

Sexual dysfunction

JOURNAL OF
SEXUAL MEDICINE

Endothelial dysfunction predicts ED in T2D

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓ |
| WOW! factor | ✓✓✓✓ |

- The authors assessed the association between endothelial dysfunction and low-grade systemic inflammation with erectile dysfunction (ED) and its severity in men with T2D.
- The study population consisted of 190 men with T2D (age range, 30–55 years; diabetes duration, ≥3 months).
- Serum levels of the pro-/anti-inflammatory mediators tumour necrosis factor-alpha (TNF-alpha) and interleukin-10 (IL-10) and the endothelial activation markers intercellular adhesion molecule-1 (ICAM-1) and E-selectin were evaluated.
- The five-item version of the International Index of Erectile Function questionnaire was used to assess ED presence and severity.
- Of the 190 participants, 150 had ED and 40 did not.
- Those with ED had longer duration of diabetes, higher levels of E-selectin, TNF-alpha and TNF-alpha:IL-10 ratios and lower levels of IL-10 compared with those without; there was no difference in ICAM-1 levels between the two groups.
- Multivariate analysis showed that increases in E-selectin levels and TNF-alpha:IL-10 ratio predicted ED presence, whereas increases in IL-10 levels were associated with a lower risk of ED.
- The authors concluded that ED was associated with endothelial dysfunction and an imbalanced, low-grade inflammatory response.

Araña Rosáinz MJ, Ojeda MO, Acosta JR et al (2011) Imbalanced low-grade inflammation and endothelial activation in patients with type 2 diabetes mellitus and erectile dysfunction. *J Sex Med* 8: 2017–30

Erectile dysfunction – an inflamed situation?



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The link between erectile dysfunction (ED), diabetes and atherosclerosis is well established. However, the pathological mechanisms that are implicated in this triad of clinical conditions are not fully understood. Although endothelial function appears to be a key player, there are a number of other confounders that may account for endothelial damage and vascular or metabolic change. These include systemic inflammation, and previous evidence from examining C-reactive protein levels in people with ED support this possibility (Vlachopoulos et al, 2006).

“Interventions aimed at inhibiting a chronic inflammatory response may attenuate the risk of developing erectile dysfunction.”

In this issue of *Diabetes Digest*, I have included a report from Araña Rosáinz and colleagues (2011; summarised alongside) who examined specific markers associated with an inflammatory and anti-inflammatory response in men with type 2 diabetes. Their findings support the notion that low-grade inflammation is associated with ED and endothelial dysfunction in men with type 2 diabetes, and raises the intriguing hypothesis that interventions aimed at inhibiting a chronic inflammatory response may attenuate the risk of developing ED as well as diabetes and atherosclerosis.

Vlachopoulos C, Aznaouridis K, Ioakimidis N et al (2006) Unfavourable endothelial and inflammatory state in erectile dysfunction patients with or without coronary artery disease. *Eur Heart J* 22: 2640–8

JOURNAL OF
SEXUAL MEDICINE

High prevalence of ED in men with T2D linked to SMI

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓ |
| WOW! factor | ✓✓✓ |

- This study aimed to determine the prevalence of erectile dysfunction (ED) and cardiovascular (CV) risk factors in 154 men with T2D and no evidence of macroangiopathy.
- The authors also sought to ascertain a link between ED, cardiovascular risks, chronic diabetes complications, silent myocardial ischaemia (SMI) and peripheral arterial disease (PAD).
- Data were collected for the 154 men participating in the study; main outcome measures included PAD, SMI, 24-hour blood pressure (BP), lipid profile, insulin resistance, testosterone, chronic inflammation, nephropathy, retinopathy and neuropathy.
- The prevalence of ED was 68.2%; men with ED were older, had a longer duration of T2D, higher systolic BP, a poorer metabolic control and a higher incidence of retinopathy and neuropathy.
- Independent risk factors for ED were age (57.7 years ± 7.5 years; relative risks [RR], 1.1; $P=0.003$) and diabetes duration (9 years [3–15 years]; RR, 1.1; $P=0.006$).
- In total, SMI was detected in 13.6% (18.1% with ED vs 4.1% without); asymptomatic PAD in 13.2% (14.4% with ED vs 10.4% without).
- ED is highly prevalent in men with T2D; it is linked with SMI, higher systolic BP and chronic microvascular diabetic complications.
- As the risk factors for ED and CV disease are similar, the authors concluded that the two conditions possibly share the same pathophysiological mechanism.

García-Malpartida K, Mármol R, Jover A et al (2011) Relationship between erectile dysfunction and silent myocardial ischaemia in type 2 diabetic patients with no known macrovascular complications. *J Sex Med* 8: 2606–16

“Vibration perception threshold is a significant indicator of early erectile dysfunction in men with diabetes.”

UROLOGIA INTERNATIONALIS

VPT detects early ED in men with diabetes

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓ |
| WOW! factor | ✓✓✓ |

1 Early recognition of diabetic neuropathy is essential for early erectile dysfunction (ED) diagnosis and initiation of treatment.

