficult stool expulsion– 57–67%
  - Diarrhea– 21%
  - Fecal incontinence– 10–24%
  - Dysphagia, vomiting

- Insoluble dietary fibers increase stool frequency
- Constipation in PD is treated by drugs acting on dopamine D2 receptors or 5-HT4 receptors (mosapride) in the bowel

Chaudhuri KR, 2006

Conservative management of neurogenic bladder & bowel dysfunction

Louise Kurczycki
Continence Nurse Consultant
Eastern Health MS Service, Melbourne Australia

Simple
Low cost
Low risk
Conservative Management
Adjunctive & complementary
Conservative management

- Principal direction in management at the primary care level
- ICS recommends regular monitoring in people with neurogenic bladder and bowel dysfunction
  - best done by primary carers
  - General Practitioners
  - Nurses: general, MS Nurses, Practice Nurses
  - Physiotherapists
  - Occupational Therapists

The therapeutic principles which underpin management interventions vary depending upon the pattern of LUT dysfunction

- **detrusor**
- **sphincter**

Protect upper urinary tract

- **Regular bladder emptying**
  - prompted, timed voiding or habit-retraining
  - catheterisation: intermittent, indwelling
- **Fluid intake**
  - volume, timing, type
- **Assisted bladder emptying**
  - bladder expression (Credé & Valsalva manoeuvres) should be avoided unless bladder pressures are identified as low by UDS
  - triggered reflex voiding: stim sacral/lumbar dermatomes in UMNL → reflex detrusor contraction
  - toileting assistance: mobility, dexterity, cognitive deficits

Protect upper urinary tract

- **Pelvic floor muscle rehabilitation**
  - goal may be to strengthen / relax / patient feedback
  - improves incontinence, aids in voiding dysfunction
  - may include PFM electrostimulation & biofeedback
- **Neuromodulation**
  - strong contraction of urethral sphincter, pelvic floor reflexly inhibits micturition
  - ano–genital electrostim (penile, clitoral, vaginal & anal) can inhibit NDO by stimulating pudendal nerve afferents
  - produces inhibition of micturition reflex & detrusor contraction
- **Catheterisation**

Catheterisation

<table>
<thead>
<tr>
<th>Transurethral (ID)</th>
<th>Suprapubic (SC)</th>
<th>Intermittent (IC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is always the last resort</td>
<td>Better alternative to ID</td>
<td>Gold standard for NLUTD</td>
</tr>
<tr>
<td>Still used if IC difficult or persistent UI</td>
<td>Benefit &amp; risks similar to ID</td>
<td>Resume normal bladder storage</td>
</tr>
<tr>
<td>Demonstrated poor long-term outcomes</td>
<td>+ve = no trauma to urethra</td>
<td>Prevent over distension which leads to bladder and possible renal impairment</td>
</tr>
<tr>
<td>Especially unsuitable in neurologic pts</td>
<td>-ve = risk related to sx procedure</td>
<td>Safe for short &amp; long term</td>
</tr>
</tbody>
</table>

Long-term use in neurologic pts is controversial
Intermittent catheterisation

- Done by patient or another person
- Effective in patients with:
  - detrusor underactivity
  - detrusor acontractility,
  - DSD
- Debate: single use vs re-use
- Ongoing monitoring
  - regular screening by primary health care providers
  - adherence to treatment regimen may change over time & life circumstances (personal, financial)

Advantages
- Safe
- Effective
- Reduces risk of long-term bladder & renal impairment
- Convenient

Disadvantages
- Cost
- Risk
  - UTI assoc with technique & care of catheters
  - Non adherence to Rx regimen
  - Trauma (false passage)
- Psychological
  - Fear, loss & grief
  - Altered self image

Debate: single use vs re-use

Ongoing monitoring

Education
- Patient should understand rationale for IC.
- Resilience & problem-solving & UTI management prevention plan
- Output: volumes no greater than 400ml
- Fluid input: 1500–2000ml
- Regimen: frequency vary upon degree of dysfunction
- Oral & intravesical drug instillations

Support
- Counseling: patient / life partner
- cost of equipment – some countries have funding schemes
- run through real–life scenario’s
- for some IC is difficult to accept:
  - altered self image & deterioration in health

Timed voldemort/habit retraining/prompted voiding

Adaptation of the drinking & voiding regimen
- requires patient understanding of principles
- some are implemented with carer assistance & support
- when social or dependent continence is the goal or as an adjunct to other treatment

AIMS:
- correct faulty habit patterns of frequent urination
- improve ability to control bladder urgency
- prolong voiding intervals
- increase bladder capacity
- reduce incontinent episodes
- build patient’s confidence in their bladder function

Outcomes:
- Reduced risk of constipation, impaction & faecal incontinence
- Improved QoL
- Reduced fear of soiling which can be disabling

Clinical Practice:
- Little evidence of success in NBoD
- Interventions mostly empirically based

Timed voiding
- fixed interval between toileting
- passive toileting assistance program
- avoids incontinence rather than restore bladder function
- initiated & maintained by caregivers, but not exclusively
- neurogenic bladders: useful adjunctive therapy

Prompted voiding & Habit retraining
- aim: avoid incontinence by reducing voiding interval
- program has to be adapted to each pt & needs specific analysis of voiding patterns to select appropriate schedule
- prompted V: teaches people to initiate their own toileting through requests for help with carer +ve reinforcement
- neurogenic bladders: may be useful in dependent patients with good cognitive function

Effective bowel management

AIMS:
- Modulation of stool consistency
- Promotion of stool transit through bowel
- Effective reflex or mechanical evacuation of stool at an appropriate time & place

Outcomes:
- Reduced risk of constipation, impaction & faecal incontinence
- Improved QoL
- Reduced fear of soiling which can be disabling

Clinical Practice:
- Little evidence of success in NBoD
- Interventions mostly empirically based

Toileting assistance techniques

Timed voiding
- Timed voldemort/habit retraining/prompted voiding

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Clinical Practice:
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Toileting assistance

- Timed voiding
- Timed voldemort/habit retraining/prompted voiding
Despite the significance & impact on QoL from bowel dysfunction there is little research evidence to support NBo management.

Symptoms can include:
- constipation
- difficult evacuation
- bloating
- urgency
- anal incontinence: stool / flatus

**Defaecation program:**
- cleansing the colon
- normalising the stool consistency
  - adequate dietary fibre & fluid intake
  - stimulating evacuation of stool on a regularly scheduled basis
- maximising success using gastro-colic reflex
- reflex-triggered evacuation + stimulation can be helpful
  - mechanical digital stimulation
  - increases peristaltic contractions by facilitating excitatory anorectal reflex
  - enhances bowel movement & evacuation in reflex bowel
- chemical stimulation using suppositories / enema

**Containment options:**
- valsalva or manually generated external pressure
- oral medications: softeners, stimulant, osmotic laxatives & prokinetic agents
  - poor quality & inadequate evidence for NBoD
- transanal / transrectal irrigation: safe option
- diet & fluid modification
- posture and defaecation technique
- biofeedback
- appliances
  - containment using reusable / disposable pads
  - anal plug: variable success
- patient education very important
- support
  - fear of soiling can be equally disabling as FI

**Additional aspects of care**
- Patient problems are multiple & chronic in nature.
- Pts often reconcile themselves to accept bladder & bowel dysfunction, making adherence to Rx challenging

**ADDITIONAL ASPECTS OF CARE**
- Patient & carer education
- Support: professional, psychological, social, financial
- Ongoing monitoring & screening
- Education of primary health care workers
Notes
Record your notes from the workshop here