

Urological Problems in Women after Menopause

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Introduction

Management of problems after menopause is an important aspect of routine gynecological practice. The average age at menopause in western world is 51.7 years [1] and one is expected to live up to 78 years and beyond. That means a woman has to live almost a third of her life after menopause.

In India and the Philippines, the median age of natural menopause is considerably earlier, at 44 years [2]. Women on west coast in south India were reported to have attained menopause at the mean age of 46.8 years and their life expectancy was 63.8 years [3]. It was also seen that although joint and vasomotor symptoms were seen in 70-80% of cases, urogenital symptoms were seen in 60% of the menopausal women. In late menopause, every third woman will have some kind of incontinence and urinary tract infection is not uncommon [4].

It is logical to think that urogenital disorders could be due to age related degenerative process and also to estrogen deprivation. There is always a debate as how much of causality can be attributed to any of these.

Age related changes include thinning of trigonal and urethral epithelium, decrease in blood flow through urethral plexus resulting in reduced cooptation, and overall connective tissue (elasticity, striated muscles and total collagen) diminution. There will also be attrition of alpha adrenergic receptors and slowing of nerve

conduction. Detrusor muscle may show hypertrophy and increase in trabeculation. With respect to bladder capacity, there is increase in hypersensitivity and decrease in ability to initiate contractions. Most of these factors account to detrusor instability and increased chances of urinary infection.

The effects on other organ systems and comorbidities add to urological problems in the aged. Nocturia may be seen with increasing frequency because of impaired cardiac function due either to congestive failure with venestasis and/ or edema, or following increasing urinary output in diabetics. The latter may also contribute to increased frequency in urination. Connective tissue ageing through decreased mobility and the pelvic organ prolapse that manifests or gets aggravated after menopause will result in altered sensation and control, decreased emptying, increased residual urine, and sphincter incontinence. Lower urinary tract dysfunction is more common in patients with pelvic organ prolapse.

Though it is very difficult to attribute all these changes to aging, estrogen deprivation after menopause seems to contribute significantly to the urological problems. Estrogen receptors are present in vagina, cervix, uterus, ovary, tube, urethra, trigone, bladder, connective tissue and pelvic floor muscles. High affinity receptors are found in large numbers in vagina and urethra. The mucosal atrophy is shown to correlate well with serum estrogen levels [5].

Impact of the age related disorders are important contributors to the urological problems in the aging women especially diabetes mellitus, cataract and associated visual impairment and arthritis with musculoskeletal deformities. The comorbid conditions like cardiovascular problems, neurological conditions and metabolic diseases will add to the urinary symptoms. But, the women carry on regardless of these conditions.

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These women are found to have cellular changes in detrusor resulting in incomplete dysfunctional pattern. It is reported that the detrusor shows widening of intercellular junction, protrusion of cell junctions and heightened muscle activity. The other changes include dense band pattern of smooth muscles and decreased contractility. The changes that are seen in lower urinary tract even in the absence of any disease are decreased bladder capacity, urethral length and urethral closure pressure and increased involuntary detrusor contraction.

The urological problems

Urinary tract infection: The prevalence of recurrent infection is said to increase by multiples as the age advances (Table 1) [6].

Table 1: Prevalence of Recurrent Urinary Tract Infection

Age (yr)	45-54	55-64	>65
UTI (%)	5	10	15

What is important to note is that in 30-40% of women with symptoms of urinary tract infection, urine shows no growth on culture [7] and that bacteriuria is not uncommon in the asymptomatic women. Hence, the approach to management assumes importance. In women with asymptomatic bacteriuria, antimicrobials are not recommended for the fear of development of drug resistance [8]. In such cases vaginal estrogen may provide relief. Low glycogen levels in vagina and decreased vaginal lubrication following menopause may also contribute to increased urinary tract infection rates.

Voiding dysfunction: Most of the voiding dysfunctions could be categorized as frequency problems, urgency or nocturia. For these in addition to age related structural changes as already described (vide supra), the presence of comorbidities play a major role. These dysfunctions can be contained by attention to these comorbid conditions.

