Vascular effects of aspirin in patients with type 2 diabetes and sex and age-matched healthy controls

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INTRODUCTION

- Patients with type 2 diabetes are known to have increased arterial stiffness and impaired endothelial function, both important predictors of cardiovascular disease (CVD).
- The vascular effects of aspirin are undetermined and needs clarification.
- Aspirin may induce nitric oxide release from the endothelium, and thereby improve endothelial function and arterial stiffness.

Aim

- Our aim was to study the effect of aspirin on endothelium-dependent vasodilation and arterial stiffness in patients with type 2 diabetes without known CVD and in healthy controls.

METHODS

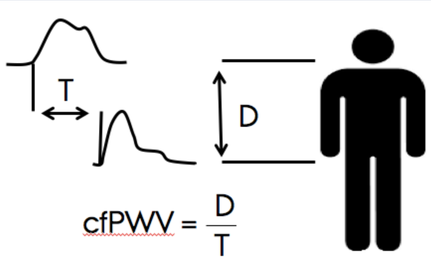
- So far, 19 patients with type 2 diabetes and 9 controls have been enrolled.
- Arterial stiffness was assessed by applanation tonometry (SphygmoCor®) and endothelium-dependent vasodilation by peripheral arterial tonometry (Endopat®).
- Measurements were performed at baseline and after treatment for 1 week with 75 mg of aspirin daily. Post-treatment measurements were made 1 hour after aspirin ingestion.

Inclusion criteria

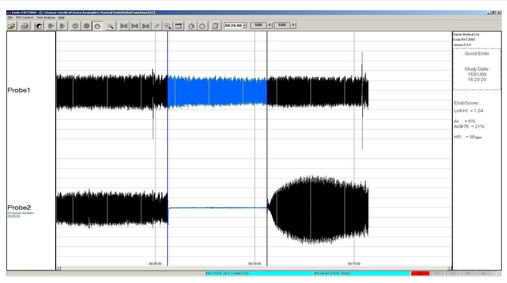
- Age > 18 years
- Patients: Diagnosis of type 2 diabetes
- Healthy persons: Type 2 diabetes excluded by oral glucose tolerance test

Exclusion criteria

- Treatment with aspirin and NSAIDs.
- Active cancer diagnosis, chronic or acute infection, dialysis or pregnancy
- Known CVD



Arterial stiffness
(carotid-femoral pulse wave velocity, cfPWV, m/s)



Endothelium-dependent vasodilation
(The log transformed Reactive hyperemia index (LnRHI))

RESULTS

Characteristics	Diabetes (n=19)	Controls (n=9)
Age (years)	60,3	62,2
Men	12 (63 %)	6 (56 %)
BMI (kg/m^2)	30,3	27,6
HbA1c (mmol/mol)	52,1	38,5
Systolic blood pressure (baseline)	135	137
Diastolic blood pressure (baseline)	80	81
cfPWV (m/s) (baseline)	9,2	8,2
Antihypertensiva	15 (79 %)	4 (44 %)

RESULTS

Endothelium-dependent Vasodilation

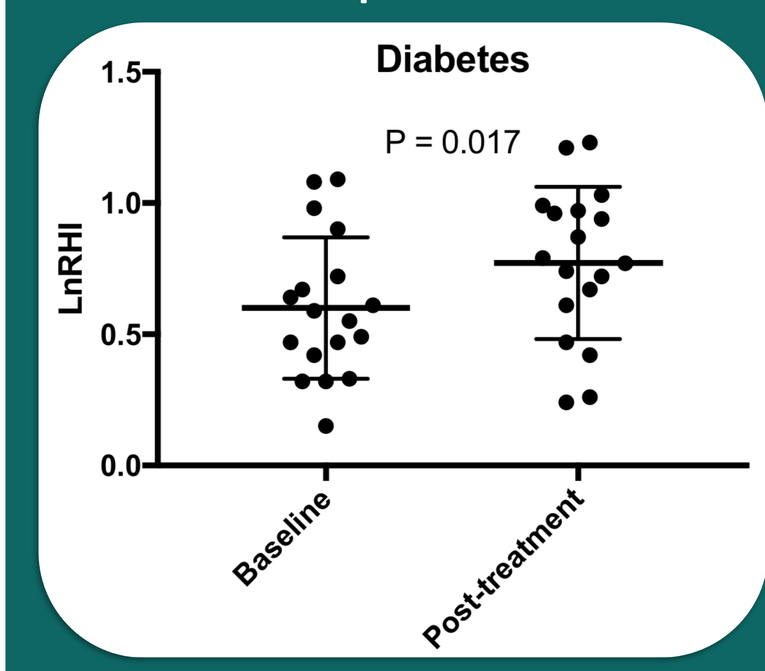


Figure 1: LnRHI before and after aspirin-treatment, n=18.

