VOIDING DISORDERS - REVIEW OF CURRENT ADVANCES

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ABSTRACT: The prevalence of voiding disorders in women varies between 1.8% and 18% and appears to increase with age[1, 2; 3]. Urodynamic tests define voiding disorders with repeated peak flow rates of around 14ml/s and or 200ml or more of residual urine. Voiding disorders are common in women. The prevalence of voiding disorder (VD) in women varies between 1.8% and 18% and appears to increase with age. Urodynamic evidence of voiding difficulty was defined as repeated peak flow rates of 14ml/s and/or 200 ml or more of residual urine. The causes include: Acute inflammation such as genital or urinary tract infection, Drugs such as epidural anaesthesia, oxybutynin, detrusitol and antidepressants, Nerve damage such as spinal cord injury and diabetic neuropathy, Psychological influences such as anxiety, hysteria, Schizophrenia and depression, Pelvic surgery and vaginal delivery, Obstruction due to pelvic organ prolapse, faecal impaction and urethral narrowing, detrusor underactivity or detrusor areflexia, Overdistension of the bladder, Inability to relax the urethral sphincter during voiding, Symptoms include: Delay in initiating urination, Slow urinary flow, Sensation of incomplete emptying of bladder, The need to immediately re-void, The need to strain to void, Dribbling of urine after completing bladder emptying. Investigations include Urinalysis, Uroflowmetry, Urodynamics, Electromyography, Radiology, Cystoscopy, Urethral pressure profile; treatment includes medical and surgical management.

CONCLUSION: Voiding disorder (VD) in women varies between 1.8% and 18% and appears to increase with age. Early diagnosis and treatment is mandatory to prevent irreversible damage to the urinary tract.

KEY WORDS: Voiding disorder, detrusor, urine.

Causes of voiding disorders: There are many causes of voiding disorders in women. Some may be temporary while others may be permanent. The causes include Psychological influences - anxiety, Schizophrenia and depression, Pelvic surgery and vaginal delivery, Acute inflammation such as genital or urinary tract infection, Oxybutynin, detrusitol and antidepressants, anesthetics like drugs, Nerve damage such as spinal cord injury and diabetic neuropathy, Obstruction due to pelvic organ prolapse, fecal impaction and urethral narrowing, detrusor underactivity or detrusor areflexia, Overdistension of the bladder[4], Inability to relax the urethral sphincter during voiding.

Impaired detrusor contractility is a result of bladder over-distension and can lead to bladder necrosis[5], thus resulting in voiding dysfunction. Retention of urine can lead to over distended bladder. Mainly causes of retention are labour and delivery itself, spinal anaesthesia, neurological disease, any uterine mass, ovarian cysts or anticholinergic and/or psychotropic medication.

A primary disorder of external urethral sphincter with hypertrophy of muscle fibres, which doesn't relax during voiding leads to voiding difficulties. Urethral stenosis can arise as a result of scar tissue that has been caused by urethral catheterization or instrumentation, such as cystoscopy or urethral dilation, inflammation, infection or urethral injury[6]. Urethral diverticula are difficult to diagnose, relying on thorough digital vaginal examination and further investigation such as

cystoscopy. Urethral narrowing caused by atrophy of urogenital tissue in the older female and urethral caruncles may also lead to voiding dysfunction.

Hinman (1986) suggests that this voiding disorder can be reversed with re-educational therapy [7,8]. Patient may present with history of lower urinary tract symptoms, difficulty voiding in public place, intermittent normal voiding pattern.

Diagnosis can be made with either fluoroscopic visualisation of the urethra during voiding using radio opaque contrast or with needle electromyography.

Peripheral neuropathy, which affects bladder contractility leading to urinary retention or incomplete bladder emptying, is mainly caused due to diabetes. Hypothyroidism can affect the bladder in a similar way[9].

Patients with Alzheimer's disease may experience voiding dysfunction. Frontal lobe changes in the brain can impair decision making, leading to inappropriate voiding or lack of recognition of the need to void, resulting in urinary retention.

Importance of early diagnosis of voiding disorders: It is important to diagnose voiding disorders to prevent urinary tract infections and renal failure if untreated.

Symptoms include:

- Delay in initiating urination
- urinary flow slow
- Dribbling of urine after completing bladder emptying
- Sensation of incomplete emptying of bladder
- Sensation of the need to re-void
- The need to strain to void

Patients with voiding disorders may also present with symptoms such as frequency, urgency, passing urine more than once at night, urinary incontinence, and urinary tract infection. Some patients may have associated prolapse of the womb, bladder or rectum.

