Female urinary incontinence: A review

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Abstract

Urinary incontinence affects approximately a quarter of a billion people worldwide. It is associated with high economic costs, psychological morbidity and adverse effects on the quality of life. Despite this, few women seek help for this condition either due to embarrassment and unwillingness to discuss the symptom with their family member or friend or, acceptance of the disorder as a natural part of aging or being unaware that treatment exists. More resources are utilised in maintaining patients with chronic incontinence rather than for diagnosis and treatment of the condition. Urinary incontinence is a complex problem resulting from many different causes and for which many different approaches to treatment exist. The commonest types of incontinence include stress urinary incontinence, urge urinary incontinence and mixed incontinence. Recently, better understanding of the pathophysiology of urinary incontinence has led to the development of numerous non-pharmacological, pharmacological and surgical interventions.

Introduction

According to the World Health Organisation, urinary incontinence is “a widespread global disease and one of the last medical taboos for many people”. In South Africa, urinary incontinence and pelvic floor dysfunction are major health problems. Urinary incontinence affects all ages, both sexes, and all social classes. Its prevalence is underestimated and it is estimated that only one in four symptomatic women will seek help for this problem.

The annual direct cost in all ages for incontinence is estimated to be over 16 billion US dollars (in 1995 dollars), which is more than that of breast, cervical, ovarian and uterine cancers combined.

In 2002, the Standardisation Subcommittee of the International Continence Society (ICS) changed the original ICS definition of incontinence, from ‘urinary incontinence is the involuntary loss of urine that is a social or hygienic problem,’ since it relates the complaint to the quality of life, to ‘urinary incontinence is the complaint of any involuntary loss of urine’. Standardisation thus facilitates comparison of results and effective communication between clinicians.

Types of Urinary Incontinence

There are three main types of urinary incontinence (UI), stress urinary incontinence, urge urinary incontinence and mixed urinary incontinence. According to the ICS, the definitions are as follows:

• Stress UI is the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing.

• Urge UI is the complaint of involuntary leakage accompanied by or immediately preceded by urgency (a sudden compelling desire to urinate that is difficult to defer).

• Mixed UI is the complaint of involuntary leakage associated with urgency and also with exertion, effort, sneezing or coughing.

Stress UI (SUI) is a very common condition affecting approximately half of incontinent women between 18 and 90 years of age. In stress UI there are two main mechanisms for urinary leakage:

• Urge UI is the complaint of involuntary leakage accompanied by or immediately preceded by urgency (a sudden compelling desire to urinate that is difficult to defer).

• Mixed UI is the complaint of involuntary leakage associated with urgency and also with exertion, effort, sneezing or coughing.

Intrinsic sphincter deficiency (ISD) occurs when there is failure of the urethral sphincter due to mucosal and muscular atrophy and denervation, occurring alone or in combination with inadequate urethral support. It is commonly due to aging, neurologic disorders, obstetric/surgical trauma and lack of estrogen.

Urge incontinence, together with other symptoms such as urgency, frequency, and nocturia forms part of the overactive bladder (OAB) symptom syndrome. Urgency is the ‘driving’ symptom in OAB, with the patient experiencing urgency at

Figure 1: Urgency drives the other symptoms of the overactive bladder syndrome.

unpredictable and inconvenient times resulting in the loss of urine before the toilet can be reached.\textsuperscript{7} (See Figure 1). The overall prevalence of OAB is estimated to be 16.9% in the United States, the prevalence increasing with advancing age.\textsuperscript{8} Incontinence occurs in approximately one third of patients presenting clinically with OAB. Recently a cross-sectional population based survey of 11521 individuals aged 40-64 years, conducted in France, Germany, Italy, Spain, Sweden and the United Kingdom concluded that the OAB symptoms have a significant effect on the emotional well-being and productivity of the patient both at home and at work.\textsuperscript{9}

Mixed urinary incontinence, a combination of both stress and urge incontinence, may result from compensatory responses initiated by the incontinent patient. Approximately 50% of patients with incontinence will have mixed urinary incontinence symptoms. The degree to which each component contributes to the patient’s incontinence varies, but one symptom will be dominant either stress or urgency.

