



A REVIEW OF OVERACTIVE BLADDER SYNDROME: EVALUATION AND MANAGEMENT

Anagha U¹, Dr. Subash Chandran M P², Dr. Karthika Lal B³, Prasobh G R⁴

¹ Student, Sree Krishna College of Pharmacy and Research centre, Parassala, Trivandrum

² Professor and Head, Department of Pharmaceutics, Sree Krishna College of Pharmacy and Research centre, Parassala, Trivandrum

³ Assistant Professor, Department of Pharmacy practice, Sree Krishna College of Pharmacy and Research centre, Parassala, Trivandrum

⁴ Principal, Sree Krishna College of Pharmacy and Research centre, Parassala, Trivandrum

ABSTRACT: Overactive bladder syndrome is a chronic, disabling condition with physical, psychological and social consequences that significantly affects the quality of life of millions of patients worldwide. The economic impact of this disorder is crucial. Overactive bladder syndrome is a little-known condition, with different manifestation from patient to patient. Usually patients suffer from OAB in advanced age. Nocturia is reported as the most bothersome symptom in the elderly population. The patient requires a clear explanation and the full support of the attending physician. It is extremely important to establish a correct diagnosis and an effective individualized treatment. Improving the quality of life in these patients is the main purpose in managing this condition. The aim of the review was to discuss all aspects of this challenging disorder and suggest tools for assessment and management strategies.

KEYWORDS: Overactive bladder syndrome, Antimuscarinic drugs, Overactive detrusor muscle, Nocturia, Aging.

INTRODUCTION

Overactive bladder (OAB) syndrome is a chronic medical condition which has a tremendous impact on the quality of life in both men and women. OAB affects performance of daily activities and social function such as work, traveling, physical exercise, sleep, and sexual function. The characteristic symptoms of OAB are urinary urgency, usually accompanied by frequency and nocturia, with or without urgency incontinence. Urgency incontinence is more common in women, and urgency and frequency are more common in men.

The symptoms has a significant impact on the quality of life of these patients leading to frequent sleep disorders, anxiety and depression, as well a reduction of physical activity and social interactions, reduction of sexual activity and marital satisfaction. Due to sleep disorders, it has been shown that patients with OAB have a much higher risk of fractures or fall-related injuries.

Diagnosis of OAB is considered in the absence of urinary tract infection, metabolic disorders or urinary stress incontinence. Although OAB can affect children and young adults, this condition is most common in patients over 40 years old. Since the frequency and consequences of OAB is more significant in elderly patients, this group of the population has to be more carefully evaluated for relevant complains.

RISK FACTORS

- A well-known risk factor is age. Due to the postmenopausal status, by reducing the level of estrogen, the prevalence of symptoms is higher.
- Genital prolapse is also increases the risk of OAB
- Stress urinary incontinence surgery may also cause OAB
- Obesity
- Inflammatory syndrome or oxidative stress
- Affective disorders: anxiety or depression
- Functional gastrointestinal disorders: irritable bowel syndrome.
- Autonomic nervous system dysfunction.

Others

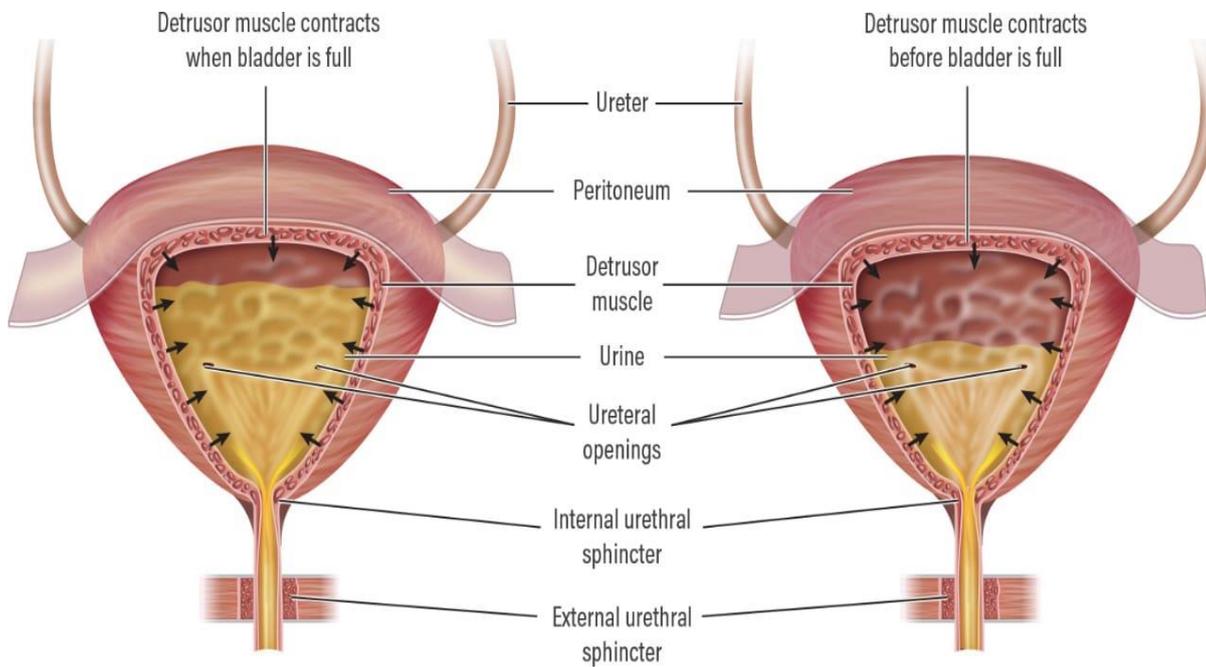
- Sleep apnea
- Smoking
- Increased coffee consumption
- Artificial sweetener
- Alcohol
- Spices and soft drinks