Incontinence: Similar to voiding dysfunctions, all forms of incontinence like urge due to detrusor over activity, stress as a result of structural support changes at trigone of bladder, pelvic floor laxity and bladder wall protrusion, and overflow incontinence. Prevalence of incontinence increases with age and it ranges from 8-13%. In a third of women with incontinence the problem is transient and the rest do not suffer from incontinence suggesting that aging may not be the cause for it. The prevalence rates vary depending on the definition used to describe them,

the design of the study, the population involved, and the geographical location of the study. Whether there is any association between urinary incontinence and menopause is the subject of debate, partly due to the fact that is difficult to tell the difference between the effects of menopause and those of ageing. For some time it was hoped that hormonal treatment for menopause would be beneficial for urinary incontinence because there are hormonal receptors in the urinary tract. Analysis of the epidemiological data drawn from large cohorts has shown that on the one hand, the menopause has little if any impact on the risk of urinary incontinence, and on the other hand that the effects of estrogen medication on urinary incontinence vary according to how it is administered and the type of incontinence. The effect of oral hormone treatments for menopause is rather negative with respect to stress incontinence. Vaginal treatment appears to be beneficial for overactive bladder symptoms [9].

Sphincter inadequacy leading to stress incontinence may follow decrease in elastic tissue support, muscular atrophy and neuromuscular denervation due to estrogen deprivation after menopause.

It is logical to hope improvement or eradication of the problem with menopausal hormone replacement therapy (HRT). Contrary to the expectations no change in the incidence of incontinence in the first 5 years HRT use is seen. But, the decline prevalence of incontinence was reported after 5 years of menopause [10]. Videodynamic testing has shown that bladder neck incompetence was not influenced by menopausal status [11]. Menopause *per se* may not represent as precipitating factor for incontinence in these women and there is no evidence that urodynamic variables after menopause will be affected by estrogen therapy [12]. Whereas coronary vascular accidents, tumors, Parkinson disease, diabetes, pelvic organ prolapse, chronic urinary tract infection may proportionately increase with age and could be attributed for detrusor instability.

Detrusor over activity and overactive bladder: It is the commonest dysfunction in menopausal women. One needs to differentiate between hyperreflexia and instability, and between overreactivity and impaired contractility, while individualizing the treatment.

One has to keep in mind that the side effects of the drugs that women are taking for various comorbid conditions such as anticholinergics, sedatives and antihistamines may result in subclinical retention, stress incontinence, dryness mouth necessitating ingestion of more fluids and increased urination. Decreased mobility due to the underlying disease and

use of sedatives or antihistaminics may add to the problem. Excessive cough caused by ACE inhibitor use in hypertensives may be associated with urinary leak may worry the patient and diuretics prescribed result in increased urinary output.

Diagnostic approach

Approach to the diagnosis should be focused on identifying any transient causes, looking for serious underlying problems in brain, spinal cord or bladder, and providing conducive environment and support.

Voiding record

Maintaining a voiding diary is the first step in evaluating the patients with micturition related symptoms. It is first line method for diagnosing and/or treating patients with overactive bladder and nocturia. It has the advantage of involving patients in the care of their problem, may sometimes be unreliable because of voiding habits and patient compliance may vary.

A voiding diary is a record in which patients are asked to write down micturition and symptoms over some period. It helps in documenting the nature and severity of lower urinary tract dysfunction and incontinence. For the purpose, three different types of instruction-cum-maintenance charts that could be used are:

- Micturition time chart – involves recording of only the times of micturition for at least 24 hours, day and night.
- Frequency volume chart - is the record of amount of volume of urine voided and the time of each void for at least 24 hours, day and night.
- Bladder diary – not only provides information about records of times of micturition and voided volume, it also expects the patient to provide the information about incontinence episodes, pad usage and other information such as fluid intake, the degree of urgency and the degree of incontinence.