Initial Assessment

In the initial assessment, the patient’s incontinence should be categorised, and treatment tailored toward the predominant symptom. To achieve optimum success, good communication between the healthcare professional and patient is imperative. According to the National Institute of Clinical Excellence (NICE) Clinical Guideline, healthcare professionals should adopt a ‘women-centered care’ approach women should be provided with evidence based information and the treatment and care tailored to their individual needs and preferences.\textsuperscript{10}

During examination a routine digital assessment of pelvic floor muscle contraction should be done, using the Oxford grading system. The grade, strength and duration of muscle contraction is assessed. The scale is as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Nil</td>
</tr>
<tr>
<td>1</td>
<td>Flicker</td>
</tr>
<tr>
<td>2</td>
<td>Weak</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>Good</td>
</tr>
<tr>
<td>5</td>
<td>Strong</td>
</tr>
</tbody>
</table>

The Q-tip test evaluates the mobility of the urethra and bladder neck. This is done by inserting a sterile, lubricated cotton-bud into the urethra to the level of the bladder neck. The patient is then asked to strain. The resting and straining angles are measured, and the difference between the two angles is calculated. A difference of greater than 30 degrees is thought to be indicative of hypermobile urethra. Note that this test does not establish the diagnosis of SUI and does not add any extra information to history and examination.\textsuperscript{11,12}

The Bonney test is a test of bladder neck elevation and indicates the likelihood of curing stress incontinence with a vaginal repair. It is currently not recommended for testing urethral competence. To demonstrate SUI the patient should have a full bladder. Note that often women will empty their bladder prior to a gynaecologic examination.

After history and examination, a urine dipstick test should be done to exclude a urinary tract infection. Urine positive for leucocytes and nitrites should be sent for microscopy, culture and sensitivity. A post-void residual should be done either by a bladder scan or by catheterisation.

This should be followed by a 3 day bladder diary, incorporating both a working and a leisure day. Bladder diaries are a reliable method of quantifying urinary frequency and incontinence episodes. Identify factors warranting urgent referral i.e.:  

- Microscopic haematuria if aged 50 years and older
- Visible haematuria
- Recurrent or persisting UTI associated with haematuria if aged 40 years and older
- Suspected pelvic mass arising from the urinary tract.

Categorise the urinary incontinence and discuss treatment options with patient, family or carer.

The use of multi-channel cystometry, ambulatory urodynamics or video-urodynamics is not recommended before starting conservative treatment. It is recommended in women before surgery for UI if:

- There is clinical suspicion of overactive bladder, or
- There has been previous surgery for stress incontinence or an anterior compartment prolapse, or
- There are symptoms suggestive of voiding dysfunction.

It has not been shown that carrying out urodynamic investigations before initial treatment improves outcome.

CONSERVATIVE TREATMENT

Lifestyle interventions:

This includes the following:

- In patients with urge UI/ OAB:
  - Reduction in caffeine consumption
  - Fluid restriction to 2 - 2.5 liters per 24 hour
  - Reduction of body mass index to ≤ 30

Physical therapy

In patients with mild SUI or mixed UI, a trial of supervised pelvic floor muscle training of at least three month’s duration should be offered as first line treatment. Evidence suggests that pelvic floor muscle training continued for three months is safe and effective.

Pelvic floor muscle training should be offered to women in their first pregnancy as a preventative strategy for UI, since it reduces the likelihood of postnatal UI. Therapy should comprise at least eight contractions three times day. Electrical stimulation and/or biofeedback should be considered when women do not actively contract their pelvic floor muscles, thereby promoting motivation.

In patients with urge or mixed UI, bladder training for a minimum of 6 weeks should be offered as first line treatment. Bladder training has fewer adverse effects and lower relapse rates than treatment with anti-muscarinic agents. The addition of an anti-muscarinic agent should be considered should one not achieve benefit from bladder training alone.