Pathophysiology of OAB syndrome

Various factors may be involved in OAB and the major cause may vary from individual to individual. 4 theories have been proposed to explain the pathophysiology of OAB

1. The neurogenic theory: reduction in the inhibitory neural impulses and increase in the afferent impulses from the bladder trigger the voiding reflex.
2. The myogenic theory: the detrusor muscle becomes more sensitive to cholinergic stimulation leading to increased spontaneous activity.
3. The autonomous bladder theory: alteration or exacerbation of phasic activity is generated by muscarinic stimulation.
4. The afferent signaling theory: spontaneous bladder contractions during filling result in increased afferent output and hence the awareness of bladder filling.

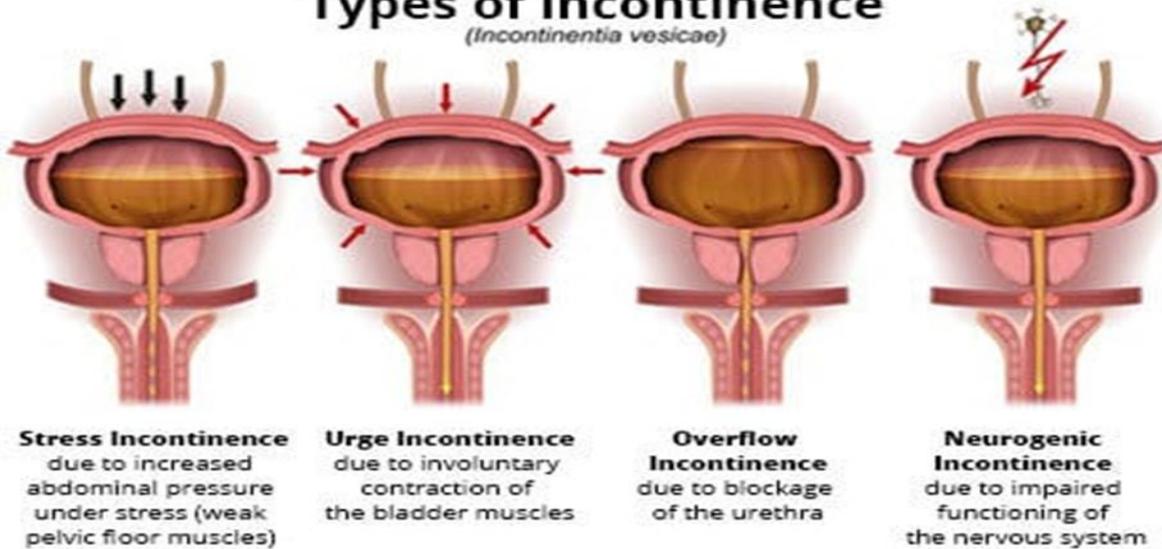
All these theories explain the detrusor overactivity. The detrusor muscle is densely innervated and allows synchronous activation and a rise in bladder intra vesicle pressure. A pathological partial denervation of the detrusor may induce muscle contractions leading to an urgency sensation and possible urge of urinary incontinence.



