Managing the Patient with Erectile Dysfunction: What Would You Do?

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Wayne A. Sampson, M.D.
Cross Creek Medical
Tallahassee, FL
Learning Objectives:

• Identify medical conditions and medications associated with the development of erectile dysfunction
• Recognize safe and appropriate use of the phosphodiesterase inhibitors
• Define the role of medications, other than the phosphodiesterase inhibitors, and non-medication treatments used in the treatment of erectile dysfunction
• Recall adverse effects, important drug interactions, and patient counseling pearls for patients treated with medications for erectile dysfunction
Erectile Dysfunction (ED)

Definition:

• The inability to achieve and maintain an erection sufficient for satisfactory sexual intercourse
• It is estimated to affect 20 - 30 million men in the United States
Penile Erection

- Neurovascular event subject to psychological and hormonal modulation
- Upon sexual stimulation nerve impulses release neurotransmitters from the cavernous nerve terminals and relaxing factors from the endothelial cells in the penis
Penile Erection

- Several fold increase in blood flow to penis venous plexus located between the sinusoids & the rigid tunic covering the penis are compressed resulting in almost total occlusion of venous outflow.
- Traps blood within the corpora cavernosa & raises the penis from flaccid to erect position.
- Nitrous oxide releases from the nonadrenergic neurotransmitter & the endothelium is likely the principal neurotransmitter for penile erection.
Sildenafil, Vardenafil, and Tadalafil are drugs currently FDA approved for treatment of ED and they work by blocking phosphodiesterase enzyme activity.
Causes of ED

- Psychological
- Organic
  - Neurogenic
  - Hormonal
  - Arterial
  - Venous
  - Cavernosal
- Drug Induced
Common Mixed Etiologies of ED

Psychogenic
- Performance Anxiety
- Strained Relationships
- Lack of Sexual Arousability
- Overt Psychiatric Disorders
  - Depression
  - Schizophrenia

Neurological Disorders
- Parkinson’s Disease
- Alzheimer’s Dementia
- Stroke
- Spinal Cord Injury
Common Mixed Etiologies of ED

- Androgen Deficiency -
  - Decrease Nocturnal Erections
  - Decreased Libido

Hormonal

- Erection in response to visual stimulation is preserved in patients with hypogonadism - suggesting androgen is not essential for erection
Hyperprolactinemia of any cause results in both reproductive and sexual dysfunction due to the inhibitory action of prolactin on gonadotropins releasing hormone secretion resulting in hypogonadotrophic hypogonadism.
Vascular Deficiencies: Arterial Insufficiency

• Risk Factors -
  • Hypertension
  • Hyperlipidemia
  • Cigarette Smoking
  • Diabetes
  • Pelvic Irradiation

• Focal stenosis of common penile artery often occurs in men who have sustained blunt trauma to the perineum
Erectile Dysfunction

- Poor venous occlusion during erection can result an ED

Degenerative Changes
- Peyronie’s Disease
- Aging
- Diabetes Mellitus
Medications Associated with ED:

- Central neurotransmitter pathways (serotonergic, noradrenergic and dopaminergic) involved in sexual function may be disrupted by psychotropics and centrally acting anti-hypertensives.
- Beta-Blockers*
- Thiazide Diuretics
- Spironolactone**
- Cigarettes
- Alcohol
Erectile Dysfunction: Diagnosis

- Medical, Sexual, & Psychological History
- Physical Examination of:
  - Breasts
  - Hair Distribution
  - Penis
  - Testis
  - Palpitation of Femoral & Pedal Pulses
- Testing of Genital & Perineal Sensation
- Appropriate Labs -
  - UA
  - CBC
  - FBG
  - Testosterone
  - Lipids
Erectile Dysfunction: Evaluation

• Evaluate for underlying -
  • CVD
  • Diabetes Mellitus
  • Hyperlipidemia
  • Hypertension
Erectile Dysfunction: Prevalence

- In men with new onset of ED there was an estimated 25% increase risk of MI, strokes, angina and TIAs compared to men without ED.
- ED is as important a risk factor for CVD as is smoking or a family history of heart disease.
- Previous results showed that among patients that seek help for ED, nearly 20% had undiagnosed high blood pressure.
- 15% had diabetes mellitus and
- 5% already had significant coronary artery disease.
Erectile Dysfunction: Treatment

• **Lifestyle Changes**
  • Quit Smoking
  • Lose Weight
  • Increase Physical Activity
  • D/C Drugs with harmful Side Effects

• **Psychotherapy**
• **Pharmaceutical Therapy**
Erectile Dysfunction: Treatment

**Oral**

- FDA approved Sildenafil (Viagra) in 1998 - first oral therapy
- Multiple additional Phosphodiesterase 5-Inhibitors (PDE) inhibitors have been approved
- Taken prior to sexual activity
ED Treatment: Phosphodiesterase 5-Inhibitors

- PDE inhibitors work by enhancing the effects of Nitrous Oxide relaxing penile smooth muscle during sexual stimulation and allows increased blood flow
- First Line Therapy
- PDE inhibitors should not be used more than once daily
- Contraindicated with concomitant use of nitrates or alpha blockers → hypotension
ED Treatment:

- Yohimbine
- Dopamine & Serotonin Agonists
- Trazodone - may be effective but studies are inconsistent
- IM Testosterone
ED Treatment:

- Intracavernosmal injections with drugs such as papaverine, phentolamine, and alprostadil modulate endothelial function and induce and maintain erection
- Intraurethral Injections
- Pumps: Vacuum Erection Devices
- Penile (implant) surgery


