ICS Fact Sheets

A Background to Urinary and Faecal Incontinence

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www.ics.org

About the ICS

The International Continence Society (ICS) is a membership society aimed at medical professionals working in or with an interest in the field of incontinence. The ICS provides education and activities that advance the sciences concerned with urinary tract, bowel, and pelvic floor dysfunction including: urology, neurourology, urogynaecology, and urodynamics. The Society promotes research into the causes of, prevention of, and remedies for incontinence and provides access to the results of that research via website, email, print journal, newsletters, presentations at annual congresses, and educational courses. The Society also works to standardise the terminology and guidelines surrounding the diagnosis and treatment of both urinary and faecal incontinence.

History of the ICS

The ICS was founded in 1971 by Eric Glen under the name of the "Continent Club" and held its first annual meeting the same year in Exeter, UK. In 1998, the Society was set up as a UK Charity under the guidance of Paul Abrams. It now boasts a membership of around 3,000 members from 70 different countries. The ICS emphasises the multi-disciplinary approach toward incontinence issues with membership derived from numerous different disciplines including: geriatricians, surgeons, nurses, urologists, physiotherapists, gynaecologists, pharmacologists, and scientists. Since 1971, the Society has gone on to publish numerous state-of-the-art reports, retaining the copy-rights, and thereby enabling publication in a range of international journals. This broad dissemination of information highlights a primary mission of the organisation.

A review of the ICS' functions and governing laws was undertaken from 2006-2008. At the ICS Annual Meeting in Cairo in 2008, members overwhelmingly approved the new Bylaws and Articles of Association. These documents saw the creation of a new Board of Trustees to govern all aspects of ICS activity. Day to day society tasks and procedures are managed by six full time and two part time office staff situated at the ICS headquarters in Bristol, UK. There are also numerous committees dedicated to various projects that ensure the Society's charitable objectives are supported.

ICS membership

ICS annual membership subscription is just £70 a year and includes:

- Full subscription to the journal *Neurourology and Urodynamics*
- Substantial reduction in the registration fee for the Annual Meeting
- Access to the online ICS Newsletter
- Free membership to EU-ACME programmes
- Access to fellowships, scholarships, grants and other support offered by the ICS
- Access to our abstract archive dating back to 1975
- Ability to host an education course in the your country
- The opportunity to participate as a committee member
- The chance to become an official ICS speaker at international events
- Information and education via the ICS website, headquarters, courses, and meetings
- Voting rights on membership issues and committee positions
- The ability to contact other members worldwide via the ICS website

ICS Affiliate Membership

Any international, national, or regional

organisation that has a focus or interest in the field of incontinence may apply for affiliation with ICS. As the only international multi-disciplinary society that focuses on incontinence, the ICS seeks affiliation with other organisations in order to enhance the management of incontinence care. Depending on the chosen payment option, benefits of affiliation include the following:

- Six issues of the Journal Neurourology and Urodynamics (NU)
- Access to the online ICS Newsletter
- Substantial reduction in registration for the ICS Annual Meeting

In addition, the affiliate society logo will be placed on the ICS website with links to the society. There will also be opportunities to publicise activities and events in the ICS News, e-News and online.

Currently (as of February 2013) affiliate membership payments are as follows:

- £50 - ICS full membership (including journals). This is a reduced rate compared to the standard £70 ICS membership fee.
- £35 – ICS membership with no access or receipt of journals.

Applications are reviewed by the ICS Board of Trustees and a response is rendered as soon as possible, usually within 30 days. A minimum of 30 paying members are required. A society representing a small nation/interest group may apply for exception to this minimum requirement.

ICS Annual Meeting

The founding members of the ICS decided that the Society should meet annually with a different meeting chair and venue each year. This site is selected by members' ballot four years in advance of the meeting date. Today, the annual meeting remains one of the most valued dates on the urological and gynaecological calendars, attracting in excess of 3,000 delegates from all corners of the globe. A list of annual meetings from 2013 to 2016 is provided below:

- **43rd meeting 2013 Barcelona, Spain** Chair, David Castro-Diaz
- **44th meeting 2014 Rio de Janeiro, Brazil** Chair, Carlos D'Ancona
- **45th meeting 2015 Lyon, France** Chair, Emmanuel Chartier-Kastler
- **46th meeting 2016 Tokyo, Japan** Chair, Yukio Homma

ICS Educational courses

The ICS also delivers and contributes to educational courses around the world. These courses are primarily aimed at junior physicians and medical trainees and are priced accordingly. Efforts are made to ensure that the scientific programme is of the utmost relevance to the local audience. The ICS also provides specialist speakers to other continence societies' courses around the world.

A selection of education courses delivered in 2013 are shown below, for a full list of future courses please see the ICS website **www.ics.org**

- ICS Education course in association with Venezuelan Society of Urology 2012
- Guest Lecture in association with Asociación Guatemalteca de Urologia 2012
- ICS Cadaver Workshop - Oporto, Portugal 2012
- Guest Lecture in association with Confederación Americana de Urología (CAU) 2012
- Guest Lecture at SINUG 12th Annual Conference 2012
- Guest Lecture in association with German Society of Urology 2012
- ICS Education Course in association with Sicilian Urogynecologic Society 2012
- ICS Education Course - Krakow, Poland 2012

Investigation of Lower Urinary Tract Symptoms

Introduction

Lower urinary tract symptoms (LUTS) refers to symptoms that result from conditions and diseases affecting the bladder and the urethra. These are comprised of:

- Storage symptoms which include the overactive bladder symptoms (urgency, urgency incontinence, frequency, and nocturia) as well as pain and stress urinary incontinence.
- Voiding abnormalities which include slow and/or interrupted stream, splitting or spraying, terminal dribble, hesitancy, and straining.
- Post-micturition symptoms which include post-micturition dribble and the sensation of incomplete emptying.
- Suspicious findings such as haematuria (blood in the urine) and dysuria (pain on passing urine) that may indicate other pathology such as bladder tumour, stone disease, or urinary tract infection.

History

Assessment begins with taking a thorough history. The following queries are made to elucidate the patient's particular constellation of symptoms:

- Which of the above symptoms are present.
- Symptom frequency and severity.
- Variation between night time and daytime symptoms.
- Precipitating or relieving factors.
- Prior treatments attempted and their success.
- Coping measures used by the patients to improve their symptoms.
- The impact of the symptoms on quality of life and social functioning.

Increasingly, validated questionnaires are being used to better characterise patients' LUTS and to provide an objective means of determining response to therapy. The International Consultation on Incontinence has developed a comprehensive questionnaire, the ICIQ (www.iciq.net). The ICIQ has modules for men and women that assess LUTS as well as associated effects on quality of life and sexual function.

Frequency Volume Chart / Bladder Diary

Both the patient and the treating practitioner gain great knowledge and insight into the individual's LUTS if a frequency/volume chart (bladder diary) is completed. For three days, the patients record the time they get up and go to bed, their fluid intake, the volume of urine passed each time they go to the toilet, every episode of incontinence, and the use of incontinence pads. Patients may also be asked to keep a food diary to assess the quantity of water-containing foods eaten each day. Some practitioners also add items such as number of urgency episodes, but care must be taken not to overload the patient with demands for information. The frequency/volume chart is particularly helpful in assessing nocturnal polyuria vs. nocturia, excessive urine production during the night vs. an excess number of night time urination episodes.