Normal bladder

Overactive bladder

Types of Incontinence (Incontinentia vesicae)



Diagnosis of OAB

Key topics	Keynotes to follow and comments
Patient characteristics	gender, age, presenting symptoms, frequency, better, worse, impediments to life style, voiding diary
Current drugs taken	diuretics aggravate symptoms, alpha-agonists may lead to overflow incontinence
Past medical history	heart failure, poorly controlled diabetes, strokes, neurological diseases
Previous surgeries	transurethral resection, colposuspension, midurethral slings
Physical examination	general, gynecological, neurological
Laboratory and urology tests	blood test for HbA1c, creatinine levels, urine analysis and culture of residual urine and flowmetry, urodynamics

Treatment

Non Pharmacological treatment

Dietary changes and fluid management

1. Foods to avoid:

Foods and drinks, which are known to cause or worsen the symptoms of OAB include:

- Alcohol
- artificial sweetener
- caffeine chocolate
- citrus fruit and juices
- Sugar and honey
- Spicy food



Red wine and chocolate may cause or worsen the symptoms of an overactive bladder.

2. Manage fluid intake:

Drinking enough water is essential for health.

3. Bladder control techniques:

There are several ways to reduce bladder leaking.

- Scheduled urination
- Delayed urination
- Double-void technique
- Kegel contractions:
Strengthening the pelvic floor muscles, which are used to control urinary flow.

Life style changes

- Quitting smoking
- Maintaining a healthy weight
- Managing medical conditions
- Herbs and supplements
Eg: vitamin D, Magnesium hydroxide

PHARMACOLOGICAL THERAPY

Anti-cholinergic drugs

- They blocking the nerve signal related to bladder muscle contraction.
- These drugs also might increase bladder capacity and decrease the path to go.
- Anti-Cholinergic have 2 mechanisms.
 - The first mechanism of action works at the level of the neuromuscular junction on cholinergic-muscarinic receptors producing a competitive inhibition of the process through which parasympathetic stimulation leads to detrusor muscle contractions.
 - A second mechanism of action may work on urothelial sensory receptors inhibiting afferent nerve activity.

Examples of anti-cholinergic drugs:

- Darifenacin
- Fesfoterodine
- Oxybutynin
- Solifenacin
- Tolterodine
- Oxytrol for women is the only drug available over the counter.
- The main side effect is the dry mouth and constipation.

Mirabegron

- Mirabegron can help treat an overactive bladder by relaxing the bladder, which help it still and store urine.

Anti-depressants

- Anti- depressants medication may help to reduce incontinence by improving the muscle tone.

Example:

- Duloxetine

Management of Resilient OAB

There are some minimally-invasive second line treatment options to be considered when ant muscarinic drugs are unsuccessful. These include botulinum toxin injections directly into the detrusor muscle, posterior tibial nerve neuromodulation, and sacral neuromodulation. Recently a new β adrenergic drug has shown some benefit. Botulin toxin, especially Botox is used by direct cystoscopic multiple injections of the detrusor muscle. This selectively blocks presynaptic release of acetylcholine from nerve endings and as a result decreases contractility, and muscular atrophy is obtained at the injection site. This treatment can be administered in the clinic with local intravesical anesthesia using viscous lidocaine. After 4 to 12 weeks, 88% of patients showed significant improvement in the bladder function with regard to subjective symptoms, quality of life, and urodynamic parameters. The effects of this treatment began to diminish after 6 to 9 months and repeat treatments were necessary.

Another approach to resilient OAB is the use of neuromodulation to regulate bladder and pelvic floor function. There is peripheral tibial nerve stimulation and sacral neuromodulation.

