Influence of NaCl intake on Microcirculation and immune System

No registrations found.

Ethical review	Positive opinion
Status	Recruiting
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON25435

Source
Nationaal Trial Register

Brief title
The Dynamics-2 study

Health condition

hypertension, diabetes type 1, psoriatic arthritis, salt, sodium, blood pressure

hypertensie, diabetes type 1, artritis psoriatica, zout, natrium, bloedddruk

Sponsors and support

Primary sponsor: University Medical Center Amsterdam, Location AMC , nephrology department
Source(s) of monetary or material Support: University Medical Center Amsterdam, Location AMC , nephrology department

Intervention

Outcome measures

Primary outcome

- Blood pressure as represented by mean arterial pressure

Secondary outcome

- Examine the effect of dietary sodium intake on capillary recruitment and capillary perfusion as determined by capillary density, proportion of perfused density, microculatory flow index and tortuosity, assessed by SDF-imaging and retinal vascular imaging.

- Examine whether different sodium intakes (high or low salt diet) will lead to changes in circulating T-lymphocyte subpopulations (e.g., Th17 cells) and changes in circulating neutrophils

- Examine whether there is a relation between microcirculatory and macrocirculatory changes induced by either a low or high salt intake. Macrocirculation will be measured with central and peripheral blood pressure, pulse wave velocity (PWV), augmentation index (AI) by use of the devices Nexfin, Sphygmocor, Omron and Mobil-o-Graph.

- Examine if adminstration of nitroglycerin, an endothelial-independent vasodilator, influences microcirculatory changes in the setting of either low or high salt intake, and to determine to what extent the endothelium is able to vasodilatate in different salt conditions.

- To assess whether different sodium intakes will lead to an altered phenotype of circulating monocytes and of skin macrophages, and whether other immune cells than macrophages are also upregulated in the skin after high sodium diet.

Study description

Study objective

1. In patients with DM1 and psoriatic arthritis, high salt intake will lead to an increase in body weight and blood pressure. In patients with psoriatic arthritis that use IL-17 inhibitors, the increase in blood pressure will not take place.

2. In patients with DM1 and psoriatic arthritis, high salt intake will lead to impaired microcirculatory structure and function, thereby increasing peripheral vessel resistance, leading to increased blood pressure.

3. Nitroglycerin, a endothelial-independent source of nitric oxide, will restore high sodium-induced changes in microcirculation.

4. High sodium intake will lead to an increase or increased activity of Th17 cells and neutrophils in patients with DM1 and psoriatic arthritis whereas we expect this increase to be absent in patients with psoriatic arthritis that use IL-17 inhibitors.

5. High sodium intake will lead to a pro-inflammatory phenotype of monocytes and macrophages in patients with DM1 and psoriatic arthritis.

Study design

14 days of high salt diet and 14 days of low salt diet.

Intervention

Dietary intervention

After randomization all patients will be asked to adhere to two consecutive (Na+) diets for 14 days each in random order. Thus, total diet period will last four weeks. The 14-day low sodium diet (LSD) consists of a maximum of 3 grams of salt a day, equal to 50 mmol Na+ daily. The 14-day high sodium diet (HSD) consists of a minimum of 12 grams of salt daily, equal to 200 mmol Na+ daily. To check if patients are compliant to the diet, urine Na+ in 24-hours collection will be measured at day 7 and day 11.

Contacts

Public

Scientific

Eligibility criteria

Inclusion criteria

All patients

- Male between 18 and 40 years of age

- Non-treated office blood pressure < 140/90 mmHg

- A body mass index < 30 kg/m2

- Capable of giving written informed consent and able to comply with the requirements and restrictions listed in the informed consent form

DM1 patients

- Known with Diabetes Mellitus type 1

- With or without microalbuminuria defined as:

o either albuminuria 20-200 mg/L in a morning urine sample

o or albuminuria 30-300 mg/24 hrs collected in a 24-hours urine collection

o or albumin-to-creatinin ratio 2,5-25 mg/mmol in a morning urine sample.

- Stable renal function (creatine clearance > 60 ml/min and < 6 ml/min per year decline) with or without on stable therapy with RAAS inhibiting agents

- HbA1c levels below 10.0% (86 mmol/mol) during the 6 months preceding the study

- Multiple injections of insulin a day

Psoriatic arthritis patients without IL-17 inhibitors

- Known with psoriatic arthritis, stable disease activity (mild or in remission) as clinically assessed by the treating rheumatologist

- Stable renal function (creatinin clearance > 60 ml/min and < 6 ml/min per year decline, no overt proteinuria)

- Without use of IL-17 inhibitors, IL-10 inhibitors, IL-23 inhibitors, and leflunomide

Psoriatic arthritis patients with IL-17 inhibitors

- Known with psoriatic arthritis, stable disease activity (mild or in remission) as clinically assessed by the treating rheumatologist

- Stable renal function (creatinin clearance > 60 ml/min and < 6 ml/min per year decline, no overt proteinuria)

- Use of IL-17 inhibitors at least 3 months before screening.

Exclusion criteria

- An office blood pressure >140/90 mmHg

- A body mass index > 30 kg/m2

- Use of systemic corticosteroids

- Use of NSAIDS >2 times a week

- A major illness in the past 3 months or any significant chronic medical illness that the Investigator would deem unfavourable for enrolment, including chronic inflammatory diseases, excluding the diseases of interest (DM1 and psoriatic arthritis)

- A history of any type of malignancy within the past 5 years with the exception of successfully treated basal cell cancer of the skin

- A history of any renal disease

- A history of any auto-immune disease other than DM1 and psoriatic arthritis

- A history of cardiovascular disease (in the past 6 months) defined as documented coronary artery disease including myocardial infarction, (un-)stable angina pectoris or acute coronary syndrome, precutenaous transluminal coronary angioplasty, coronary artery bypass grafting, cerebrovascular disease including ischemic and hemorrhagic stroke or a subarachnodial bleeding, or peripheral artery disease including aortic aneurysmata

- A history of eye-surgery, glaucoma or retinal eye disorder

- A history, within 3 years, of drug abuse (including benzodiazepines, opioids, amphetamine, cocaine, THC, methamphetamine)

- A history of alcoholism and/or drinking more than 3 units of alcohol per day. Alcoholism is defined as an average weekly intake of >21 units for males. One unit is equivalent to 8 g of alcohol: a half-pint (~240 mL) of beer, 1 glass (125 mL) of wine or 1 (25 mL) measure of spirits

- Smoking or use of tobacco products less then 30 days ago

- Any other issue that in opinion of the Investigator could be harmful to the subject or compromise interpretation of data.

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)

Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	01-09-2018
Enrollment:	54
Type:	Anticipated

Ethics review

Positive opinion

Date:	24-01-2019
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

ID: 50531
Bron: ToetsingOnline
Titel:

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL7479
NTR-old	NTR7721
CCMO	NL63332.018.18
OMON	NL-OMON50531

Study results