Στυτική δυσλειτουργία/σεξουαλική ανικανότητα στην καρδιακή ανεπάρκεια. Συμβουλευτικές & θεραπευτικές παρεμβάσεις

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Disclosure

*In relation to this presentation, I declare that there are no conflicts of interest.*
The physiological effects and clinical aspects of sexual function have been extensively studied and reported in patients who have angina or who have experienced a myocardial infarction and in those who have undergone coronary artery bypass graft surgery or heart transplant.

However, less has been published about sexual function in patients with chronic heart failure (CHF), and clinicians are therefore less well informed on this topic.
60% to 87% of patients with HF report sexual problems

When HF patients (n = 438) were compared with healthy elders (n = 459), the self-reported amount of sexual dysfunction was similar, at 59% and 56%. However, HF patients reported significantly more often ED (37% vs. 17%)

In a general population, 27% of women (age 50–59) reported lack of interest in sexual activity, and 23% of women were not able to have an orgasm. In a HF population, 80% of the female HF patients reported reduced lubrication and 76% reported frequent unsuccessful intercourse
SEXUAL FUNCTION AND CHF

• In men sexual problems include a lack of interest in or fear for having sex, orgasmic difficulties, or erectile dysfunction (ED) (60 to 70% of CHF outpatients)

• Women may experience other types of sexual dysfunction than men, including decline in sexual interest or desire, decline in sexual arousal, orgasmic disorder, or painful sexual intercourse

• Some sexual problems already are present prior to the onset of HF, but such problems also can develop during different phases in the HF trajectory

• Sexual function in CHF is related not to resting EF but rather to New York Heart Association (NYHA) functional class

ESC Heart Failure (2016)
DOI: 10.1002/ehf2.12108
So what?


Circular causal relationship with *anxiety and depression* (Lauman et al, 1999)
Hemodynamic stress of normal sexual activity (middle-aged men)

- Sexual activity consists of 4 stages: baseline resting, foreplay, stimulation, and orgasm

- **Mean heart rate**: ~ 120 beats per minute

- **Mean blood pressure**: ~ 160/90

- 2.5 METs with the “woman-on-top” and 3.3 METs with the “man-on-top”. 
  
  1 MET (metabolic equivalent of oxygen consumption) is defined as the energy expended at rest, which is equivalent to body oxygen consumption of 3.5 mL/kg/min

- 2.0 to 3.0 METs represent the energy expended walking on level ground at 2 to 2.5 mph or doing light housework (dusting)

- 3.0 to 4.0 METs that expended while walking on level ground at 3 to 4 mph, climbing stairs slowly, or doing general housework (vacuuming)
The Hear Rate pre-Orgasm

Dr A. Douras, courtesy
The Heart Rate during Orgasm, of a healthy woman 30 yrs old

18-Jun
22:25:30
22:25:45
22:26:00
22:26:15
22:26:30
22:26:45
22:27:00
22:27:15
22:27:30
Tachycardia 18-Jun-2016 10:27:06 PM
148 BPM at cursor

Dr A. Douras, courtesy
Pathophysiology of sexual function

Normal sexual function:

symphony of simultaneous interplay between psychologic, hormonal, vascular, and neurologic factors

Vascular phenomenon

Sexual arousal and erection in men:

Parasympathetic nerves stimulation, sympathetic pathways activity reduction, release of nitric oxide from endothelium.

(In women result from sympathetic nervous system activation).

Int J Impot Res. 2005;17(suppl 1):S4-S6
Factors related to sexual problems in heart failure patients

- Smoking
- Overweight
- Sedentary lifestyle
- Age
- Relationship
- Devices
- Medical treatment
- Activity intolerance
- Comorbidity
- Physiologic factors
- HF symptoms
- Psychological factors
- Depression
- Performance anxiety
- Anxiety related to symptoms
- Dyslipidemia
- Hypertension
- Diabetes
- Obesity
- Endothelial dysfunction
- Atherosclerotic plaques
- Anabolic deficiency
- Andropausal syndrome

ESC Heart Failure
ESCHF-16-00029, 14 SEP 2016 DOI: 10.1002/ehf2.12108
Factors related to sexual problems in heart failure patients

- HF symptoms
  - Dyspnea, fatigue, and activity intolerance

- Comorbidity
  - Up to 35% of HF patients suffers from COPD, and the overall prevalence of diabetes in HF is 20–25%
  - There is an over threefold increased risk of ED in diabetic vs. nondiabetic men and diabetic women are more likely to report problems with lubrication than nondiabetic women.