Nerve stimulation

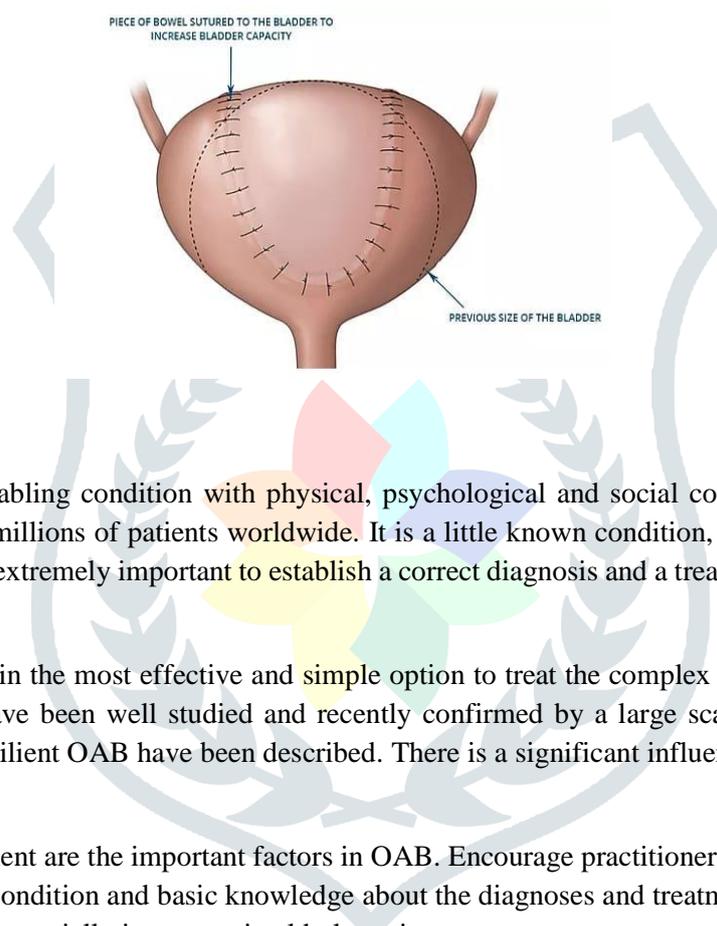
Nerve stimulation is a relatively simple and promising treatment for an overactive bladder. This treatment may help people whose symptoms don't respond to lifestyle change or meditation. It may also beneficial for those who experience adverse effect from the drug In nerve stimulation sending mild electric current to the muscle of the pelvic and lower back. That play a role in urination. It can either help in muscle contract or encouraged growth of helpful nerve cells in area. There are two main ways of nerve stimulation.

- Percutaneous Tibial nerve stimulation(PTNS):

- A small electrode through the skin of a lower leg.
- A device sent pulses of electricity to the electrode, which stimulate a nerve in the leg. Stimulate a nerve in the lower back that is responsible for controlling the bladder
 - Sacral nerve signal stimulation(SNSS):
 - Place the electrode under the skin, just above the buttes.
 - Way used this to stimulate the nerve in the lower back that help control bladder storage and the urge to urinate.

Augmentation cystoplasty

It uses path of the bowel to increase bladder capacity or urinary diversion an alternative route for bladder drainage for severe



Conclusion

OAB is a chronic, very disabling condition with physical, psychological and social consequences that significantly affect the quality of life of millions of patients worldwide. It is a little known condition, with different manifestations from patient to patient. It is extremely important to establish a correct diagnosis and a treatment as efficient as possible, often individualized.

Antimuscarinic agents remain the most effective and simple option to treat the complex symptoms of OAB, and their pharmacological profiles have been well studied and recently confirmed by a large scale meta-analysis. Additional secondary treatments for resilient OAB have been described. There is a significant influence of OAB on health-related quality of life.

Diagnosis and proper treatment are the important factors in OAB. Encourage practitioner to give more attention to this issue. Familiarity with this condition and basic knowledge about the diagnoses and treatment options can contribute to the general health, which is especially important in elderly patients.

In the case of OAB the patient involving must be optimal so that the treatment options are clearly understood. The advantages and disadvantage of each, to make a correct and informed decision.

Improving the quality of life in patients is the main goal in managing this condition.

Reference

1. Haylen BT, de Ridder D, Freeman RM, Swift SE, Berghmans B, Lee J, Monga A, Petri E, Rizk DE, Sand PK, Schaer GN. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Neurourol Urodyn.* 2010;29:4–20.
2. Van Dijk MM, Wijkstra H, Debruyne FM, De La Rosette JJ, Michel MC. The role of nocturia in the quality of life of men with lower urinary tract symptoms, *BJU Int.* 2010;105:1141-1146.
3. Kincade JE, Dougherty MC, Carlson JR, Hunter GS and Busby-Whitehead J: Randomized clinical trial of efficacy of self-monitoring techniques to treat urinary incontinence in women. *Neurourol Urodyn.* 26:507–511. 2007.

4. Wallace SA, Roe B, Williams K and Palmer M: Bladder training for urinary incontinence in adults. *Cochrane Database Syst Rev.* 2004
5. Brading AF. Spontaneous activity of lower urinary tract smooth muscles: correlation between ion channels and tissue function. *J Physiol.* 2006;570:13–22.
6. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, Van Kerrebroeck P, Victor A, Wein A. The standardisation of terminology in lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. *Urology.* 2003;61:37–49.
7. Novara G, Galfano A, Secco S, D'Elia C, Cavalleri S, Ficarra V and Artibani W: A systematic review and meta-analysis of randomized controlled trials with antimuscarinic drugs for overactive bladder. *Eur Urol.* 54:740–763. 2008.