Physical Examination

- Simple cardiac and respiratory examination to exclude signs of heart failure.
- Abdominal examination to exclude a pelvic mass or palpable bladder.
- Simple neurological examination.

- Pelvic examination in women to assess oestrogen status and the presence of pelvic organ prolapse.
- Digital rectal examination in men to assess prostate size and the presence or absence of a nodule.

Urinalysis:

This should be performed on every patient and it can be done with a diagnostic urine "dipstick" to exclude:

- Blood in the urine.
- The possibility of urinary tract infection. This may be indicated by a positive test for nitrites or white cells and would be confirmed by urine culture.
- Glucose in the urine.

Urinary tract imaging (ultrasound or X-ray)

This is not routinely indicated unless there is a specific indication such as blood in the urine or complicated voiding dysfunction.

Urinary tract endoscopy

Similarly, this is not indicated unless there is a specific indication such as blood in the urine or a symptom such as bladder pain.

Urodynamic Studies

Many patients are treated based on an empirical diagnosis provided the treatment is safe and cost-effective. Examples of such interventions include lifestyle interventions, pelvic floor muscle training for stress and urgency incontinence, bladder training and antimuscarinic medications for overactive bladder, and alpha-receptor antagonists for outlet obstruction in men and women. Should a patient fail to respond to the above measures, or if treatment is potentially hazardous or expensive, then a urodynamic evaluation is desirable.

Urodynamic studies range in complexity:

- Urine flow measurement (uroflowmetry) in conjunction with assessment of bladder emptying, by catheterization or ultrasound, is a simple screening test which may also be used for objective assessment of response to therapy.
- Filling cystometry is the test of choice for storage symptoms such as OAB or incontinence of any type.
- Pressure flow studies of voiding are able to confirm whether the patient's symptoms are due to bladder outlet obstruction or an underactive detrusor muscle.

Complex testing such as video urodynamics is indicated when anatomic detail is required in addition to information on lower urinary tract function.

Conclusion

The assessment of LUTS should be methodical and sufficiently extensive to provide a sound anatomic and physiologic basis for managing the patient's symptoms.

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Overactive Bladder

Introduction

Overactive bladder (OAB) is a syndrome characterized by symptoms of urgency, with or without urgency incontinence, usually with increased daytime frequency and nocturia (increased night time urination). The term OAB can only be used if there is no proven infection or other obvious pathology.

OAB affects about 12% of both men and women. The incidence increases with advancing age and affects between 70-80% of people by the age of 80. More women than men exhibit incontinence, but, overall, 33% of patients have OAB with urgency incontinence ("OAB wet"), while 66% have OAB without urgency incontinence ("OAB dry"). OAB is a bothersome condition that negatively affects quality of life and can lead to social isolation. OAB also has significant psychological and financial consequences, and may be associated with increased morbidity and mortality in the elderly.

Symptoms

The symptoms of OAB are suggestive of detrusor (bladder muscle) overactivity but can be due to other forms of urinary/voiding dysfunction. The symptom of urgency is the most bothersome and drives the other OAB symptoms.

- **Urgency** is the sudden, compelling desire to pass urine which is difficult to defer
- **Urgency urinary incontinence** is the complaint of involuntary leakage of urine that is accompanied by or immediately preceded by urgency.
- **Frequency** denotes voiding too often during waking hours. In clinical trials, this has generally been defined as urinating more than 8 times in a 24 hour period. The new ICS definition does not specify a particular figure, as an increase in the daytime frequency is a subjective matter that can be confirmed by a bladder diary.
- **Nocturia** refers to the patient waking due to the need to void.
- **Detrusor overactivity** (DO) is a diagnosis made after urodynamics, clinical studies of bladder function. Such testing demonstrates involuntary detrusor contractions during bladder filling. While OAB is a clinical diagnosis, DO occurring spontaneously or by provocation, is a urodynamic diagnosis that may or may not be associated with OAB.

The majority of people with OAB are thought to have detrusor overactivity (DO): 69% of men and 44% of women with urgency but no incontinence have DO, while 90% of men and 58% of women with urge urinary incontinence have DO.

Assessment

The clinical diagnosis of OAB is based on a careful history and physical examination supplemented by the use of a bladder diary or frequency-volume chart. It documents how frequently a patient voids over a 24-72 hour period. The bladder diary may show increased daytime frequency and nocturia with small voided volumes and incontinence episodes. Urinalysis with culture as indicated is necessary to rule out infection, and if blood is present in the urine, the patient must be evaluated for bladder cancer.

Treatment

Lifestyle modifications, behavioural therapy, and pharmacotherapy in the form

of antimuscarinics, are the mainstays of treatment.

About 50% of patients gain satisfactory benefit from lifestyle modifications when combined with behavioural therapy such as bladder retraining and pelvic floor muscle rehabilitation. Lifestyle modifications and behavioural therapy involve avoiding caffeinated beverages and other bladder irritants, restricting fluid intake at night, changing the time of administration of diuretics, and training the bladder to hold urine for a longer period of time. Individuals suffering from OAB should attempt these before seeking further interventions.

Antimuscarinic agents are often effective for the treatment of OAB. A number of approved medications are available: oxybutynin, tolterodine, fesoterodine, trospium, solifenacin, darifenacin, and propiverine. More recently, mirabegron, the first of a new class of medication for OAB, the beta-3 agonists, has come into use. If medication is not tolerated or is ineffective, minimally invasive procedures such as injection of botulinum toxin A into the bladder wall, posterior tibial nerve stimulation (transcutaneous electrical current directed via needle just above the ankle), or sacral neuromodulation (spinal implant) are available.

If the minimally invasive therapies fail, surgical urinary diversion may be necessary as for neurogenic detrusor overactivity. (Please see fact sheet on Neurogenic Bladder.) Surgery for detrusor overactivity should be reserved only for patients for whom all previous treatment modalities have failed, since all surgical procedures entail greater potential for complications.

Conclusion

Overactive bladder is a highly prevalent condition that is usually amenable to minimally invasive therapies.

Suggested reading

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Interstitial Cystitis / Bladder Pain Syndrome / Hypersensitive Bladder

Introduction

Pain in the bladder can be caused by numerous disorders, such as bladder or genital infection, benign or malignant tumours, radiation, tuberculous cystitis, bladder or urethral obstruction, prostate disorders, endometriosis, pelvic/gynaecological disorders and chemical or drug-induced cystitis, including the recreational use of "street ketamine" that has recently been hitting the headlines.

There is, however, a chronic painful bladder condition of unknown origin, described over 200 years ago and first referred to as interstitial cystitis (IC) in 1876. In 1914, Baltimore gynaecologist Guy Leroy Hunner described in detail "a rare type of bladder ulcer in women" which later became known as Hunner's ulcer. Even though it was realized very early on that this was not in fact a true ulcer, the term Hunner's ulcer persisted in use until very recently. It is currently more commonly described as Hunner's lesion. However, it is now known that the majority of patients do not have lesions, but a chronic non-lesion form. These two types are sometimes described as the classic type (with lesions) and the non-classic type (without lesions).