2 Clinical parameters, such as age, HbA_{1c} level, duration of diabetes and presence of diabetic

complications, were ascertained for 145 men with diabetes.

3 Peripheral neuropathy was determined by vibration perception threshold (VPT); erectile function was measured by the International Index of Erectile Function (IIEF-5).

4 IIEF-5 scores were significantly correlated with age, duration of diabetes, complications and VPT.

5 VPT was concluded to be a significant indicator of early ED in men with diabetes.

Amano T, Imao T, Seki M et al (2011) The usefulness of vibration perception threshold as a significant indicator for erectile dysfunction in patients with diabetes mellitus at a primary diabetes mellitus clinic. *Urol Int* **87**: 336–40

JOURNAL OF ANDROLOGY

Daily sildenafil improves endothelial function in T2D

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓✓ |
| WOW! factor | ✓✓✓✓ |

1 Erectile dysfunction (ED) is strongly associated with endothelial dysfunction in men with T2D.

2 This double-blind trial aimed to determine whether sildenafil administered daily could improve endothelial function in 24 men with T2D.

3 Participants were randomised to receive once-daily sildenafil (50 mg, *n*=12) or placebo (*n*=12) for 10 weeks.

4 Erectile function was determined by version 5 of the International Index of Erectile Function (IIEF-5), and endothelial function by brachial artery flow-mediated dilatation (FMD).

5 After 10 weeks, men in the sildenafil group had significantly improved scores on the IIEF-5 and improved FMD.

6 It was concluded that once-daily sildenafil significantly improves endothelial function in men with T2D.

DeYoung L, Chung E, Kovac JR et al (2011) Daily use of sildenafil improves endothelial function in type 2 diabetic men. *J Androl* [Epub ahead of print]

JOURNAL OF ATHEROSCLEROSIS AND THROMBOSIS

IIEF-5 score correlates with angiopathy in T2D

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓ |
| WOW! factor | ✓✓✓ |

1 The authors examined the association between the 5-item version of the International Index of Erectile Function (IIEF-5), markers of subclinical atherosclerosis and albuminuria in 197 men with T2D.

2 The degree of urinary albumin excretion, pulse wave velocity, ankle-brachial index or toe-brachial

index (TBI) and major cardiovascular risk factors were evaluated.

3 The mean IIEF-5 score was 10.0±6.9; IIEF-5 score inversely correlated with age, duration of diabetes, log and pulse wave velocity, and positively correlated with diastolic blood pressure, serum total cholesterol concentration and TBI.

4 IIEF-5 score was lower in those with proliferative diabetic retinopathy, macroalbuminuria, neuropathy or cardiovascular disease.

5 The authors found that IIEF-5 score was found to correlated with angiopathy in men with T2D.

Fukui M, Tanaka M, Okada H et al (2011) Five-item version of the International Index of Erectile Function correlated with albuminuria and subclinical atherosclerosis in men with type 2 diabetes. *J Atheroscler Thromb* [Epub ahead of print]

JOURNAL OF SEXUAL MEDICINE

Weight loss improves sexual, urinary and endothelial function in obese men with T2D

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| Readability | ✓✓✓✓ |
| Applicability to practice | ✓✓✓✓ |
| WOW! factor | ✓✓✓✓ |

1 Abdominal obesity and T2D are risk factors for ED and lower urinary tract symptoms (LUTS), both associated with endothelial dysfunction and chronic systemic inflammation.

2 As rapid diet-induced weight loss has previously been shown to improve ED and LUTS, the authors compared the effects of a low-calorie diet (LCD) and a low-fat, low-carbohydrate, high-protein (HP) diet on systemic inflammation and endothelial, erectile and urinary function in 31 abdominally obese men with T2D.

3 Participants were randomly assigned to either an LCD (*n*=19) or a HP diet (*n*=12) for 8 weeks; all were continued on or switched to an HP diet for a further 44 weeks.

4 Measures included weight, waist circumference, version 5 of the International Index of Erectile Function (IIEF-5) score, Sexual Desire Inventory (SDI) score, International Prostate Symptom Scale (IPSS) score, plasma fasting glucose and lipids, sex hormone-binding globulin (SHBG) and inflammatory markers, determined at baseline, 8 weeks and 52 weeks.

5 Both the LCD and HP diet significantly improved plasma glucose, low-density lipoprotein, SHBG, IIEF-5, SDI and IPSS scores and endothelial function after 8 weeks; the HP diet further improved IIEF-5, SDI and IPSS scores at 52 weeks.

6 Diet-induced weight loss rapidly improved sexual, urinary and endothelial function in obese men with T2D; a HP diet was found to sustain these benefits.

Khoo J, Piantadosi C, Duncan R et al (2011) Comparing effects of a low-energy diet and a high-protein low-fat diet on sexual and endothelial function, urinary tract symptoms and inflammation in obese diabetic men. *J Sex Med* **8**: 2868–75