DRUG THERAPY

Although the mainstay of treatment for SUI is surgical treatment, new drug therapies are being sought worldwide. Attention has focused on alpha-agonists with a high specificity for urethral smooth muscle and selective serotonin norepinephrine reuptake inhibitors, specifically duloxetine.

Duloxetine inhibits the reuptake of serotonin and norepinephrine in the motor neurons of the pudendal nerve. This increases the amount of neurotransmitters in the sacral spinal cord (Onuf’s nucleus), the end result being increased pudendal stimulation of the urethral striated sphincter muscle. It has been shown to significantly improve the incontinence episode frequency and quality of life in patients with SUI.\textsuperscript{13} Nau-
Stress UI:
The retropubic mid-urethral tape (bottom-up approach), with a type 1 mesh (acroporous polypropylene with pore size > 50µm) is the procedure of choice due to the efficacy of long-term data. Other options include open Burch colpo-suspension, retropubic (top-down approach), or the transobturator approach. Note that the transobturator approach is limited by the lack of long-term data. The use of intramural bulking agents is limited by:
• need for repeat injections
• diminishing efficacy with time
• inferior to the retropubic sling

Anterior colporraphy, needle suspensions and para-vaginal defect repair are not recommended for the treatment of stress incontinence.

Surgery should be performed by surgeons with appropriate training. For maintaining competence it is suggested that an annual workload of at least 20 cases of each primary procedure for stress incontinence be performed. Surgeons should audit their data and submit their outcomes to national registries.

Conclusion
Urinary incontinence is an important public health issue. Epidemiological data for South Africa is lacking. This may be due to patient factors, lack of community continence centres, competing health needs, etc. Effective non-pharmacological, pharmacologi-

SURGICAL TREATMENT
When conservative management has failed, a detailed discussion of benefits versus risks of surgical treatment is the first step.

Table 2: Comparison of the different drugs used in the treatment of overactive bladder

<table>
<thead>
<tr>
<th>DRUG</th>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic oxybutynin</td>
<td>Cheap, well established, safe in pregnancy, dosing versatility</td>
<td>Side-effects</td>
<td>Most commonly prescribed drug, often not continued due to side-effects</td>
</tr>
<tr>
<td>Slow release oxybutynin</td>
<td>Has good efficacy, M3 predominant</td>
<td>While side-effects are reduced and therefore more acceptable side-effects still limit use</td>
<td>Single day dosing easier for many patients</td>
</tr>
<tr>
<td>Oxybutynin patches</td>
<td>Avoids conventional side-effects while maintaining efficacy</td>
<td>Patch irritation in 15%</td>
<td>Offers new option - patient may prefer patches to tablets</td>
</tr>
<tr>
<td>Tolterodine</td>
<td>Available as bd or ER preparations, tends toward bladder specificity</td>
<td>Fewer side-effects than oxybutynin but not as effective</td>
<td>Developed from terodoline, but associated with torsades de pointes, withdrawn in early 1990s</td>
</tr>
<tr>
<td>Trospium chloride</td>
<td>Quaternary ammonium compound, fewer CNS side-effects</td>
<td>Broad spectrum anti-cholinergic gives rise to side-effects</td>
<td>Long established in many countries, good safety profile</td>
</tr>
<tr>
<td>Solifenacin</td>
<td>M3 selectivity, variable dosing regimen, STAR study - some advantages over detrusitol</td>
<td>Constipation in some patients</td>
<td>May change from second-line to first-line choice for many secondary care clinicians</td>
</tr>
<tr>
<td>Darifenacin</td>
<td>Most M3 selective medication</td>
<td>Side-effects</td>
<td>Recently launched in RSA</td>
</tr>
</tbody>
</table>

Adapted from Textbook of Female Urology and Urogynaecology. Staskin S, Cardozo L. 2006
cal and surgical treatments exist. Only by fully understanding the impact of urinary incontinence on quality of life of women can we hope to improve its treatment. 

See CPD Questionnaire, page 43

References


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