- Erectile dysfunction, cardiovascular disease, and depression seem to form a mutually reinforcing triad

Factors related to sexual problems in heart failure patients: medical treatment

- **Thiazide diuretics**
  - endothelial dysfunction and increased vascular oxidative stress, as well as hyperlipidemia, insulin resistance, a new onset of diabetes mellitus, and stimulation of the sympathetic system and the renin–angiotensin–aldosterone system

- **Digoxin and mineralocorticoid receptor antagonists**
  - impaired NO-induced relaxation. Spironolacton: androgen suppression

- **Beta blockers**
  - They counteract the stimulatory effects of the epinephrine in the brain, tamping down on a person’s excitement. Also messes with the areas of a man’s nervous system that make him erect

- **Nocebo effect**
  - a patient’s knowledge that a drug has been associated with ED, is often at least as important a contributing factor to a patient’s ED as any physiological effect
Factors related to sexual problems in heart failure patients: device therapy or heart transplantation

• In a small study of 31 patients, 29% left ventricular assist device (LVAD) patients and 71% heart transplant patients reported being content with sexual activity.

• Satisfaction with sex life was lower in (LVAD) patients compared with HTx patients (7.6 ± 3.1 for HTx on a visual analogue scale vs. 3.9 ± 4.0 for LVAD patients, P = 0.017).
TREATMENT OF SEXUAL DYSFUNCTION IN PATIENT WITH HEART FAILURE

• Optimization of CHF management
  - Sexual function improves as CHF symptoms are reduced and exercise capacity increases

• Avoiding when possible drugs such as digoxin and thiazide diuretics which can contribute to ED. Also recommend replacing the first & second with third generation β-blockers and replacing spironolactone with the more selective mineralocorticoid receptor antagonist eplerenone

• Nocebo effect
  - In patients who develop sexual problems as a result of medication therapy, it can be helpful to switch to another drug from the same class or find a reasonable alternate strategy

Circulation 2012;125: 10581072
The figure below shows the mechanism of action of Viagra, and the other PDE5 inhibitors, on the nitric oxide cycle.
PDE5 Inhibitors: sildenafil (Viagra), tadalafil (Cialis), vardenafil (Levitra), avanafil (spedra).

- Tadalafil has the longest period of onset (2 hours) and lasts up to 36 hours, whereas as sildenafil is effective after 1/2 hour for 4-8h as vardenafil and avanafil acts after ½h for 12h.

- PDE5 inhibitors are generally safe and effective for the treatment of ED in patients with compensated heart failure.

- No studies have shown one agent to be more effective or safer than the others.

- Large trials and meta-analyses suggest that they are not associated with an increase in MI or cardiac events.

Circulation 2012;125: 10581072
TREATMENT OF SEXUAL DYSFUNCTION IN PATIENT WITH HEART FAILURE

• PDE5 inhibitor use has been explored in females for treatment of arousal disorders and has largely been shown to be no more effective than placebo. The safety of PDE5 inhibitor use in females with CVD has not been established.

• When administered with cardiovascular drugs that reduce systemic blood pressure, PDE5 inhibitors are associated with small additive reductions in systemic blood pressure but no increase in adverse cardiac events.

• Vardenafil (but not sildenafil, tadalafil or avanafil) carries a precautionary statement about prolongation of the corrected QT interval and should be avoided in patients taking medications known to prolong the QT interval (eg, class IA or III antiarrhythmic agents).

