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### PENILE DOPPLER FINDINGS OF ARTERIAL FLOW IN RELATION TO VASCULAR RISK FACTORS IN PATIENTS WITH ERECTILE DYSFUNCTION

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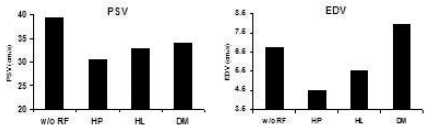
**Introduction & Objectives:** Erectile dysfunction (ED) is associated with traditional coronary artery disease risk factors, including diabetes, hypertension and hypercholesterolemia. Aim of the present study was to investigate the effect of each individual risk factor on penile vascular hemodynamics.

**Material & Methods:** A total of 123 consecutive men (mean age 59±11 years) with symptoms of ED were evaluated for penile vascular disease severity by penile Doppler ultrasound: 44 were treated hypertensives (HP), 26 men had hypercholesterolemia (HL) and 25 men had diabetes (DM). We also evaluated 28 men with no risk factor (w/o RF) matched for age, body-mass index and intensity of smoking with the three subgroups. The flow parameters of the cavernous arteries including, peak systolic velocity (PSV) and end-diastolic velocity (EDV) were obtained bilaterally and compared according to the presence of various risk factors. A mean PSV below 25 cm/s was considered to indicate arterial insufficiency.

**Results:** The greatest decrease in PSV occurred in hypertensive men, whereas the greatest increase in EDV was observed in diabetic patients (figure). Furthermore, men with no risk factors had similar values of EDV with those of diabetic men and higher compared to patients with hypertension and hypercholesterolemia. A multiple logistic regression analysis was performed with arterial insufficiency as dependent variable and hypertension, diabetes, hypercholesterolemia, age and antihypertensive agents as predictive variables. In this model, hypertension (O.R: 3.6, 95%CI: 0.9-12.2, P<0.01), hypercholesterolemia (O.R: 2.3, 95%CI: 0.7-8.8, P<0.05) and b-antagonists (OR: 1.8, 95%CI: 0.6-6.6, P<0.05) were strong and independent markers for presence of arterial insufficiency (mean PSV<25 cm/s).

**Conclusions:** Penile hemodynamic findings are related to vascular risk factors. Furthermore, hypertension followed by hypercholesterolemia and b-antagonists are strong predictors of severe arteriogenic ED. These findings provide further evidence for the close interrelationship between vascular risk factors and ED.

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### AORTIC STIFFNESS AND CAROTID INTIMA MEDIA THICKNESS ARE ASSOCIATED WITH PENILE DOPPLER FINDINGS IN PATIENTS WITH VASCULOGENIC ERECTILE DYSFUNCTION

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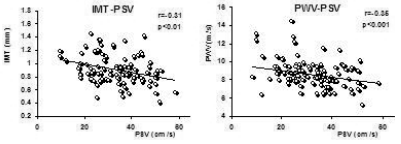
**Introduction & Objectives:** Erectile dysfunction (ED) may be a sign of generalized vascular disease. Intima-media thickness (IMT) and aortic stiffness are markers and prognosticators of cardiovascular risk. The association between ED and measures of IMT and aortic stiffness has not been investigated.

**Material & Methods:** A total of 95 men with ED (detected with a validated questionnaire) were studied: 36 men (62±9 yrs) with coronary artery disease (CAD) and 59 men (59±11 yrs) without CAD. Mean IMT of the common carotid arteries, carotid-femoral pulse wave velocity (PWV) as an index of aortic stiffness and pharmacologically stimulated peak systolic velocity (PSV) of cavernous arteries were used to assess vascular damage.

**Results:** Patients with CAD had decreased PSV (27.2 vs 33.8 cm/s, p=0.01), increased IMT (0.98 vs 0.82, p<0.001) and increased PWV (8.9 vs 8.2 m/s, p<0.01) compared with men without CAD. PSV was inversely correlated with age (r= -0.24, p<0.05), pulse pressure (r= -0.25, p<0.05), Framingham score (r= -0.28, p<0.05), IMT and PWV. (figure). After adjusting for potential confounding factors such as age, mean pressure, BMI, total cholesterol, HDL and intensity of smoking in multivariate linear regression models, penile PSV was independently associated with both IMT (r= -0.39, p=0.002) and PWV (r= -0.31, p=0.01) (adjusted $R^2$ of models 0.29 and 0.28 respectively).

**Conclusions:** Carotid IMT and aortic stiffness are associated with impaired erectile function as estimated by penile PSV. This finding provides further insights into the pathophysiology of ED and may have implications for the cardiovascular risk in these patients.




## 955

### METABOLIC SYNDROME EVALUATION THROUGH THE ERECTILE DYSFUNCTION WINDOW

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**Introduction & Objectives:** Metabolic syndrome (MetS) has been considered as a risk factor for general vascular disease as well as coronary artery disease. We investigated the clinical significancy of MetS as a window of erectile dysfunction (ED).