The properly maintained diary helps the clinician in not only identifying the nature of problem, but also in treatment follow-up. It can also provide a simple form of bladder retraining.

However, the use of voiding diary as a tool in the management of urological symptoms is not without issues. There is no consensus on the number of days a voiding diary should be recorded whether for 1, 2 or 3 days. Recording for 3 days may increase the

reliability but this is associated with decreased patient compliance. There are some suggestions to record for 2 days over weekends.

Although the voiding diary is among the best possible means of obtaining objective data on subjective symptoms, it is not known whether it reflects actual urinary habits since the diary may not be in agreement with symptoms in 50% of patients with urge incontinence. It is argued that the discrepancy may be due to over- or underestimation of their urinary habits. The poor diary compliance by the patient cannot be ruled out.

Targeted patient examination

The targeted examination is important. Body Mass Index should be calculated.

Higher BMI is generally considered an incontinence risk factor [13], and a positive association between BMI and incontinence has been observed [14]. It is noted that a 5% (95% CI 4% - 7%) increased risk of any incontinence with each one unit increase in BMI. [15] It is possible that episodes of urine leaking led to increases in BMI by dissuading some women from being physically active. However, there is a suggestion that obesity may cause a chronic state of increased pressure that stresses the pelvic floor.

General inspection, especially perineum and neurological evaluation by eliciting bulbocavernosus and anocutaneous reflexes.

Pelvic assessment should include a visual assessment for vaginal atrophy. Pelvic organ prolapse, particularly a cystocele can affect incontinence symptoms. Asking the patient to cough with a comfortably full bladder and observing the urethra for any evidence of urinary leak including a Q-tip test is an important observation to be made. On cough provocation, evidence of urinary leak suggests stress urinary incontinence and a persistent leak may suggest detrusor over activity.

A bimanual pelvic examination is necessary as an enlarging uterus or a pelvic mass may press on the bladder and contribute to urinary incontinence. In addition, stool impaction is common in nursing home patients and may lead to bladder urgency and subsequent urinary incontinence.

Laboratory tests

The tests carried out are aimed at knowing glycemic status (blood sugars), kidney function (urea,

creatinine estimation), and urinary tract infection (urine analysis and culture).

Ultrasound abdomen and pelvis

The imaging studies are required to (i) confirm or rule out clinical examination findings of pelvic or abdominal mass lesion that are thought to contribute to bladder symptoms, (ii) to document residual volume with a post-void residual bladder scan, and (iii) a renal ultrasound to assess for any evidence of upper renal tract involvement.

Role of Urodynamics

Urodynamic testing is not routinely needed. They will be required if conservative treatments are not successful or the patient is severely incontinent or if symptoms and physical findings are incongruous to establish the problem objectively. Despite these indications, urodynamic studies remain controversial.

It involves cystometrics (simple and multichannel), uroflowmetry, cystometrography, pressure flowmetry, and urethral pressure profile studies.

Simple cystometrics allows determination of stress incontinence and detrusor overactivity, as well as measurement of first sensation, desire to void, and bladder capacity. Multichannel cystometry, in addition helps in identifying internal sphincter deficiency. And information regarding bladder, intra-abdominal, and detrusor pressures can also be obtained.

Uroflowmetry provides information on a woman's ability to empty her bladder. It can identify women with urinary retention and other types of voiding dysfunction.

Cystometrography is performed to determine whether a woman has urodynamic evidence of stress incontinence or detrusor overactivity. This test provides information on bladder threshold volumes at which a woman senses bladder capacity. Delayed sensation or a sensation of bladder fullness only with large capacities may indicate neuropathy. The extreme bladder sensitivity may suggest sensory disorders such as interstitial cystitis.

Pressure flowmetry for which microtip transducer catheter is used gives additional information regarding detrusor pressure at maximum flow. This is particularly useful in women who may have incomplete bladder emptying.

Urethral pressure profile studies help to determine maximum urethral closure pressure, the functional urethral length and the area of continence zone. This test provides valuable information on the intrinsic properties of the urethra and aids in the diagnosis of internal sphincter deficiency.

