

Evaluation of Erectile Dysfunction

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Abstract

Review Article

Erectile dysfunction falls under one of three main categories when evaluating male sexual dysfunction; other two include, low libido and ejaculatory disorders, both of which are not included in the scope of this paper. This paper will review the guidelines for Erectile Dysfunction (ED) with the aim to increase awareness amongst primary care clinicians of the signs and symptoms of ED, and how to manage patients with ED in the community setting.

Keywords: Erectile Dysfunction (ED).

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INTRODUCTION/AIM OF STUDY

ED is a common condition seen in general practice, typically affecting males over the age of 40. With an increasing prevalence worldwide and severe associated comorbidities, it is imperative for clinicians to conduct a thorough assessment including a detailed history and complete examination, followed by relevant investigations. It was estimated to affect over 150 million men globally in 1995, however this number has since more than doubled to 322 million men in 2025 [1]. The aetiology of ED can vary between organic and psychological causes, or mixture of both. Associated cardiovascular, endocrine, and neurological disorders can all add to the complexity of each case, when trying to establish a root cause for ED, to aid appropriate management. The clinician should apply a holistic approach towards every patient presenting with ED. Specifically, with regards to the psychosocial context and emotional burden of ED on both the patient and their partner. Even when the cause is organic in root, there are almost always associated psychological impacts of illness leading to performance anxiety, low mood, low self-esteem, shame, which can all contribute towards a poor quality of life. Fortunately, a wide range of medical, psychosocial and surgical treatment options are available for clinicians to tailor their management specifically in alignment with the patient and their partner's priorities and values.

Definition

ED, previously also known as impotence, is defined as the persistent inability to develop and sustain a firm penile erection necessary for satisfactory sexual

performance [2]. This bimodal definition accounts for both the quality of the erection and, the ability to keep the erection going for an effective duration. Although there is no specific timeframe set for this condition, it typically must occur in a consistent and recurrent manner, to impact on a patient's quality of life. Some have suggested it should last for 6 months or more [3].

Aetiology

The root cause for ED is usually divided into two main categories: organic or psychogenic. However, it is often multifactorial in which both the causes can coexist, resulting in a mixed organic and psychogenic picture. Whilst psychological causes are common in younger patients, latest evidence suggests an organic cause in 80% of cases [4]. Organic causes can be subdivided into vascular, neurological, endocrine, urological aetiologies. Most common cause is usually vascular which can stem from past medical history of cardiovascular disease, hypertension, hyperlipidemia, smoking, major surgery (radical prostatectomy), radiotherapy (pelvis or retroperitoneum) [5]. Patients suffering from chronic conditions such as diabetes mellitus, can carry a tendency to impact arterial flow to the penis or impair its nerve supply, thus a combined risk of vascular compromise with associated autonomic dysfunction together, can lead to higher rates of ED.

Neurological causes may include cerebrovascular events, Parkinson's disease, Alzheimer's disease, Multiple Sclerosis, spinal cord injuries. Endocrine problems such as hypogonadism, hyperprolactinaemia, thyroid disorders have also been associated with ED. Urological conditions include but

are not limited to, prostate hypertrophy, peyronie's disease, priapism, cavernous fibrosis, anatomical abnormalities. Factors surrounding lifestyle such as smoking history, obesity, and chronic alcohol abuse are all deemed as independent risk factors associated with ED. Ageing is also an independent risk factor for ED as incidence rises with age, however it is important to recognise that ED is not a confirmed consequence of ageing. A reported survey suggested one-third of men above the age of 70, did not report any erection problems [6]. Carrying out a medication review can help rule out drug-induced ED, from a wide range of medications including antihypertensives, psychiatric, antiandrogenic, anticonvulsants, chemotherapy agents, and recreational drug use.

Whilst it remains imperative to establish a primary cause, psychosocial factors such as depression, performance anxiety, stress, traumatic past experiences, relationship problems, should not be overlooked, as they can contribute heavily towards disease burden.

Diagnosis

Due to the range of associated comorbidities discussed and various risk factors, the evaluation and diagnosis of ED relies upon a comprehensive medical, social, and drug history, backed by a focused cardiovascular, neurological and urogenital examination. The history and physical examination together have shown to have a 95% sensitivity, but only a 50% specificity in establishing the underlying cause of ED; thus, further tailored laboratory investigations are often required to screen for common aetiological factors and can help to improve the specificity [7].

1. History

Taking an in-depth history is essential for reaching an objective diagnosis in the evaluation of a patient with suspected ED. Although clinicians may feel awkward when initiating conversations about sexual function, in most cases the patients recognise it as an appropriate topic to be discussed and feel relieved once it has been addressed [8]. Some useful communication tools which will help overcome this barrier include, using open questions and non-jargon terms, incorporating the discussion whilst asking about other commonly associated chronic health conditions or medication use, or allowing the patient to use their own words to define the problems [9]. Whilst taking the sexual history the clinician should clarify regarding the onset and timeframe of erection problems, and its severity.