• Since PDE5 inhibitors such as sildenafil, tadalafil, Vardenafil and avanafil may cause transiently low blood pressure (hypotension), organic nitrates, should not be taken for at least 48 hours after taking the last dose of tadalafil. Using organic nitrates within this timeframe may increase the risk of life-threatening hypotension.
<table>
<thead>
<tr>
<th></th>
<th>Sildenafil</th>
<th>Vardenafil</th>
<th>Tadalafil</th>
<th>Avanafil</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dosage</strong></td>
<td>25, 50, and 100 mg. Usually start with 50 mg. Maximum dose 100 mg daily</td>
<td>2.5, 5, 10, and 20 mg. Usually start with 10 mg. Maximum dose 20 mg daily</td>
<td>2.5, 5, 10, and 20 mg. Usually start with 10 mg. Maximum dose 20 mg daily</td>
<td>100 mg. Maximum dose 200 mg daily</td>
</tr>
<tr>
<td><strong>Onset</strong></td>
<td>30–60 min</td>
<td>30 min</td>
<td>45 min</td>
<td>30–60 min</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>4–8 h</td>
<td>4–8 h</td>
<td>Up to 36 h</td>
<td>12 h</td>
</tr>
<tr>
<td><strong>Efficacy</strong></td>
<td>&gt;65%</td>
<td>&gt;65%</td>
<td>&gt;65%</td>
<td>&gt;65%</td>
</tr>
<tr>
<td><strong>Side-effects</strong></td>
<td>Headache, flushing, and dyspepsia</td>
<td>As for sildenafil</td>
<td>Flushing, back pain, and general myalgia</td>
<td>Facial flushing, nasal congestion, ocular hyperemia, and headache</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Nitrate-containing compounds, recent serious cardiovascular events, non-arteritic ischaemic optic neuropathy, and α blockers</td>
<td>As for sildenafil, but also type 1 or 3 antiarrhythmics and congenital prolonged QT syndrome</td>
<td>As for sildenafil</td>
<td>As for sildenafil</td>
</tr>
<tr>
<td><strong>Food and alcohol interaction</strong></td>
<td>Interacts with food, administer while fasting. No alcohol interaction</td>
<td>Interacts with food, administer while fasting. No alcohol interaction</td>
<td>No food or alcohol interaction</td>
<td>No food or alcohol interaction</td>
</tr>
</tbody>
</table>
Lifestyle interventions and CV risk factor management reduce sexual dysfunction.

Lifestyle modifications (diet, physical activity, weight loss) and pharmacotherapy for CV risk factors associated with improvement in sexual function (IIEF-5 scores)

Regaining sexual function may be an important behaviour change motivator for patients

Gupta et al, 2011
TREATMENT OF SEXUAL DYSFUNCTION IN PATIENT WITH HEART FAILURE

- **Exercise training**
  - sexual activity as well as functional capacity and quality of life improved independently of medications
  - coronary risk factors such as hyperlipidemia and hypertension did improve with exercise training

  *Int J Cardiol. 2005;101(1):83-90*

- **Second-line therapies for ED**
  - Androgen replacement therapy, intraurethral suppositories, penile injection therapy, penile prostheses, and vacuum-assisted erection devices do not appear to have adverse effects in patients with CHF
  - penile angioplasty or surgical revascularization is an option, provided that arterial lesions are localized

  *Mayo Clin Proc. 2007;82(10):1203-1210*
Sexual counselling describes an interaction between provider and patients where the provider provides information on sexual concerns and safe return to sexual activity, assessment, support, and specific advice related to psychological and sexual problems (Steinke et al., 2013).
The PLISSIT model to guide education and counselling

- **Permission**
  e.g. "It's common for people with heart disease to experience sexual difficulties. I'm going to ask you some questions about this aspect of your life; please feel free to ask me questions as well."

- **Limited Information**
  In response to a question provide facts, such as the workload on the heart of sexual activity

- **Specific Suggestion**
  anticipate potential effects of treatments on sexuality and offer guidance.

- **Intensive Therapy**
  Usually requires a referral to a sex therapist or specially trained counselor.
Approach to the treatment of the patient with CHF

Initial assessment
- Thorough medical history (focus on age, overall health, motivational state)
- Physical examination (look for signs of active congestion: rales, elevated jugular veins, peripheral edema)
- Laboratory testing (chemistries, hematology, BNP)

Low-risk
- NYHA class I
- No increase in symptoms or cardiac events with sexual activity
- Most patients are in this category

Intermediate-risk
- NYHA class II or asymptomatic with LV dysfunction and EF <40%
- Moderate risk of symptom exacerbation with sexual activity

High-risk
- Severe or unstable heart disease
- NYHA class III or IV
- Substantial risk of symptoms or CHF decompensation with sexual activity

Low-risk:
- Continue routine CHF regimen
- Advise patient to proceed with sexual activity without further testing
- Treat ED if necessary if patient does not have active ischemia or nitrate use

Intermediate-risk:
- Restratify into low- or high-risk group after exercise testing, echocardiography, and 6-minute walk test
- Consider cardiology consult

High-risk:
- Advise patient to abstain from sexual activity
- Stabilize underlying heart failure via diuresis, titration of ACEI and β-blockers, etc
- Reassess

Am J Cardiol. 2005;96(2):313-321
Heart Failure

Recommendations

1. Sexual activity is **reasonable** for patients with **compensated** and/or mild (NYHA class I or II) heart failure (Class IIa; Level of Evidence B).