Problems in voiding may lead to acute or chronic urinary retention. In acute retention the patients suffer with inability to pass urine and his/her bladder can be percussible4. Patients complaining of frequency of urination, poor flow, overflow incontinence or UTI infection can be suspected to have chronic retention of urine.

Early assessment of the disorder is very important as it may be too late for treatment. Patient selection is of utmost importance.

Investigations: Investigations are of utmost importance in detecting voiding disorders, currently comprises of midstream urine for microscopy, culture and sensitivity. Uroflowmetry is a noninvasive procedure to calculate the flow rate of urine and total volume voided and the time taken for it. The patient passes urine into a special funnel, connected to instrument which calculates the amount of urine passed, rate of flow in seconds and the length of time until completion of voiding. This test assesses the maximum and average flow rate and records voiding pattern. This information is converted into a graph, Urodynamic study is also important, it's done by inserting a catheter with two channels is inserted into the urethra. The bladder is filled with sterile 0.9% sodium chloride at a

rate of +/- 50ml/min, via the filling channel. The pressure in the bladder is measured during filling via the pressure catheter, which is connected to a pressure dome. The pressure dome transmits an electrical signal to a computer that converts the information into a graph. During the filling phase of the test, often referred to as cystometry, compliance of the detrusor muscle can be measured. Stability of the bladder can be evaluated by the presence or absence of detrusor activity. Total capacity of the bladder can be measured. Video urodynamics is also done; residual urine volume is also measured. Other tests include Electromyography which detects the contractions of the sphincter muscles during voiding. In the evaluation of urinary symptoms the muscle activity around the bladder (urethral sphincter) is measured by using sensors placed on the skin around the urethra and rectum. In the assessment of Fowler's syndrome local anaesthetic is injected into the sphincter region and a small needle placed within the sphincter. Muscle activity is recorded on a machine in the form of waves. The pattern of impulses will show whether the messages sent to the bladder and urethra are coordinated correctly.

Various other investigations such as X-rays and ultrasound scan are done to look for tumour, diverticulum and foreign body of the bladder, or enlarged kidneys caused by voiding disorders.

Cystoscopy is done which allows visualisation of the bladder lining that may show tumours, stones, diverticula and particularly urethral diverticula.

Management

a) Prevention and early recognition: Prevention of voiding disorders is important. Risk factor detection is very important to prevent complications due to voiding disorder. After pelvic or continence surgery, the use of temporary catheterisation can prevent immediate post-operative bladder overdistension. Early recognition of postnatal urinary retention and early catheterisation is crucial to early return of normal urinary function subsequently.

b) Treatment:

- **Medical:** Drugs may be used to treat the underlying cause of the voiding disorders. A course of antibiotics or antiseptic may be used if there is an infection. In patients with anxiety disorders, a small dose of anti-anxiety medication or sleeping tablets may help. Vaginal oestrogen pessaries may be used if atrophic changes are implicated in the voiding difficulties. Some drugs may be used to improve bladder muscle contraction. Newer studies prove the use and importance of botulinum toxin for treating voiding dysfunctions[10], one of the side effects of this procedure can be continued voiding dysfunction, especially urinary retention. Alpha-blockers, such as tamsulosin, have been used with some success in functional bladder neck obstruction[11], but further research is needed.
- **Clean Intermittent Self Catherisation (CISC):** In CISC, the patient is taught to insert a urinary catheter under clean conditions at regular intervals. The use of CISC enables many women to live normal lives with efficient bladder emptying. For patients not willing or unsuitable to use CISC, indwelling catheters may be used.
- **Surgical treatment:** In cases where the urethral opening is narrowed, it may be dilated using metal rods called Hegar dilators. Often, repeated dilatations are needed. If the patient has genital prolapse this may be corrected by using a pessary or surgery. If the woman is having bladder or uterine prolapse, it should be dealt with surgically. If problem arises as result of surgery, such as tension-free vaginal tape, release of the tape may be required.

Institute of Neurology 2008 stated neuromodulation can be beneficial for patients with fowler's syndrome. Sacral nerve stimulation is a process whereby small electrical impulses stimulate the lower back just above the sacrum, via an electrode which is inserted at S3 level.

CONCLUSION: Voiding disorders in women varies between 1.8% and 18%. It is a form of preventable condition which requires early diagnosis and identification of risk factors to prevent irreversible damage to the urinary tract. Treatment modality includes surgical, medical as well as patient self catheterization technique.

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