Treatment

Having ascertained the authenticity and type of voiding problem based on the maintained diary, the initial approach will be mainly to adjust the timing and amount of fluids, providing bedside urinal, timing the prompted voiding, verbal enhancement for voiding, use of adjunctive like pads and undergarments, and in some individuals catheterization before bedtime may be required.

To most patients with urinary incontinence, conservative management is a reasonable initial approach. The rationale behind conservative management is to strengthen the pelvic floor and provide a supportive backboard against which the urethra may close. Options include active pelvic floor exercises and passive electrical pelvic floor muscle stimulation. For both stress urinary incontinence and urge these exercises prove valuable. Pelvic floor strengthening exercises may help to compensate for anatomic defects in the former and in patients with urge incontinence will be of help to improve pelvic floor muscle contraction to provide temporary continence during waves of bladder detrusor contraction.

The drug treatment for the dysfunction (overactive bladder, incontinence, nocturia) would involve use of anticholinergic drugs (oxybutynin 2.5–5mg every 8 hours/ tolterodine 4mg once a day/ trospium chloride 20mg twice daily) that competitively antagonize the M1, M2 and M3 subtypes of the muscarinic acetylcholine receptor. These drugs also have direct spasmolytic effects on bladder smooth muscle as calcium antagonist and local anesthetic. The problems with the use of these drugs are narrow angle glaucoma, myasthenia, and occurrence of megacolon.

In patients with outlet obstruction are usually managed by meatal dilatation and in cases of severe obstruction meatoplasty may be warranted.

Incontinence pessaries are also made available in certain women with incontinence and pelvic organ prolapse. They reduce downward excursion of or funneling of the urethrovesical junction. This bladder neck support may help to reduce incontinent episodes.

In patients with urodynamically proven stress incontinence with internal sphincter deficiency periurethral injection of bulking agents is an alternative considered in women who are a poor surgical candidate due to medical comorbidities.

Women who do not show adequate improvement with conservative management would require surgical procedures to recreate the urethral support. Although the complete physiology underlying the success of these surgical procedures is not entirely clear, they are believed to prevent bladder neck and proximal urethra descent during increases in intra-abdominal pressure. Transvaginal needle procedures and paravaginal defect repair, retropubic urethropexy, pubovaginal and midurethral slings with retropubic or transobturator approach are some of the procedures that are being popularized. Retrospective studies have suggested that the transobturator procedures may have limited effectiveness for patients who demonstrate urodynamic criteria for intrinsic sphincteric deficiency [16, 17].

It is not uncommon to find under-active bladder due to hypofunction of detrusor. These patients may be benefitted by indwelling catheter for 2-4 weeks followed by bladder training by augmented voiding (Crede or Valsalva methods). If use of parasympathomimetic drugs (bethanechol with the hope that stimulation of muscarinic receptors occurs without any effect on nicotine receptors, in them intermittent catheterization by the patient herself may be the alternative.

In the elderly women requiring continuous catheterization, care of indwelling catheter assumes a significant importance. It should be a closed drainage. It would not require any bladder irrigation. Routine bladder washouts only if there is a clinical indication for doing so. Any attempt to train the bladder by clamping the catheter is unnecessary. One should use the catheter with smallest balloon capacity. The longest duration that a catheter should remain indwelling should be based on the manufacturer's recommendations for catheter usage and the change should be individual need based rather than strictly based by time. However, infective prophylaxis and surveillance cultures are required.

Conclusion

Ageing and its effect seem to be the main reason for voiding related problems rather than estrogen deprivation in women after menopause. The problems are more cumbersome in the elderly worsened by the

comorbidities. Incontinence of any kind is abnormal regardless of any age. Treatment of the factors beyond the bladder for the voiding related worries including incontinence is required. A multipronged, creative, persistent and optimistic approach is needed to treat these cases.

Conflict of Interest: None to declare

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