Many new names for this enigmatic disorder have been suggested over the years. Today it is increasingly known as interstitial cystitis/bladder pain syndrome or painful bladder syndrome. The East Asian countries (Japan, Korea and Taiwan) prefer the term hypersensitive bladder (HSB), with or without pain, reserving interstitial cystitis for a disease with specific cystoscopic findings. Most patient organisations prefer to use the older term interstitial cystitis. This topic is currently under review by an ICS Standardisation Steering Committee Working Group on standardisation of terminology and definitions for Chronic Pelvic Pain.

Symptoms

This distressing and potentially debilitating bladder symptom complex is characterised by an unpleasant sensation (pain, pressure or discomfort) perceived to be related to the bladder, associated with chronic lower urinary tract symptoms such as a frequent and urgent need to urinate, both day and night, in the absence of infection or other identifiable causes. Although the symptoms may initially resemble a bladder infection, urinalysis appears normal and a urine culture is negative. The pain typically increases as the bladder fills and may be temporarily alleviated when it is emptied. This pain may be suprapubic, in the bladder, urethra, vagina, penis, scrotum, testicles and perineum, may radiate to the lower back and groin and be felt throughout the pelvis. It may be burning or stabbing pain or a feeling of pressure or heaviness. Both male and female patients often experience pain with sexual activity. The course of the disease may be characterised by exacerbations and remissions ("flares") or the pain may be persistent.

Prevalence

This bladder syndrome is believed to affect mainly women (approx. 80%) and is found worldwide in all races and all age groups, including children. While prevalence figures are still unclear and hampered by the many different definitions and methods of diagnosis around the world, it has been

estimated that IC/BPS/HSB may affect around 300 per 100,000 females, although much higher figures have been seen in the United States. Of these, 10-50% may have the classic Hunner's lesion subtype.

Associated Disorders

IC/BPS/HSB patients may also suffer from one or multiple associated disorders such as allergy and hypersensitivity, multiple drug/chemical intolerance, gastrointestinal disorders (including inflammatory bowel disease, irritable bowel syndrome and gastro-esophageal reflux disease), fibromyalgia, vulvodynia, depression, panic attacks and generalised autoimmune diseases such as rheumatoid arthritis, systemic lupus erythematosus and Sjogren's syndrome.

Assessment

Assessment procedures vary considerably in different parts of the world. Due to the current lack of any specific marker, diagnosis is based on symptoms and exclusion of confusable diseases by history, a thorough physical examination, urinalysis and culture. In some countries, the initial diagnosis is based on symptoms and exclusions alone, while other countries insist on cystoscopy and biopsy. A cystoscopy under anaesthesia - with or without hydrodistension and with or without bladder biopsy - may provide information concerning bladder capacity, the presence of Hunner's lesions, inflammation, or other pathology. The findings may provide support for a diagnosis and form guidance for the choice of treatment.

Treatment

Since there is as yet no cure for IC/BPS/HSB, treatment of this complex condition is challenging and aimed at alleviating the symptoms and improving the patient's quality of life. Treatment is highly individual since no therapy exists that is equally effective for all patients and every patient is different. There are, nevertheless, many different treatments that can be tried, varying from conservative to invasive. Treatment may consist of diet and behavioural modification, pelvic floor rehabilitation, one or more oral drugs, intravesical treatment, neuromodulation or surgical interventions. Surgery with urinary diversion with or without bladder removal is considered to be a last resort, but in rare cases may be the only option for the severest patients. The two currently known subtypes - the classic inflammatory Hunner's lesion subtype and the non-lesion subtype - require different treatment approaches. Effective treatments exist for patients with Hunner's lesions and can greatly improve their quality of life. A holistic approach to treatment may produce the best results in all patients and certainly the presence of associated disorders should always be taken into account. Patient education plays an important role since it helps patients to understand why they are receiving a specific form of treatment and what it aims to achieve. IC support groups can also help a patient to cope with this disabling chronic condition.

Phenotyping

Current research is focusing on sub-typing (phenotyping) these patients with the ultimate aim of ensuring the most effective treatment per individual patient. There are great differences between the patients: some may have Hunner's lesions, others not, some may have a contracted bladder with a very small bladder capacity, others a normal bladder capacity under anaesthesia. Some patients have bladder inflammation, others not. Some may have devastating pain, while other patients may have only frequency and urgency without any real pain. Some patients may have an associated autoimmune disease, others multiple pain syndromes.

Understanding these different populations of patients (different phenotypes) may lead to better treatment in the future.

Impact

Painful bladder syndrome has a major impact on the patient's quality of life. The frequent and urgent need to urinate means that the patient is constantly looking for the next toilet. This can present a serious obstacle to work, travel, social life and relationships and lead to social isolation and depression. Lack of sleep due to pain and frequent night-time urination causes fatigue, lack of concentration and irritability, while painful sexual activity may have a dramatic effect on relationships.

Conclusion

IC/BPS/HSB is an enigmatic, complex and difficult condition: difficult to diagnose, difficult to treat and difficult for the patient to cope with. Good physician/patient communication is of the utmost importance.

Suggested Reading

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Stress Urinary Incontinence

Introduction

Stress urinary incontinence (SUI) is defined as involuntary loss of urine on effort or physical exertion or on sneezing or coughing. It is one of the most common lower urinary tract disorders for which women seek medical attention. SUI is uncommon in men and, when present, is usually associated with prostate surgery. In young girls or adolescents it may be related to a congenital neurologic abnormality, or to high levels of physical activity such as competitive gymnastics. In the majority of postmenopausal women with urinary incontinence, SUI and urgency urinary incontinence coexist, and the combination is known as mixed urinary incontinence.

SUI in adult women is attributed to one or more defects in urethral support, urethral coaptivity, urethral composition, or neurologic innervation. Although distinctions are made between SUI due to urethral hypermobility (support defect) and SUI due to intrinsic sphincter deficiency (tissue and/or neurologic factors), most believe that both are present to one degree or another and that SUI represents a spectrum of urethral pathology. Predisposing factors in women include childbearing, obesity, and constipation. Because SUI largely derives from the effects of parturition, it is commonly associated with pelvic organ prolapse (POP).

Symptoms

Patients affected by SUI will complain of lack of urinary control that results in leakage of variable volumes of urine. Often the leakage will necessitate the use of absorbent pads to protect undergarments and clothing. In general, the greater the level of exertion, the more leakage occurs. Often patients will restrict water intake to maintain low urine volumes thereby reducing incontinence episodes. Secondary effects of incontinence may be present such as excoriation of the skin or fungal skin infections. Patients are particularly embarrassed by the odour from the liberated urine.

Assessment

A thorough medical history and detailed pelvic examination are essential to the diagnosis of SUI. The sine qua non of SUI is a positive cough stress test on pelvic examination: loss of urine is visually confirmed by having the patient cough and observing expulsion of urine through the urethra. Coincident POP should be quantified using one of the established systems such as the POP-Q. (Please see the POP fact sheet.) A urinalysis is necessary to rule out infection as this can sometimes cause transient SUI.