After identifying a patient's concern surrounding their sex life, the clinician can direct their questions to help differentiate ED from other common problems surrounding arousal, orgasm, ejaculation and loss of libido, and previous traumatic experiences. The International Index of Erectile Function (IIEF) is a well-recognised patient questionnaire available to clinicians to

help direct the exact nature of the sexual problem [10]. It is a helpful multidimensional adjunct to a thorough sexual history which can be utilised not only as a reliable baseline measure of sexual function, but also for monitoring efficacy of response to treatments being offered, and severity of sexual dysfunction from patient's perspective. With patient's informed consent, their partner's narrative is equally important to obtain as it provides a different perspective. As ED can impact both the patient and the partner, having their involvement in the discussions surrounding therapy and treatment, can improve the overall outcome.

A holistic approach involved asking about social history and lifestyle status. This can help establish any obvious chronological life stressors which correlate with the presence of ED symptoms, such as divorce, unemployment, death of partner or family conflicts. Furthermore, enquiring about prescribed medications, recreational drug use, prior medical and surgical history, smoking status, alcohol intake, activity level, and other associated risk factors remains important. There have been strong correlations between obtaining a diagnosis of ED as an independent predictive value for future cardiovascular disease. In a study involving 300 male patients with confirmed coronary artery disease following cardiac catheterisation, 50% were reported to have significant ED [11]. Other studies have shown that ED can exist as early as 5-10 years prior to suffering from coronary artery disease, myocardial infarction, and strokes [12]. Hence by screening all patients with ED for cardiovascular risks, clinician can bridge this gap between both conditions.

2. Examination

Physicians should carry out a thorough cardiological examination for patients with suspected ED which can involve checking the pulse, blood pressure, and auscultating the heart sounds. This can be followed by a localised examination of the testes and penis, in particular assessing for any signs of reduced testicular size (hypogonadism), localised penile infection, phimosis, or fibrosis. To complete the assessment, evaluate for irregularities in hair distribution, abnormalities in size of breast tissue (gynaecomastia), and carry out a thorough neurological examination [13].

3. Investigation

Although there are no definitive or specific tests necessary for initial evaluation of ED, some baseline routine investigations can be considered by physicians to help identify systemic conditions which predispose to ED. These can include full blood count, urea and electrolytes, liver function tests, lipid profile, thyroid function test, and HbA1c to screen for diabetes mellitus. In addition, the American Urology Association guidelines recommend checking an age-adjusted, early morning, free testosterone level, to accurately assess for hypogonadism [14]. If the first testosterone level is reduced, further evaluation would include luteinizing

hormone (LH) and follicle-stimulating hormone (FSH) levels, to help differentiate between testicular and hypothalamic-pituitary disorder.

Management

The initial manages must always reinforce diet and lifestyle modifications to achieve general improvement in overall health and reduce risk of cardiovascular disease. Lifestyle changes include but are not limited to:

- Increasing physical activity and exercise
- Improving diet and seeking nutritional counselling
- Support for stopping smoking and reducing alcohol intake
- Improving control of diabetes and hypercholesterolaemia

A review of all routine and over the counter drug history can also help identify possible offending medications. A referral for psychosexual counselling for both patient and partner can be helpful for those patients with a psychogenic cause for ED.

The first-line medical option involves a trial of oral phosphodiesterase-5 inhibitors (PDE-5 inhibitors) such as sildenafil or tadalafil. They function by achieving an increased cavernous smooth muscle relaxation and arterial blood flow. Once commenced they can achieve an overall success rate of 76% [15]. Commonly reported adverse drug reactions are usually of mild intensity, and can include headache, gastrointestinal disturbances, nasal congestion, or light sensitivity. If patients failed to respond to first agent, usually a subsequent trial with a second agent can increase overall success rates. Specific instructions to take sildenafil on an empty stomach can improve drug absorption and efficacy.

Tesosterone supplementation alongside PDE-5 inhibitors can be effective in patients with combination of ED with mixed symptoms of low libido or hypogonadism indicated by blood results. On their own however, tesosterone therapy has not been shown to be effective in treating ED alone.

External vacuum devices can offer a safe, long-term, cost-effective, and non-invasive option, in selected patients with good manual dexterity, who are also likely to comply with counselling and guidance on the use of devices and adhere to regular practice with them, to achieve optimal outcomes. However, patients have reported poor satisfaction rates with their ease of use and practicality.

Further secondary options of treatment which are beyond the scope of this article, typically involve a referral to secondary care for specialist to consider more invasive options including intraurethral prostaglandin, intracavernosal prostaglandin injections, or combination

of both. Surgical management options include penile prosthesis, revascularization surgery, arterial balloon angioplasty.

Summary

As with most medical conditions a focused medial and sexual history coupled with a comprehensive physical examination remains essential in evaluation of ED in the primary care setting. Psychological causes remain a common differential for the cause of ED with appropriate referrals for counselling to trained mental health colleagues. Although no specific diagnostic test exists for ED, a routine blood panel is recommended for all patient with suspected ED. A collaborative approach together with the patient and their partner involved in shared decision-making process, helps achieves the best outcomes in management of ED. A trial of multiple different PDE-5 inhibitors is recommended, supported with specific instructions on how to take the medications can improve efficacy rates. If patients remain unresponsive to conservative and medical options, consider referral to specialist urology services for further evaluation.

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