2. Sexual activity is not advised for patients with **decompensated** or advanced (NYHA class III or IV) heart failure until their condition is stabilized and optimally managed (Class III; Level of Evidence C).
Sexual Activity and Cardiovascular Disease

A Scientific Statement From the American Heart Association

Circulation. 2012;125:1058-1072

Pharmacotherapy for Sexual Dysfunction

PDE5 Inhibitors

Recommendations

1. PDE5 inhibitors are **useful** for the treatment of ED in patients with **stable CVD** (Class I; Level of Evidence A).\(^5,46,48,49,90-106\)
2. The safety of PDE5 inhibitors is unknown in patients with severe aortic stenosis or HCM (Class IIb; Level of Evidence C).
3. PDE5 inhibitors should not be used in patients receiving nitrate therapy (Class III; Level of Evidence B).\(^98,107,108\)
4. Nitrates should not be administered to patients within **24 hours** of sildenafil or vardenafil administration or within **48 hours** of tadalafil administration (Class III; Level of Evidence B).\(^98,107,108\)
Sexual Activity and Cardiovascular Disease

A Scientific Statement From the American Heart Association

*Circulation.* 2012;125:1058-1072

Arrhythmias, Pacemakers, and ICDs

Recommendations

1. Sexual activity is reasonable for patients with atrial fibrillation or atrial flutter and well-controlled ventricular rate (Class IIa; Level of Evidence C).

2. Sexual activity is reasonable for patients with a history of atrioventricular nodal reentry tachycardia, atrioventricular reentry tachycardia, or atrial tachycardia with controlled arrhythmias (Class IIa; Level of Evidence C).

3. Sexual activity is reasonable for patients with pacemakers (Class IIa; Level of Evidence C).

4. Sexual activity is reasonable for patients with an ICD implanted for primary prevention (Class IIa; Level of Evidence C).

5. Sexual activity is reasonable for patients with an ICD used for secondary prevention in whom moderate physical activity (≥3.5 METS) does not precipitate ventricular tachycardia or fibrillation and who do not receive frequent multiple appropriate shocks (Level of Evidence C).

6. Sexual activity should be deferred for patients with atrial fibrillation and poorly controlled ventricular rate, uncontrolled or symptomatic supraventricular arrhythmias, and spontaneous or exercise-induced ventricular tachycardia until the condition is optimally managed (Class III; Level of Evidence C).

7. Sexual activity should be deferred in patients with an ICD who have received multiple shocks until the causative arrhythmia is stabilized and optimally controlled (Class III; Level of Evidence C).
Management of ED in patients with heart failure: conclusion

- Consideration of referral to a specialist

- Optimisation of the patient’s clinical status

- Identification of medical co-morbidities, such as type 2 diabetes mellitus, hyperlipidaemia, hypotension or significant atherosclerosis, that are contributing to the ED

- Identification of possible ongoing ischaemia

- Adjustment of medication regimens to avoid negative side effects
  - Replacement of propranolol or atenolol with carvedilol
  - Avoidance of digoxin and thiazide diuretics
  - Replacement of spironolactone with eplerenone
  - Replacement of angiotensin-converting enzyme inhibitors with angiotensin-receptor blockers

- First-line use of phosphodiesterase-5 inhibitors (sildenafil preferred), and avoidance of the concurrent use of nitrates.
Able to climb 2 flights of stairs), then safe to resume sexual activity. DeBusk et al. (2000)

American Journal of Cardiology. 86(2): 175-181

Patients: with controlled hypertension or mild, stable angina; postrevascularization patients without significant residual ischemia; past MI (> 6 weeks) patients without treadmillinduced ischemia; patients with mild valvular disease; patients with mild (class I) left ventricular dysfunction or other cardiovascular conditions such as pericarditis, mitral valve prolapse, or atrial fibrillation with controlled ventricular response.

good luck!!!