If the preliminary evaluation confirms SUI +/- POP and there are no complicating factors such as coincident urgency urinary incontinence or failed prior surgery for SUI, no further evaluation is required, and one can the establish a plan of care based on the patient's preferences and goals. However, if there is any question regarding the validity of the SUI diagnosis, if there are complicating factors, or if mixed incontinence is present, then further assessment in the form of urodynamic testing is indicated. Urodynamics consists of a collection of studies that assess the function of the bladder and urethra and their interaction during the storage and voiding phases of micturition (urination). The testing is tailored to each individual, and it attempts to reproduce the symptoms that the patient experiences. The studies therefore confirm the nature of the patient's voiding dysfunction and provide guidance for the choice of therapy.

Treatment

There are no approved pharmacologic agents for SUI. First line therapy, particularly for mild SUI, consists of pelvic floor physiotherapy; primarily instruction in and reinforcement of exercises for strengthening of the pelvic floor. Adjunctive physiotherapeutic techniques include the use of electrical stimulation, vaginal cones, and biofeedback. Passive electromagnetic stimulation of the pelvic floor was utilized in the past for treatment of SUI, but the results were neither reliably effective nor durable. A very well-established and effective treatment for SUI is the use of injectable agents for urethral bulking. These are injected directly into the urethra under vision producing coaptation of the urethral wall. The procedure can be performed in the office setting. The most significant issues are durability and cost, as the bulking materials degrade or migrate over time with loss of effect and the requirement for repeated injections to maintain continence.

Definitive therapy for SUI is surgical and involves restoring urethral support through use of a sling. Worldwide, midurethral slings comprised of synthetic mesh have become the treatment of choice for SUI. Long-term data are robust and demonstrate durable efficacy with a very low complication rate, particularly in experienced hands. Various techniques for sling placement and different meshes are employed according to physician preference, but all appear to be equally effective. An additional benefit of the slings is that they are easily combined with procedures for the repair of POP. In complex cases such as those involving prior failed anti-incontinence sling procedures, before any decision concerning further treatment is made, ultrasonography should be performed in order to localize tape position. When ultrasound demonstrates that the sling is malpositioned, a second sling should be placed at the midurethra.

Male SUI can also be treated with synthetic slings with few complications, though success rates are not as high as for procedures performed on women. Definitive therapy for male SUI is an artificial urinary sphincter. The device consists of a saline-filled silicone cuff that surrounds and compresses the urethra. When the patient wishes to void, he compresses a pump placed in the scrotum discharging the fluid from the cuff. This allows the urethra to open and the bladder to empty. The cuff then passively refills from a reservoir of fluid placed in the abdomen.

Conclusion

SUI remains a common and distressing condition that adversely affects quality of life. Unfortunately, many patients and some physicians continue to regard SUI as an inevitable consequence of aging. The availability of effective non-invasive interventions, minimally invasive procedures, and definitive surgical approaches means that all patients with SUI can be successfully treated, or, at the very least, their condition significantly ameliorated.

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Neurogenic Bladder

Introduction

Since the innervation of the lower urinary tract (LUT) is both complicated and subtle, it is no surprise that LUT dysfunction occurs in many neurological conditions to a variable degree. The symptoms are related to the disease, dysfunction, or injury type which must be further classified according to the site of origin and extent (central versus peripheral and complete versus incomplete). Often the LUT dysfunction involves both the bladder and the sphincter complex. The most common neurological diseases that are associated with voiding dysfunction are multiple sclerosis, spinal cord injury, Parkinson's disease, stroke, dementia, and neuropathy. Though not considered neurological diseases per se, diabetes mellitus and alcohol abuse both affect the nervous system and are commonly associated with voiding abnormalities.

Signs and Symptoms

In order for normal urinary elimination to occur, there must be coordination between the bladder and urethra (vesico-urethral unit) and both organs must also be functionally competent. Incontinence may be due to overactivity of the bladder muscle (detrusor) as seen in spinal cord injuries above the sacral level or following a stroke. It may also be due to detrusor hypocontractility with overflow incontinence, as seen in lower spinal cord lesions. Incontinence also occurs if the external urinary control mechanism (sphincter muscle) is weak. This occurs in nerve injuries below the spinal cord such as spina bifida.

Assessment

The diagnosis of neurogenic urinary dysfunction is based on detailed information gathered from a full clinical assessment including history (with particular reference to clinical symptoms and signs), a physical examination with neurological testing, and analysis of the urine. A bladder diary provides essential information as well.

In order to complete the diagnostic evaluation in these patients, urodynamic testing is often necessary. Urodynamics encompasses a number of measurements of bladder and urethral function. Often these are done with concomitant x-ray imaging so that the nature of the dysfunction is actually visualized. Upper tract evaluation by ultrasonography is obtained in all patients to look for scarring of the kidneys or dilation of the collecting system, both evidence of injury from a neurogenic bladder. In some cases, a neurogenic bladder may be suspected but without a clear diagnosis of a neurological disease, in which case specialized tests including neurophysiology or imaging of the nervous system may be helpful.

Treatment

Treatment of neurogenic vesicourethral dysfunction must be tailored to the individual patient. It will depend on many factors including the patient's age and severity or progression of the neurologic problem. Additionally, the patient's mobility, including hand function, mental status, motivation, and family support may need to be considered.

One of the primary goals of treatment is to restore continence by producing a low-pressure bladder or reservoir that stores adequate amounts of urine and allows regular emptying of urine at a socially convenient time. The bladder must remain at low pressures during filling, and the bladder neck and urethra must open in a coordinated fashion to allow free passage of urine. Emptying must also be

efficient and occur at low pressure. Failure to achieve these factors may predispose to upper urinary tract complications and urinary infection.

Conservative treatment, which must be exhausted before considering invasive therapy, may consist of behavioural therapy, the use of drugs that promote both storage (antimuscarinics) and emptying (alpha adrenergic antagonists), catheterization, and electrical stimulation.

Behavioural therapies include timed voiding, habit retraining, and prompted voiding. Clean intermittent catheterisation (CIC) is safe and effective for both short-term and long-term management and is recommended as first choice of treatment for those with the inability to empty their bladder adequately. In those with neurogenic detrusor overactivity (NDO) as well as impaired emptying, a combination of antimuscarinics and CIC must be used. When antimuscarinic medications are ineffective, botulinum toxin can be injected into the bladder wall to produce the necessary relaxation.

For patients unable to perform CIC, the bladder may need to be drained continuously. Suprapubic catheter drainage is preferred, as urethral catheters may cause devastating urethral damage. There is increasing interest in the use of various neuromodulatory techniques to bypass or correct neurologic urinary dysfunction. These include posterior tibial nerve stimulation (transcutaneous electrical current delivered via needle electrode), sacral neuromodulation (spinal implant) and sacral nerve stimulation, usually with concomitant sacral rhizotomy.

If NDO cannot be controlled with medication or botulinum toxin and bladder capacity is functionally low, then the pressure in the bladder can be decreased and its capacity increased by augmentation enterocystoplasty – enlarging the bladder with a patch of bowel.

Urethral overactivity can be addressed with medication such as alpha-adrenergic antagonists that relax the bladder outlet. Botulinum toxin injection can also be used in male patients to treat spasticity of the external urinary sphincter. Endoscopic incision of the urethral sphincter, external sphincterotomy, has largely fallen out of favour due to frequent recurrence of dysfunction and/or problematic incontinence. In the rare instance that urethral closure is a problem, injection of a bulking agent, fascial sling, or placement of an artificial urinary sphincter can be used to alleviate incontinence.

