



Mini Review

Erectile Dysfunction: Clinical diagnosis and Management Strategies

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Abstract

Background: Male Sexual Dysfunction (MSD) can affect men of all ages. One of most common problems associated with sexual dysfunction is erectile dysfunction. Male sexual problems can be difficult to treat and some men may have more than one form of sexual dysfunction.

Objective: This review paper provides an overview of the clinical assessment and evidence-based management strategies for erectile dysfunction. Emphasis is placed on a practical set of recommendations relevant to general practice.

Discussion: Comprehensive clinical history taking, tailored physical examination and relevant laboratory testing can provide relevant clues for diagnosis. Modification of lifestyle behaviours, management of reversible risk factors and optimisation of existing medical conditions are important first-line management. Medical therapy should be initiated by general practitioners and referrals to a relevant specialist(s) if patients do not respond and/or require surgical interventions.

Introduction

Erectile Dysfunction (ED) is defined as a persistent or recurrent inability to achieve and maintain a penile erection of sufficient rigidity to permit satisfactory sexual activity and adversely impacts physical and psychosocial domains. [1-4] Erectile function is dependent on coordinated and synchronous action of the nervous system, cardiovascular system, endocrine and reproductive system. [5] Erections are a neurohumoral vascular process involving the peripheral autonomic and central nervous systems acting upon the functional penile vascular system. [5,6] ED is reported to affect more than 300 million men worldwide with prevalence increasing with age. [6] Major risk factors for ED include diabetes, hypertension, smoking, chronic alcohol use, illicit substance abuse, dyslipidaemia, metabolic

syndrome, multiple sclerosis, Parkinson's disease, previous stroke, chronic renal failure, COPD, vascular endothelial dysfunction and obesity. [5,6] Medication is implicated in up to 25% of ED cases and these include statins, digoxin, antihypertensives, H2 receptor antagonists, anticholinergics, and psychiatric medication including antipsychotics and SSRIs [5-7].

Multiple comorbid conditions can contribute directly or indirectly to ED through their effects on the male sexual response cycle. [5] Psychiatric conditions and their treatment, surgery, trauma, radiation, cardiovascular disease, androgen deficiency, Peyronie's disease and neurological factors can all contribute to ED. [2,3,5-7] Diabetes and metabolic syndrome are associated with an earlier age of onset of and more severe forms of ED. [2,5] The presence of ED itself serves as an important predictor marker

of future cardiovascular risk with the risks of cardiovascular disease and death increasing steadily with the severity of ED [5].

Aim

This review paper provides an overview of the clinical assessment and evidence-based management strategies for these ED. A Medline literature search for English language papers based on the keyword “erectile dysfunction” was performed, and a narrative review was completed.

Discussion

Diagnostic Assessment

What Features of the History are Important?: Patient history remains an integral part of evaluating patients presenting with ED. Care needs to be taken to ensure sensitivity to patients’ unique sociocultural backgrounds while maintaining patient confidentiality and engaging in an open dialogue [2]. History taking should be undertaken to understand the dysfunction and its cause, differentiate between organic and psychogenic causes, assess the contribution of underlying medical comorbidities, and assess for modifiable contributory factors (Table 1). [4] A brief assessment of psychological factors should be included in the initial evaluation of patients presenting with ED [3,4].

Sexual history	Medical history	Medications history	Psychosocial history
Onset	Hypertension	Antihypertensives	Smoking
development	Hypercholesterolaemia	Anti0arryhmics	Alcohol
Duration	Ischaemic heart disease	Antidepressants	Illicit substance
Context	Peripheral vascular diseaseDiabetess	Anxiolytics	Anxiety
severity	Pelvic surgery	LHRH analogues	Depression
Every partner	Pelvic radiotherapy	Antiepileptics	Mental health history
Self	Pelvic trauma	Statins	Social stressors
Libido	Endocrine conditions		Relationship problems
Last successful intercourse	Vascular disease		
Morning, nocturnal, spontaneous erections	Neurological conditions		
Ability to penetrate			

Table 1: Clinical evaluation for erectile dysfunction.

What Physical Examinations Should be Performed?: General physical examination should be undertaken, including an assessment of the cardiovascular system, vascular competence and neurological integrity. [4] A careful assessment of secondary sex characteristics of genitalia, including penile examination for masses, plaques, angulation, phimosis, urethral opening, testicular size & consistency and prostate. [2,4] Care should be taken to maintain confidentiality, privacy and comfort [2].

