PhD Student **Jonathan Mathias Baier**, MD

Place of enrolment: Aarhus University, Faculty of Health Sciences

Principal supervisor: Clinical Professor Per Løgstrup Poulsen, Steno Diabetes Center Aarhus

Title of project: Effect of Colchicine on Cardiovascular Target Organ Damage in Patients with Type 2 Diabetes

ABSTRACT

Cardiovascular disease remains the leading cause of reduced life-expectancy in patients with type 2 diabetes. Chronic low-grade inflammation has been suggested to play a pivotal role in the atherosclerotic processes ultimately leading to diabetic micro- and macrovascular complications. Indeed, administration of the anti-inflammatory drug colchicine in patients with recent myocardial infarction has recently been demonstrated to reduce the risk of cardiovascular events. However, the mechanisms underlying the cardioprotective effects of the drug remain to be elucidated. Therefore, **there is an unmet need for mechanistic studies, evaluating the potential beneficial cardiovascular effects of colchicine in patients with type 2 diabetes.**

Increased arterial stiffness and endothelial dysfunction are important contributors to the unfavourable cardiovascular prognosis seen in patients with type 2 diabetes. The effect of colchicine on **arterial stiffness, endothelial function and vascular inflammation** remain to be elucidated. Here we outline a randomized placebo-controlled clinical trial aimed at elucidating the effect of colchicine on cardiovascular target organ damage in patients with type 2 diabetes and established CVD. Participants will be randomized to 6 months treatment with colchicine or placebo.

Specific aims are: To test the hypotheses that treatment with colchicine (1) improves arterial function assessed as arterial stiffness and endothelial function and (2) reduces vascular inflammation assessed with arterial 18fluorodeoxyglucose-positron emission tomography (FDGPET/CT). Moreover, we hypothesize that (3) dynamic FDG-PET/CT is superior to static FDGPET/CT to detect changes in vascular inflammation.

Insights to the mechanisms of cardiovascular risk reduction may help lay ground for future clinical use of colchicine in secondary prevention of CVD. In addition, evaluation of dynamic FDGPET/CT may lead to a broader use of the novel method.