In intractable incontinence, where the above-mentioned options have failed, it may be appropriate to divert the urine away from the bladder entirely. In these situations, the urine is usually diverted to the abdominal wall using a short segment of ileum (ileal conduit). Urine is collected externally in a specialized pouch appliance attached to the abdominal wall. In selected circumstances, an internal reservoir may be constructed out of bowel, with the patient emptying this pouch with a catheter through a constructed continent channel.

Conclusion

In general, patients with vesicourethral dysfunction associated with neurologic disease, following appropriate assessment and management, can expect associated improvement in overall wellbeing and prolonged survival. Emphasis must be given to improving quality of life, with surgical intervention used only when all conservative options have been exhausted.

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Pelvic Organ Prolapse

Introduction

Pelvic organ prolapse (POP) is the herniation of pelvic organs through the urogenital diaphragm into the vagina or beyond. The urogenital diaphragm is the large muscle complex that comprises the pelvic floor. The tendency to develop prolapse and associated disorders is felt to be related to 2 factors: the changes in pelvic floor stresses during pregnancy produced by assuming the upright posture necessitating adaptation to a supportive role, and the biomechanical changes associated with pregnancy itself as well as stresses associated with parturition. The resultant effects on the pelvic floor also contribute to the stress incontinence commonly associated with POP. It is estimated that POP is associated with stress urinary incontinence in 40% of cases. When there is loss of pelvic floor support, prolapse of the bladder, rectum, small bowel, or uterus may occur. Risk factors for prolapse include familial predisposition, obesity, hysterectomy, previous prolapse surgery, defective connective tissue, constipation/straining at stool, denervation, and myopathy leading to a wide levator ani hiatus. Prolapse occurs most frequently in the anterior compartment and least frequently in the apical compartment, with posterior compartment prolapse in between.

Epidemiologic data regarding POP are based on relatively small numbers of subjects, and global data is lacking. It is widely suspected that incidence and prevalence are underreported. In one U.S. study, the lifetime risk of undergoing a single operation for prolapse or incontinence by age 80 was 11.1%. The prevalence of POP based on the sensation of a genital mass or bulge ranges from 5-10%. Most studies suggest that black women have the least POP, while white and Hispanic women have the highest prevalence. Additionally, a recent study determined that Asian women also have a significantly higher risk of developing POP.

Symptoms

The most common complaint of women with POP is a feeling of a bulge or heaviness in their genital area. Other clinical features of POP may include a dragging feeling in the pelvis, urinary incontinence, difficulties with passage of urine or stool (requiring digital splinting to aid in urination and/or evacuation), defaecatory dysfunction including flatus, and/or faecal incontinence, tenesmus, constipation, sexual dysfunction, and chronic pelvic pain.

Urinary incontinence associated with POP can be overt or occult.

Overt incontinence means that the patient is symptomatic: POP is present, and the patient complains of stress, or mixed stress and urge incontinence. On physical examination, the stress test is positive; that is, cough or Valsalva strain results in urinary incontinence.

Occult incontinence may also be referred to as masked or latent incontinence: POP is present, and the patient does not complain of urinary incontinence, or she recalls a period of stress urinary incontinence that spontaneously disappeared. During physical examination, there is no visible stress incontinence when the prolapse is manifest, but after reduction of the prolapse, the stress test becomes positive, resulting in incontinence. It is very important that patients be evaluated for occult incontinence so that ultimate repair of the prolapse will consider inclusion of an anti-incontinence procedure.

Assessment

In recent years, descriptive terminology (cystocele, rectocele, enterocele) naming the anatomical structure that is believed to be prolapsed has been discouraged because it may be difficult to precisely discern on physical exam. The ICS Pelvic Organ Prolapse Quantification (POPQ) examination is preferentially used to define prolapse based on the observed descensus of various portions of the reproductive tract during Valsalva strain with respect to a fixed point, the hymen. It may be beneficial to examine a patient in the supine and standing positions to reproduce her symptoms and to optimally assess the pelvic floor defects and incontinence.

Treatment

Conservative therapies for POP include pelvic floor muscle training as first line therapy, which improves symptoms and is best for mild degrees of prolapse, and pessaries. Pessaries are devices that come in various shapes and sizes. They are inserted into the vaginal vault in such a way as to prevent descent of the prolapsing tissue. There are also pessaries for stress incontinence alone. These devices are often used in conjunction with vaginal estrogen to prevent erosion of the vaginal wall. Pessaries are most often used in the frail elderly or patients who are surgery-averse.

Definitive treatment of POP involves surgical repair. Surgical intervention for POP has as its goal the restoration of normal vaginal anatomy while maintaining normal excretory and sexual function. Repairs may be performed transvaginally or transabdominally using an open or laparoscopic approach. Combined abdominal and vaginal approaches are also used. Concomitant hysterectomy may be necessary to accomplish repair. The abdominosacrocolpopexy, suspending the vaginal vault to the sacrum, is considered the gold standard and has about a 90 % success rate.

A recent Cochrane Review suggested abdominal sacral colpopexy is superior to vaginal sacrospinous fixation for uterine or vaginal prolapse. Transvaginal repairs of rectal prolapse appear to be better than a transanal approach. Further, the use of biological or synthetic graft material reduces the recurrence of POP.

Conclusion

POP is a highly prevalent condition that can result in severely compromised quality of life, particularly when it exists in advanced stages. Conservative therapy largely consists of the use of pessaries to reduce the prolapse, and more recently the benefits of pelvic floor muscle training have been evidenced, but surgical intervention is definitive. Often, an anti-incontinence procedure must be done in conjunction with pelvic floor reconstruction in order to prevent de novo stress incontinence.

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Children's Incontinence

Introduction

Bladder dysfunction and urinary incontinence encompass some of the most common chronic diseases in children. Bladder dysfunction has a major impact on their quality of life, especially their self-esteem. It is also associated with potential morbidity including urinary tract infections and constipation. It is therefore recommended to assess and treat children with incontinence after their fifth birthday when they should have attained bladder control. Normal voiding frequency for children is 4-7 voids per day. Deviations from the normal cycle of bladder filling and emptying constitute storage and voiding disorders.

Symptoms

Incontinence is defined as any involuntary loss of urine. If it occurs at night it is termed nocturnal enuresis. It is considered to be primary nocturnal enuresis if the child has never been dry at night for at least six months and it is considered to be secondary nocturnal enuresis if the child has had a prior dry interval of 6 months of longer at night. There are several causes of nocturnal enuresis including increased urine output at night, small functional bladder capacity at night, a lack of arousability at night, or a combination of these.

In the daytime, incontinence may be from variety of causes including detrusor overactivity, dysfunctional voiding, and structural abnormalities including ectopic ureters in females, neurogenic bladder, and other congenital anomalies. Daytime incontinence in children is also associated with constipation. In children with overactive bladder symptoms and detrusor overactivity the symptoms include frequency, urgency and urgency incontinence. With dysfunctional voiding, children may present with urgency from holding their urine for prolonged periods of time. Urinary frequency can develop from increased post-void residuals related to incomplete emptying and voiding against a tight pelvic floor as well as from reactive detrusor overactivity. Children with dysfunctional voiding may also present with a history of constipation and urinary tract infections.

