

The Diagnosis of the Erectile Dysfunction (ED)

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Erection

Lue's Hypothesis

- **Arterial dilation**
- **Cavernous smooth muscle relaxation**
- **Venous constriction**

Erectile Dysfunction (ED)

DM

- ED occurs in 25% of young diabetes and in 75% of older patients.
- impact in nervous and vascular systems
- 10-15 years

Coronary Arterial Disease

- Anxiety
- Arterial insufficiency
- Drugs

Renal Disease

- ED occurs in 50% of patients undergoing dialysis
- decreased testosterone level
- autonomic neuropathy
- accelerated vascular disease
- potency was restored in 75% after transplantation

Hypertension

- 27/101 (27%) had ED
- arterial dysfunction in 89%
- 12/27 (44%) onset of impotence since drug initiation
- Drug-induced impotence could be the result of BP reduction itself and not specific drug side effects. (*Am J Hypertension* 12:271-5, 1999)

Iatrogenic ED

- Radical prostatectomy
- Drug induced

Clinical Evaluation

- **General and sexual history**
- **Physical examination**
- **Laboratory studies**
- **NPT testing/ Rigiscan**
- **Vascular studies**
- **Intracorporal pharmacologic stimulation**

IIEF Domains and Scoring



Domain	Questions	Total Score
Erectile function	1 - 5, 15	1 - 30
Orgasmic function	9, 10	0 - 10
Sexual desire	11, 12	2 - 10
Intercourse satisfaction	6, 7, 8	0 - 15
Overall Satisfaction	13, 14	2 - 10

Question Components



1	Erectile frequency	9	Ejaculation frequency
2	Erectile firmness	10	Orgasm frequency
3	Penetration ability	11	Desire frequency
4	Maintenance frequency	12	Desire level
5	Maintain ability	13	Overall satisfaction
6	Intercourse frequency	14	Relationship satisfaction
7	Intercourse satisfaction	15	Erection confidence
8	Intercourse enjoyment		

1. 您對於自己能勃起，且能維持勃起狀態有多大信心？

非常低	低	中度	有信心	信心滿滿
1	2	3	4	5

2. 您嘗試性交時，陰莖勃起的堅硬度可以讓您順利進入女性陰道嗎？

沒有 性行為	完全或幾乎 不可以	少數幾次 可以	一半左右 可以	多數可以	幾乎每次 都可以
0	1	2	3	4	5

3. 性交中，未射精前您可以維持陰莖的堅硬度嗎？

沒有 性行為	完全或幾乎 不可以	少數幾次 可以	一半左右 可以	多數可以	幾乎每次 都可以
0	1	2	3	4	5

4. 從性交開始到結束，您覺得維持陰莖勃起很困難嗎？

沒有 性行為	極度困難	非常困難	困難	有點困難	不困難
0	1	2	3	4	5

5. 您對自己性交時的整體表現滿意嗎？

沒有 性行為	極度不 滿意	只有少數 幾次滿意	一半左右 滿意	大多數 滿意	幾乎每次 都很滿意
0	1	2	3	4	5

Classification of Erectile Dysfunction



Erectile Function Domain Score	Classification of ED
6 - 10	Severe
11 - 16	Moderate
17 - 25	Mild
26 -30	No ED

Sexual Encounter Profile (SEP)

- **SEP Q1: whether he achieved at least some erection**
- **SEP Q2: whether he was able to penetrate his partner**
- **SEP Q3: whether he was able to maintain his erection long enough for successful intercourse**
- **SEP Q4: whether he was satisfied with the hardness of his erection**
- **SEP Q5: whether he was satisfied overall with the sexual experience**

NPT

- 1966, Karacan demonstrated that 80% of NPT occurred during REM.
- 3-5 episodes of NPT per night, 30-60 min for each erection, 20% of total sleep time in young age.
- For normal NPT, the central and peripheral neuroeffectors and intracorporeal regulators of penile hemodynamics must be intact.
- Depression and sleep disorders

RigiScan

- 1985
- 1992, Cilurzo: 4-5 episodes per night, 30 min for each episode, circumference increased 3 cm at the base and 2 cm at the tip, and more than 70% of rigidity.
- Not useful when abnormal.