What Investigations are Useful in Primary Care?: Initial blood tests include fasting glucose and lipid, and hormone profile. [4] Further investigations such as blood tests (thyroid function, prolactin and extensive hormone panels) and penile colour duplex ultrasonography can be undertaken by specialist to provide additional information [2].

What Management Options Exist?

Initial management involves psychosexual counselling and management of modifiable factors including smoking cessation, better diabetic control, weight loss and use of different medications [4].

Psychological Therapy: Psychosexual counselling is important given psychological factors affects sexual function and causes ED. [4] Psychosexual therapy in combination with pharmacological intervention results in greater improvement in ED compared to oral agents alone. [3,4] A variety of psychological interventions can be used, including individual or couple based therapy. [2] Therapy aims to minimise anxiety around performance, understand the couple’s sexual relationship and improve patient compliance with pharmacological intervention [2].

Oral Drugs: Phosphodiesterase inhibitor (PDE5i) drug forms first line pharmacological intervention and should be commenced by general practitioners (Table 2). PDE5i is contraindicated in patients on nitrates, and should be used cautiously in combination with anti-hypertensives due to the risk of orthostatic hypotension. [4] PDE5i are well tolerated, effective and safe when prescribed appropriately. [2,4] Restoring untreated hypogonadal patients to eugonadism can enhance PDE5i responsiveness [4].

	administration	Starting dose	Maximum dose	Prescribing comments
Sildenafil (Viagra)	Oral 30 minutes before sexual activity	25-50mg	100mg	- Commence at low dose if creatinine clearance (CrCl) <30mL/min - Half-life increased in elderly, commence at low dose - half-life ~4hours - absorption affected by food and alcohol
Tadalafil (Cialis)	oral 60 minutes before sexual activity	10mg	20mg	- May be effective for up to 36 hours - absorption not affected by alcohol
Tadalafil daily (Cialis)	Oral Daily use	5mg		- absorption not affected by alcohol - daily use not recommended with renal or hepatic impairment
Avanafil	Oral 30 minutes before sexual activity	100mg	200mg	- Contraindicated if CrCl <30mL/min - absorption not affected by alcohol
Vardenafil	oral 30minutes before sexual activity	10mg	20mg	- commence at lower dose in renal or hepatic impairment - Delayed absorption with fatty meal - absorption not affected by alcohol
Alprostadil (caverject)	Intracavernosal therapy 30 minutes before sexual activity	10mcg	20mcg	- half-life 10 minutes - risk of priapism

Table 2: Available medical drugs for erectile dysfunction.

ICI Therapy: Intercavernosal Injection (ICI) of vasoactive substance such as alprostadil or papaverine and can be co-administered with PDE5i. [2] Patients should receive technical instruction and education about priapism. ICI therapy is often associated with low treatment compliance and high drop-out rates [2].

Vacuum Pump: Vacuum pumps provide passive engorgement of the penis through negative pressure, and a penile ring can be placed at base of penis to impede venous drainage and maintain penile erection. [4] Vacuum pumps are a relatively safe and effective treatment option, with reported success rates of up to 90%. [2,4] Common side effects include pain, petechiae, bruising, discoloration, painful or obstructed ejaculation [2,4].

Surgery- Penile Prosthesis: Patients may be considered candidates for penile prosthesis if they have failed or have contraindications to less invasive treatment options. [2,4] The inflatable penile prosthesis implant closely replicates a normal penile erectile function compares to the malleable penile prosthesis, and patients should be counselled that this surgery is irreversible and regarding potential surgical risks [2,4].

Regenerative Therapy: The idea of restoring spontaneous erection with regenerative therapy is interesting but lacks actual clinical translation due to absence of long-term data and safety. [8] Regenerative therapies such as low intensity shockwaves, and stem cell or platelet-rich plasma injections are not well regulated and should not be offered as standard of care [8].

Conclusion

ED is often multifactorial in nature and general practitioners should initiate medical therapy following careful evaluation for cardiovascular and metabolic risks. Referrals to a relevant specialist(s) should be undertaken if patients do not respond and/or require further interventions.

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