Assessment

Accurate history-taking and physical examination are necessary to rule out congenital/structural abnormalities. A bladder scan post-void residual is helpful in children with symptoms of dysfunctional voiding. When taking the patient's history, bowel habits should be reviewed to obtain information about any emptying disorder. The main diagnostic tool is the bladder diary including registration of nocturnal urine volume (pad weight + first morning urine void volume). In addition, the frequency of daytime voids, accidents and sensation of urgency associated with each accident should be noted. Fluid intake, type and volume should also be recorded for at least 3 days on a validated chart.

In children with a history suspicious for dysfunctional voiding, a uroflow/EMG is helpful, as it will demonstrate incomplete sphincter relaxation or increased pelvic floor muscle activity during voiding and is associated with an interrupted or staccato urinary flow curve.

A KUB is useful in children to assess for constipation if the history is suggestive.

A renal/bladder ultrasound should be obtained in those children with a suspicion of a congenital urologic anomaly (i.e. ectopic

ureter), males with daytime urinary incontinence and males with high post-void residuals to rule out structural abnormalities

A urodynamic study is not routinely performed. Rather, it is reserved for patients who fail treatment.

Treatment

Nocturnal enuresis - fluid restriction (no fluids 2 hours before going to bed) as well as voiding just before going to bed are essential. Additional therapies include the bedwetting alarm and desmopressin acetate.

Daytime incontinence – dietary and lifestyle modification is useful in children with daytime incontinence. Children/parents should be instructed regarding normal fluid intake, avoidance of caffeinated, carbonated and highly acidic fluids/food as well as a proper voiding interval. Proper toileting positioning (all the way back on toilet seat, upright with legs apart, 90 degrees between thighs and legs) is also important. In those children with increased post-void residuals, double voiding should be instituted (voiding once waiting a minute and attempting to void again). Children should be instructed to relax the pelvic floor to void and to not push. Biofeedback is useful in children who do not respond to behavioural therapy. For older children with daytime incontinence, the next step after behavioural modification or biofeedback is anticholinergic medication. If incomplete emptying persists after standard interventions fail, particularly if accompanied by recurrent UTI, clean intermittent catheterization should be considered. Concomitant management of associated constipation/obstipation in children with bladder dysfunction is critical to optimizing success.

Conclusion

Children's incontinence (daytime and nocturnal enuresis) has a significant impact on quality of life and may be associated with long-term morbidity. Early recognition and intervention and management are important. Several studies in the adult literature suggest that children with voiding dysfunction are at increased risk for incontinence as adults. Hopefully, early identification and management can reduce potential long-term risks. For those children with chronic bladder dysfunction, it is paramount to ensure continuity of care from childhood into adolescence and adulthood.

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Bladder Dysfunction in the Frail Elderly

Introduction

Due to advances in public health, nutrition and medicine, significant gains were made in life expectancy during the 20th century. Currently, the worldwide average life expectancy for all individuals is 67 years, with women generally living longer than men, 69 years vs. 65 years, respectively. However, in developed countries, life expectancy for both genders often exceeds these estimates, resulting in a significant population of individuals in their 70's and beyond. Though many remain relatively healthy as they age, a considerable number will develop medical conditions that place them at greater risk of physical disability, hospitalization, and death. Such individuals may be classified as the "frail elderly".

Symptoms

The elderly, both female and male, experience the same lower urinary tract symptoms (LUTs) as adults of all ages, including urinary incontinence, overactive bladder (i.e., urgency, urgency incontinence, frequency, or nocturia), and impaired emptying. The prevalence of incontinence and overactive bladder symptoms increases with age. It is believed that both physiologic changes in the lower urinary tract and alterations in central neurolgical control mechanisms contribute to LUTs in the elderly. These age-related changes include impairment in central signalling, diminished detrusor muscle strength, loss of oestrogen effect in women, and reduction in blood flow and vascularity as well as loss of muscle mass in the urethra. In men, prostatic obstruction may play a significant role.

Comorbidities compound the intrinsic factors that contribute to incontinence. Dementia, instability due to fall risk or dizziness, as well as diminished vision and hearing are all independently associated with incontinence. Diabetes mellitus, in particular, leads to many types of LUTS, from detrusor overactivity to atonic bladder, to frequency secondary to polyuria. Impaired mobility may also result from diabetes (i.e., from neuropathy or lower extremity amputation) and could impair toilet access.

Mobility disorders may also lead to functional incontinence. That is, even if the mechanisms for maintaining continence are intact, difficulty in reaching the toilet in time to empty the bladder will render the patient incontinent. Moreover, when patients suffer cognitive impairment or psychiatric illness, they may not respond to normal voiding signals and, therefore, do not exhibit normal toileting activity.

Finally, the elderly are often prescribed multiple medications, many of which may cause LUTS. Numerous agents such as opiates, antimuscarinics, and antipsychotics may cause constipation and retention of urine. Diuretics produce polyuria which, in turn, may lead to frequency and urinary incontinence.

Assessment

Preliminary screening of elderly patients to evaluate functional decline and health deterioration may be accomplished using the Vulnerable Elders Survey (http://www.rand.org/health/projects/acove/survey.html). In-office evaluation should involve a detailed history covering the time course and nature of the LUTS, their severity, and the resultant effects on the patient's quality of life using ICQ-SF and Urogenital Distress Inventory (UDI) or Incontinence Impact Questionnaire (IIQ). Information about how the individual manages LUTS at home, including use

and type of absorbent products, should be elicited. All medical comorbidities and medications must be documented. Some older patients may be unable to impart such history, so the contributions of caretakers or family members may be essential to obtaining this information, particularly that related to medications, proximity to toileting facilities, and eating and drinking habits.

The physical exam should be focused on the abdomen and pelvis with particular attention to distension as a sign of urinary retention and genital excoriation indicative of chronic exposure to moisture. Atrophic changes and prolapse in women and prostatic characteristics in men should be assessed. Sometimes urine leakage is demonstrated during the exam, providing a clue as to the nature of any incontinence, e.g., as with the cough stress test.

In addition to neurological screening, it may be useful to perform a formal test of cognitive function such as the Abbreviated Mental Test score or Mini Mental State examination. A Barthel score to assess functioning in the activities of daily living can also be helpful in determining the course of action for treatment.

A urine analysis must be performed to rule out infection or tumour. Haematuria, whether microscopic or visible, always requires further evaluation. An upper tract imaging study as well as a cystoscopic examination will determine if an occult disease process is contributing to a patient's symptoms.

A bladder diary including information about bowel movements for a 3-day period can be extremely helpful in determining causes of LUTS as well as recommending therapy. Unfortunately, the cognitive impairments in some frail elderly often preclude their collecting the necessary data; however, a surrogate can gather this information. Complex urodynamic testing is not routinely necessary or desirable in a frail patient, but a urinary flow rate and measurement of post-void residual urine volume should be performed.

Treatment

Often multimodality therapy is required to optimize voiding function in the elderly. Treatment may range from behavioural interventions to judicious use of medication to surgery. Current literature clearly supports the safety and efficacy of surgical treatment in the elderly with appropriate preoperative optimization and precautions. Successful treatment invariably leads to enormous gains in quality of life as well as benefits to overall health.