NORMAL RIGISCAN

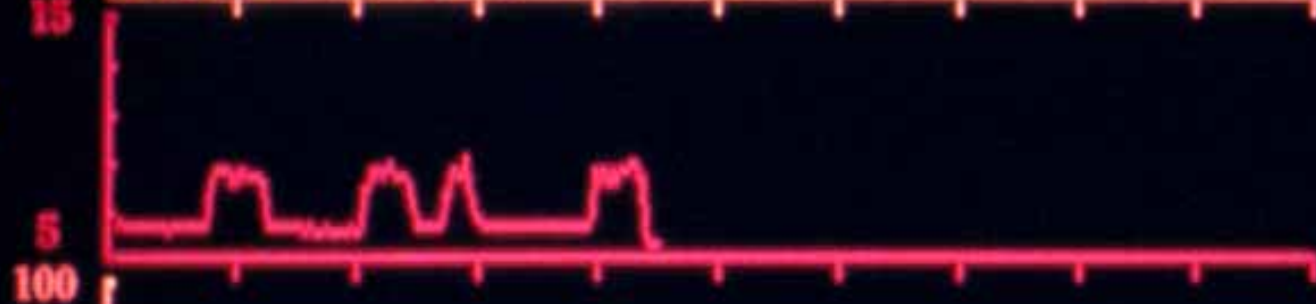
78 yr. old

WAL 3897
9-13-84

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Hours 0 1 2 3 4 5

AVSS

- **Audiovisual sexual stimulation**
- **Penile tumescence and rigidity (PTR)**
- **AVSS/PTR for psychogenic ED**
- **AVSS like NPTR alone does not distinguish among causes of organic ED**
- **+ vibratory, intracavernous, topical and oral pharmacological agents**

Neurological Testing

- It should assess peripheral, spinal and supraspinal centers and both somatic and autonomic pathways associated with all three types of erection (nocturnal, psychogenic and reflexogenic) and sexual arousal.

Somatic Nervous system

- **Biothesiometry**
- **Sacral evoked response – bulbocavernous reflex latency**
- **Genitocerebral evoked potential studies**

Autonomic Nervous System

- Sympathetic skin response (SSR)
- Corpus cavernous EMG (CC-EMG) and single potential analysis of cavernous electrical activity (SPACE)
- Cystometry + urecholine test

Hormonal Evaluation

- Free T(2%), T+albumin (42%), SHBG (55%)
- Bioavailable T: free T + albumin binding T
- Elevated estrogen, thyroid hormone and aging: increase SHBG, decrease bio-T
- Exogenous androgens, growth hormone and obese: decrease SHBG, increase free T
- Incidence of hypogonadal T: 20% (60 y/o), 30% (70 y/o), and 50% (80 y/o)

Function of Testosterone

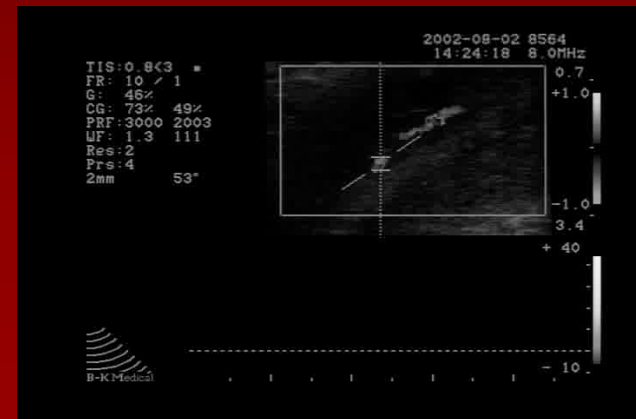
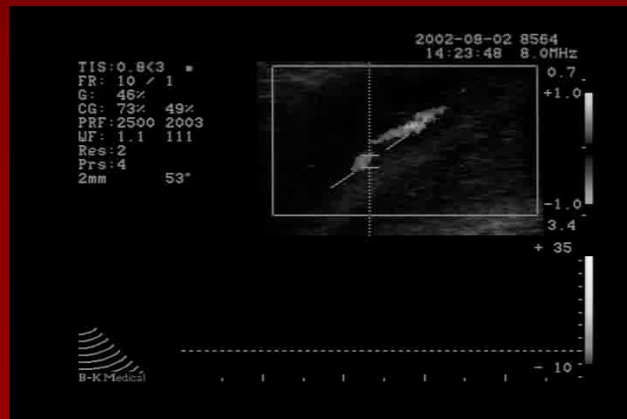
- Sexual desire, frequency of nocturnal erection
- Orchiectomy: decrease smooth m content, increase interstitial collagen in the penis
- The absence of T reduces nitric oxide synthesis production

- **Total/free/bioavailable T**
- **SHBG**
- **LH**
- **FSH**
- **Prolactin**
- **6-9 am**

Vascular Study

- Intracavernous injection (ICI): papaverine, PGE1
- ICI + AVSS
- Color duplex doppler ultrasound (CDDU)
- MRI/MRA: injury
- Arteriography
- Cavernosometry and Cavernosography