**Material & Methods:** 204 patients at least 40 years old with ED who visited the urology, endocrinology and cardiology clinics between May, 2004 and May, 2006 were analyzed. Of all object, 83 patients were categorized as having MetS (Group I) and 121 patients were not (Group II), based on the NCEP-ATP III (2001) guidelines. We compared the ED status with IIEF-5, blood chemistry as well as prevalence of MetS component between two groups.

**Results:** The average age of the group I and II was 58.4±10.2 years and 57.2±10.4 years, respectively. The severity of ED and prevalence of MetS components are more higher in group I than group II. Overall prevalence of MetS was 40.6%, which were consisted of 25%, 9.8% and 5.9% in 3, 4 and 5 components coincidence, respectively. IIEF-5 score was significantly decreased according to No. of MetS components (p<0.05) vice versa to c-reactive protein and lipid profile (p<0.05). Difference of IIEF-5 score was significant in cases with diabetes mellitus and body mass index higher than 25kg/m$^2$ (p<0.05 in each) among MetS components.

**Conclusions:** MetS is significantly associated with ED as a risk factor as well as positively correlated in the severity of disease. Assessment and management of MetS are mandatory for treatment of ED in aspect of reducing modifiable risk factors and causes.

## 956

### THE EFFECT OF CORRECTION OF SERUM CHOLESTEROL LEVELS ON ERECTILE FUNCTION

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**Introduction & Objectives:** Erectile dysfunction (ED) is one of the manifestations of generalized vascular disorder characterized by endothelial dysfunction. Recent epidemiologic studies demonstrated that increased serum cholesterol levels related to increased ED risk. In the present study we evaluated whether the correction of serum cholesterol levels with atorvastatin treatment could improve erectile function. Additionally we aimed to determine combination therapy with sildenafil citrate and atorvastatin would improve ED when compared to sildenafil citrate alone in hypercholesterolemic ED patients.

**Material & Methods:** Twenty-five patients with single risk factor (hypercholesterolemia, serum cholesterol >200 mg/dl) for ED included in the study. Penile color doppler ultrasonography was performed to all patients for ED etiology. Sildenafil citrate 100mg was recommended to take two times per week for a month. After one month wash-out period the patients received a single dose of atorvastatin 10mg/day for a month. Similarly after one month wash-out period, atorvastatin 10mg/day and sildenafil citrate 100mg two times per week were administered for a month as combination therapy. Erectile function was evaluated before and after the all treatment regimens by using the International Index of Erectile Function (IIEF). Cholesterol levels were measured after atorvastatin and combination therapy.

**Results:** The mean age of the patients was 53.7±10.5 years (range 34-72). Significant improvements were detected on lipid profile and erectile function after the treatments (tables 1-3). Table 1. IIEF scores of the patients before and after 100mg two times/week sildenafil citrate treatment.

| | Before sildenafil treatment | After sildenafil treatment | P value |
|---|---|---|---|
| IIEF score | 11.3 ± 2.7 | 17.8 ± 2.6 | 0.0001 |

Table 2. Lipid profiles and IIEF scores of the patients before and after single dose atorvastatin treatment (10mg/day).

| | Before atorvastatin treatment | After atorvastatin treatment | P value |
|---|---|---|---|
| Cholesterol | 242.9 ± 36.4 | 188.2 ± 39.2 | 0.0001 |
| Triglyceride | 217.2 ± 73.4 | 135.9 ± 42.1 | 0.0001 |
| VLDL cholesterol | 57.0 ± 15.1 | 30.4 ± 9.3 | 0.0001 |
| LDL cholesterol | 175.9 ± 17.4 | 109.0 ± 28.6 | 0.0001 |
| HDL cholesterol | 50.8 ± 7.1 | 44.3 ± 5.9 | 0.0001 |
| IIEF score | 11.3 ± 2.7 | 15.5 ± 2.9 | 0.0001 |

Table 3. Lipid profiles and IIEF scores of the patients before and after atorvastatin (10mg/day) and sildenafil citrate (100mg two times/week) treatment.

| | Before combination therapy | After combination therapy | P value |
|---|---|---|---|
| Cholesterol | 242.9 ± 36.4 | 181.9 ± 45.8 | 0.0001 |
| Triglyceride | 217.2 ± 73.4 | 130.6 ± 46.6 | 0.0001 |
| VLDL cholesterol | 57.0 ± 15.1 | 28.7 ± 11.1 | 0.0001 |
| LDL cholesterol | 175.9 ± 17.4 | 104.3 ± 32.3 | 0.0001 |
| HDL cholesterol | 50.8 ± 7.1 | 44.2 ± 8.1 | 0.0001 |
| IIEF score | 11.3 ± 2.7 | 20.0 ± 2.8 | 0.0001 |

**Conclusions:** Correcting serum cholesterol levels with atorvastatin treatment in ED patients who have only hypercholesterolemia risk factor could improve erectile function. Additionally atorvastatin have an additive effect on erectile function sildenafil citrate.