Initially, urinary tract infection should be treated in affected elderly; systemic or topical oestrogen therapy should be considered in appropriate female patients; and medication changes should be explored where possible. Any genitourinary lesions that may be contributing to the individual's complaints should be addressed.

Behavioural interventions are considered the mainstay of the treatment of LUTS. They may include prompted or timed voiding, reduction in fluid intake or avoidance of bladder irritants. Also included in this category are various efforts at increasing elders' access to a toilet such as convenient placement of a commode.

Pharmacologic therapy in men often begins with alpha blockade for the treatment of prostatic obstruction. In elderly men with very large glands or who are not felt to be candidates for prostatic surgery, a 5-alpha reductase inhibitor may be added to the regimen. Treatment with antimuscarinic agents is often a "double-edged sword", as these medications enhance urinary control while causing dry mouth, constipation, cognitive impairment, and urinary retention.

Certain antimuscarinic agents that do not cross the blood brain barrier to a significant degree are preferred in the elderly, though actual trials in the frail elderly are scarce. It is necessary to exercise caution in administering these agents to those individuals who have baseline dementia.

When there are clear anatomic abnormalities significantly contributing to LUTS in the frail elderly and the anatomic derangements are amenable to surgical correction, surgery should be offered. Urodynamic testing is necessary before contemplating surgery for urinary incontinence. Preoperative optimization and postoperative precautions to prevent delirium contribute significantly to good outcomes.

Conclusion

LUT disorders can result in severe disability and social withdrawal in elderly people. It is therefore essential that those caring for such individuals proactively identify those at risk or who have lower urinary tract symptoms and ensure proper evaluation and treatment. The treatment of LUT disorders in the frail elderly should be individualized, and multimodal intervention is usually required. Given advancements in anaesthesia, perioperative care, and surgical techniques, surgical therapies should be offered to appropriate patients. When the elderly receive such attentive care, the effects of LUT disorders on overall health and well-being can be minimized.

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Faecal Incontinence

Introduction

Faecal incontinence is the term describing the inability to control the bowels. It is a devastating condition that can result in depression, social isolation, laundry costs, and skin breakdown. Faecal incontinence is surprisingly common and affects women, men, and children. Although it is common, people are embarrassed to bring up the issue with their health care provider and suffer in silence, constantly worried about odour and leakage. Professionals often forget to ask about faecal incontinence, and patients can suffer for years without help. It is important to know that the condition can be effectively treated or managed.

Symptoms

There are multiple underlying causes of faecal incontinence. The most common include:

- Childbirth. The muscles of the anal sphincter can be stretched or even torn during vaginal birth. This usually occurs when the birth is difficult or when instruments are used to facilitate the delivery.
- Anal sphincter damage. Injury can also be caused by surgery such as that for treatment of cancer of the bowel or pelvic organs, or, inadvertently, during operations to remove haemorrhoids (piles).
- Congenital malformations. Conditions such as spina bifida or anorectal malformations that affect the nerves.
- Chronic constipation. Constant straining during defecation can gradually stretch pelvic floor and rectal muscles so that they no longer control the passage of stool or gas. Further, when patients suffer impaction of stool, liquid material above the stool blockage leaks around and escapes through the defective sphincter. Such impaction may eventually cause leakage from the bowel called "overflow diarrhoea". Blockage can be caused by tumours, as well as stool.
- Anal conditions. Haemorrhoids, rectal prolapse, or rectocele may be associated with leakage.
- Diarrhoea. Loose or watery stool may be associated with faecal urgency, and the abnormal consistency contributes further to loss of control. Individuals with chronic bowel disorders or those who have had bypass surgeries for obesity often experience diarrhoea on a regular basis, making faecal control a recurring challenge.
- Neurological disorders. Individuals with neurological conditions may have difficulty with sensation or with muscular control, or both. Spinal cord injury, multiple sclerosis, brain injury, and spina bifida are among the many conditions that can lead to faecal incontinence.
- Diabetes. Nerve damage from diabetes, termed diabetic neuropathy, is a common cause of anal sphincter dysfunction.
- Aging. The frail elderly, particularly those in nursing homes, often become constipated due to poor oral intake, medications, disease, and immobility. Almost half of people in nursing homes suffer from faecal incontinence.
- Other factors. Other extrinsic or intrinsic factors that may impair faecal control include anxiety, medications, diet, alcohol and caffeine consumption, and use of restraints as well as bathroom accessibility for people with disabilities and impaired mobility.

Presentation

Faecal incontinence can be "urgent" or "passive".

- Urgency faecal incontinence occurs when the urge to have a bowel movement is very strong and access to a bathroom is needed urgently. The anal sphincter muscles are not strong enough to hold the stool back, so leakage occurs before toileting can occur. As noted above, constipation or diarrhoeal states as well as bowel inflammation from radiation, Crohn's disease, or ulcerative colitis can cause urgency faecal incontinence.
- Passive incontinence is usually associated with impacted stool, neurological dysfunction or anal sphincter weakness. Stool leaks, usually without any warning or sensation.

Assessment

The first step is to determine the factors contributing to faecal incontinence. This includes detailed questions about the history and pattern of the problem: symptom pattern; type of leakage; stool consistency; cognition; and functional abilities. Additional questions assess related medical conditions and prior surgeries; medications (including herbal remedies); obstetric history; diet and fluid intake; and toilet access. Finally, questions to rule out other issues suggestive of bowel disease or colon cancer should be posed, such as, rectal bleeding, anaemia, and unexplained weight loss.

Assessment of faecal incontinence should include an evaluation of the impact on the patient's quality of life. This assessment should include patient-reported outcomes as clinicians tend to underestimate the impact of faecal incontinence on quality of life. The International Consultation on Incontinence Questionnaire – Bowel Symptoms (ICIQ-B) can be used to assess the impact of faecal incontinence from the patient's perspective. The ICIQ-B evaluates symptoms of faecal incontinence and impact on quality of life as well as bowel pattern and control.

Physical examination should include inspection of the skin; evaluation of faecal loading; presence of rectal prolapse or rectocele; presence of haemorrhoids; and pelvic floor muscle strength.

A bowel diary including food and fluid intake as well as the number, consistency, and colour of bowel movements for a week is extremely helpful. This assists the healthcare professional in evaluating the severity of the faecal incontinence as well as dietary issues that may be affecting the bowel pattern.

Other investigations may be required to establish a diagnosis such as imaging of the anal sphincter muscles by ultrasound or MRI, inspection of the interior of the bowel (anoscopy/sigmoidoscppy/colonoscopy), or testing the nerve and muscle function of the lower bowel.

Treatment

Treatment will depend on the cause as well as whether the individual is an adult or a child. Education is the cornerstone of treatment for faecal incontinence. Patients require knowledge and understanding of anatomy, how to manage the condition, and the causes of faecal incontinence. Caregivers, where appropriate, should be involved in this education.