CDDU

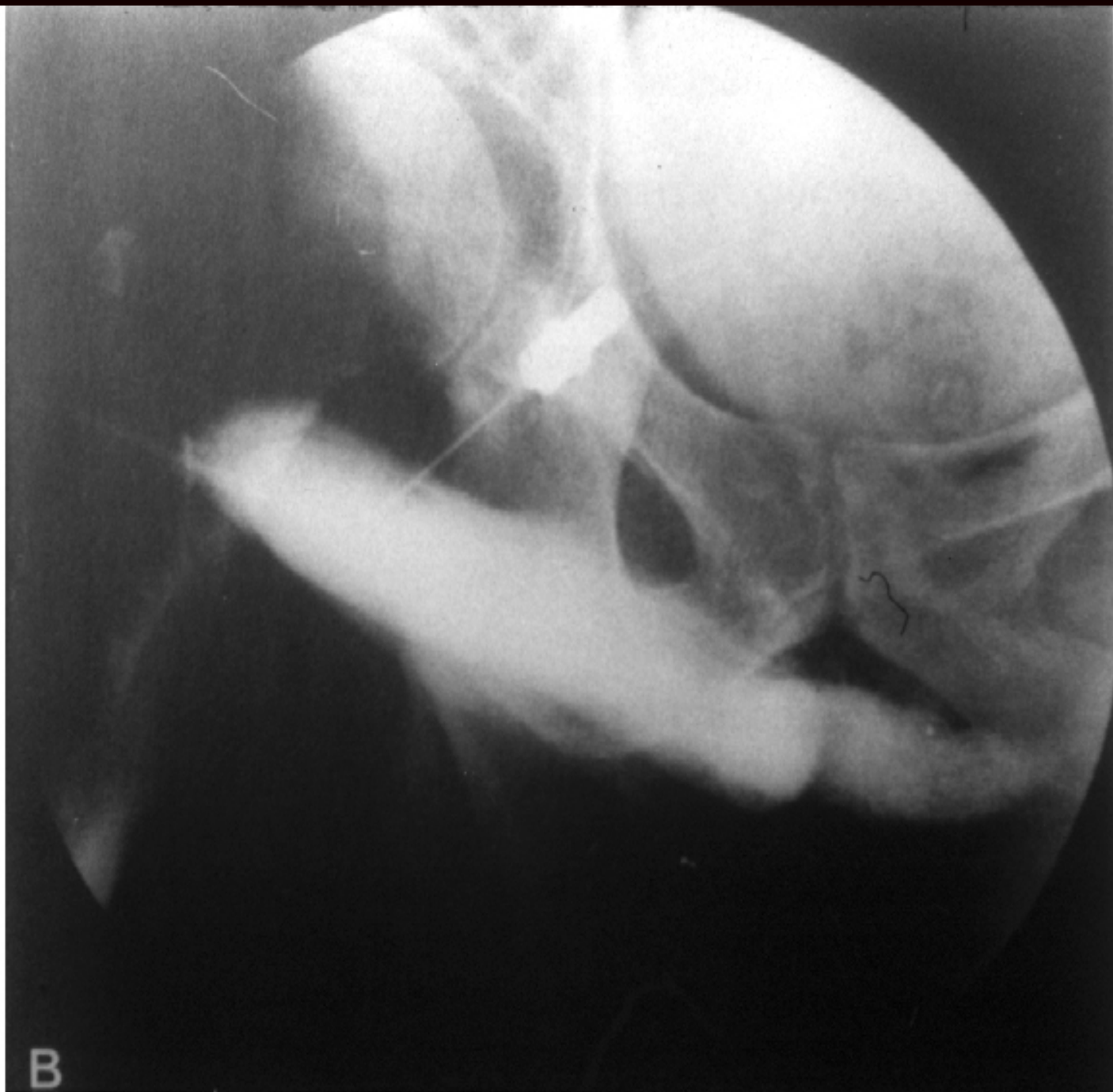


- **Color duplex doppler ultrasound**
- **PSV: 25-35 cm/sec**
- **EDV: > 5-7 cm/sec**
- **RI (resistive index)= $\frac{PSV-EDV}{PSV}$,
>0.90, 90% normal DICC;
<0.75, 95% venous leakage. (Naroda, 1994)**

Cavernosometry

- 150 mmHg
- Maintenance flow: <3-5 ml/min
- Pressure drop from 150 to 45 mmHg: 30 sec







Psychogenic ED

- **Persistent inability to achieve or maintain erection satisfactory for sexual performance which is due predominantly or exclusively to psychological or interpersonal factors.**
- **Complex ED: 25% of patients failed to previous sildenafil therapy: anxiety, low desire, relationship problems, sexual apathy and avoidance.**

Psychogenic ED

- **MMPI-2: The Minnesota Multiphasic Personality Inventory**
- **Short Marital Adjustment Test (married couples)**
- **Dyadic Adjustment Inventory (unmarried people)**

Summary

- The large majority of patients with ED do not require specialized evaluation. A PE, medical and sexual history and basic lab tests are sufficient for diagnosis of ED.