Mean of diff. = 0.17 (0.034-0,31),

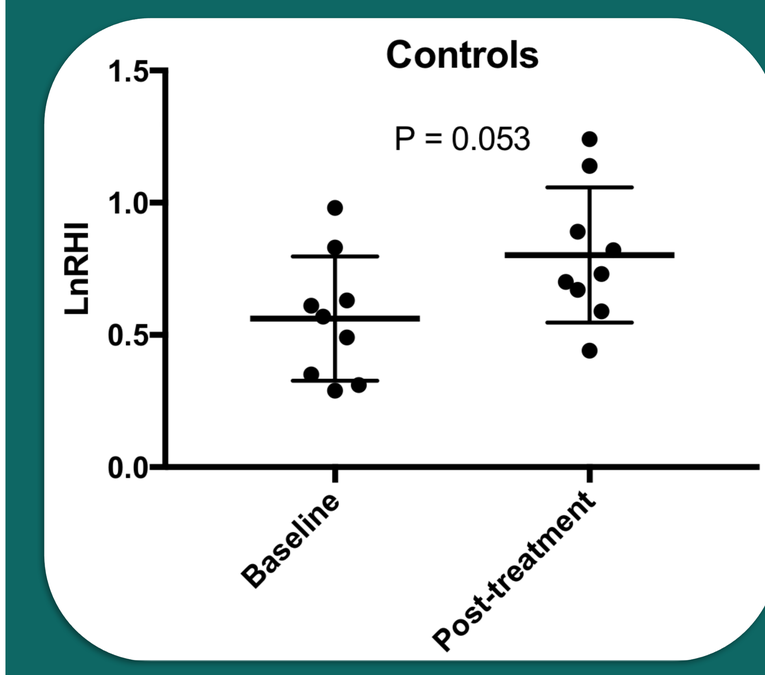


Figure 2: LnRHI before and after aspirin-treatment, n=9.

Mean of diff. = 0,24 (-0,004-0,48),

Arterial stiffness

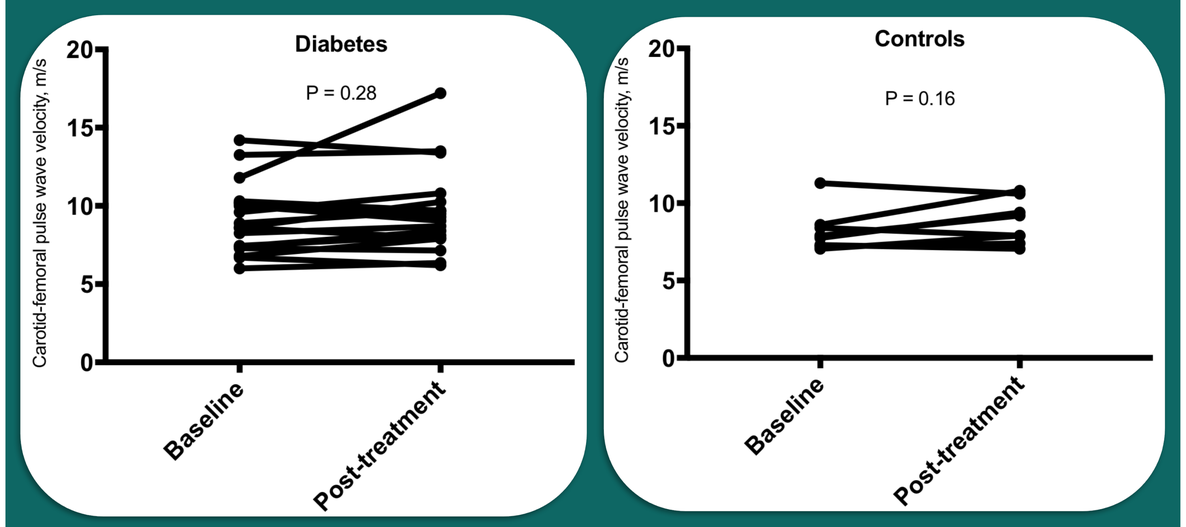


Figure 3: Carotid-femoral pulse wave velocity before and after aspirin-treatment. Diabetes (n=19), Control (n=8)

CONCLUSION

Low-dose aspirin increases LnRHI in patients with type 2 diabetes and in healthy controls. This may reflect an improvement in endothelial function. However, it does not seem to affect arterial stiffness.

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