Dietary modification is an important part of any treatment plan. Clients need coaching on soluble and insoluble fibre and monitoring, as response to fibre is different for every client. Clients should avoid foods that contribute to loose stool, such as lactose, sorbitol, fructose, caffeine, and alcohol. Weight loss is thought to improve faecal incontinence but there is

no research to support this. Expert opinion suggests that adequate fluid intake is important to prevent hard stool and constipation. Patients should track dietary intake using a bowel diary for a week. They can then determine patterns and triggers for incontinent episodes.

Bowel habit is important in preventing faecal incontinence. Patients should work to establish a regular, predictable pattern. For most, this involves having a bowel movement after breakfast to take advantage of the peristaltic contractions of the colon. Education should be provided on avoiding straining and sitting comfortably on the toilet with feet on the ground (or supported on a stool) and knees higher than the hips.

There is some evidence that pelvic floor muscle exercises are effective for patients who do not respond to other treatments. Bowel and anal sphincter retraining are commonly used. This training may involve the use of specialised equipment, termed "biofeedback".

Anti-diarrhoea medication often helps those with incontinence of loose stool. Patients are instructed to titrate the dose upward as needed. Constipation may need to be treated with medications or enemas to relieve impaction. Most recently, neuromodulation, alteration of nerve function via electrical stimulation of the percutaneous tibial nerve of the ankle (PTNS or posterior tibial nerve stimulation), has been tried as a minimally invasive treatment for faecal incontinence.

Some causes of faecal incontinence may be surgically corrected. If the muscles have been damaged or severed, a sphincter repair may be indicated. Complex injuries may need complete reconstruction or implantation of a neosphincter or a neural stimulation device. Rarely, diversion of the stool via colostomy is necessary to remedy the problem.

Conclusion

Faecal incontinence negatively affects quality of life. Sufferers describe spending considerable time and attention planning for accidents and the anxiety that unpredictable accidents can generate. Additionally, many people with faecal incontinence make dramatic restrictions in their diet and report a lack of therapeutic guidance from health care professionals in this regard. Faecal incontinence has a negative impact on self-esteem and body image and creates feelings of shame and embarrassment. Faecal incontinence also affects patients' sexuality as they worry about smells or accidents during intimacy.

More public awareness and professional interest are needed in the area of faecal incontinence as this common disorder can be managed or cured in most instances leading to a dramatic improvement in the patients' quality of life.

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Obstetric Fistula in the Developing World

Introduction

A fistula is an abnormal connection between two internal organs or between an internal organ and the surface of the body. It may be caused by disease, radiation therapy, surgery, traumatic injury, or a number of other rarer causes. It can lead to abnormal continual leakage of the contents of one organ into another organ or to the outside of the body. Obstetric fistula in the developing world most commonly results from prolonged or obstructed labour, often lasting several days, when the baby cannot pass through the pelvis and usually dies without skilled medical attention. As such, obstetric fistula should be seen as a wholly preventable condition if appropriate medical facilities are available.

Obstructed labour can cause damage to the tissue of the vagina, bladder, urethra and rectum of the woman when the pressure of the baby's head for an abnormally long time results in damage to the blood vessels supplying these tissues (ischaemia). This cuts off the supply of oxygen and leads to the death of the affected tissue (necrosis). The dead tissue then sloughs away, leaving a hole between adjacent organs. There are several possible types of obstetric fistula: tissue damage between the bladder and vagina is called a vesicovaginal fistula (VVF); between the urethra (bladder outlet) and vagina, a urethrovaginal fistula (UVF); while damage between the rectum and vagina is known as a rectovaginal fistula (RVF). Abnormal connections can also occur between the bladder and the womb and/or the neck of the womb, and more rarely between the ureters (kidney tubes) and the vagina or neck of the womb. Other causes of vesicovaginal and rectovaginal fistula in the developing world include violent sexual assault and rape, particularly in war-torn regions, although this is believed to account for less than 10% of the fistulas encountered in these regions.

Prevalence

While obstetric fistula has been virtually eradicated in the developed world due to the availability of good medical care, this is regrettably not the case in developing countries. It is estimated that there may be at least two million women and young girls, living in poverty, who suffer from fistula. Often, many of them are outcasts from their society, rejected by their husbands, families and community because they are suffering from the devastating consequences of obstetric fistula. This problem is particularly prevalent in sub-Saharan Africa, parts of Asia (India and Bangladesh), remote rural regions of China and in parts of South America. However, since many of the affected women live in isolation and never seek help, actual prevalence figures may be much higher.

Risk factors for obstetric fistula

The primary risk factors for obstetric fistula are:

- A lack of access to medical facilities, obstetric care and emergency caesarean section delivery
- A lack of adequately trained, skilled medical staff
- A lack of medical supplies and equipment

Other contributory risk factors include poverty and malnutrition leading to stunted growth that could make women more susceptible to obstructed labour. Furthermore, in some traditional cultures very young adolescent girls often marry and begin childbearing before

their body is sufficiently developed to cope with this. Many of the women have received no formal education and had no access to accurate information about healthcare, family planning, pregnancy and childbirth. Moreover, cultural beliefs and traditions may prevent them from seeking the necessary medical care.

Symptoms

The continual leakage of urine and/or faeces caused by obstetric fistula means that the woman is constantly wet and soiled with an unpleasant odour. This condition can lead to other complications such as infection, kidney disease, genital ulceration, sores, dehydration, pain, extensive scarring making sexual intercourse impossible or painful, and secondary infertility.

Assessment

The first step in the assessment of each patient includes obtaining a detailed account of their obstetric history, surgical history, and bladder/voiding symptoms. A careful physical examination is the mainstay in diagnosis including vaginal inspection of the fistula(s), sometimes with the use of intravesical methylene blue dye to detect and confirm the point(s) of leakage; cystourethroscopy to visualise the fistula from inside the bladder and to understand the relation to ureteric orifices and the bladder neck; and a rectal assessment if an RVF is suspected. Fistulas may be defined as high or low, big or small and single or multiple. Comprehensive assessment of the fistula is critical to determining the best surgical approach.

Treatment

The aim of treatment for obstetric fistula is to surgically repair the abnormal opening, restore continence, and rehabilitate the patient into the community. Fistula repair is best carried out by experienced fistula surgeons and preferably at a dedicated fistula centre. Surgical repair ideally has to be successful at the first attempt since the best surgical results are usually obtained with the first repair. Second and third attempts at repair are associated with lower success rates and more complications. Follow-up healthcare and counselling are essential for lasting results - to assist rehabilitation and reintegration into the community and to help the patient get back her life. Successful repair can lead to a dramatic change in the woman's quality of life. However, reducing the stigma and taboos associated with incontinence will help those who remain incontinent.

Prevention

The immense number of obstetric fistulas occurring in developing countries is of great concern, particularly since they are preventable. Since surgical repair is not always successful, prevention is paramount. However, prevention means tackling the many different factors which contribute to their widespread occurrence. These factors include:

- Access to skilled maternity healthcare close to the community, such as maternity waiting homes.
- Easy access to emergency caesarean section for women in obstructed labour.
- Providing girls and women with formal education, including health education concerning family planning, pregnancy, and childbirth.
- Involvement of the whole local community in promoting fistula awareness.
- Better training of locally based nurses, midwives, doctors, and surgeons.
- Raising the legal age of marriage to prevent child pregnancy.
- Combating poverty in the developing world.

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