Press release

Please fill in this form and return it to graduateschoolhealth@au.dk in Word format no later than three weeks prior to your defence.

Basic information

Name: Anne Gedebjerg Email: aged@clin.au.dk Phone: +45 20732471

Department of: Clinical Medicine

Main supervisor: Reimar Wernich Thomsen

Title of dissertation: Complications of type 2 diabetes - Prevalence and association with mannose-binding lectin

Date for defence: 25.06.2020 at (time of day): 13.00 Place: Grundet COVID-19 vil forsvaret blive afholdt som et web-forsvar via Zoom

Press release (Danish)

Type 2 diabetes komplikationer - forekomst og sammenhæng med mannose-bindende lektin

Øget morbiditet og mortalitet blandt diabetikere er relateret til udviklingen af sendiabetiske komplikationer, opdelt i mikrovaskulære komplikationer (dvs. i små blodkar), makrovaskulære komplikationer (dvs. i store blodkar) og ikke-vaskulære komplikationer som f.eks. infektioner. Vores viden om hvorfor det kun er nogle personer, der udvikler mikrovaskulære eller makrovaskulære komplikationer, mens andre ikke gør, er begrænset. På trods af mange års forskning, kender vi fortsat ikke den præcise rolle af mannose-bindende lektin (MBL, et multifunktionelt protein som spiller en rolle i det første immunforsvar) i udviklingen af hjertekarsygdom og tidlig død. Adskillige undersøgelser har fundet en sammenhæng mellem MBL mangel og øget risiko for infektioner, men ingen har undersøgt sammenhængen blandt personer med diabetes.

Í et nyt ph.d.-projekt fra Aarhus Universitet blandt ~7000 nyligt diagnosticerede type 2 diabetikere i Dansk Center for Strategisk Forskning i Type 2 Diabetes (DD2) kohorten baseret på data fra DD2 kohorten og fra danskeregistre fandt man:
1) En forekomst af diabetes komplikationer på 35% blandt personer med relativ nydiagnosticeret type 2 diabetes.
2) At mikrovaskulære komplikationer var relateret til højere alder, højere HbA1c, højere blodtryk, højere triglycerid niveauer og fravær af lipid-sænkende medicin. Makrovaskulære komplikationer var relateret til mandligt køn, højere alder, højere C-peptid niveauer, fedme, rygning, inflammation, lipid forstyrrelser, og brug af lipid-sænkende og blodtryks-sænkende medicin.
3) En U-formet sammenhæng mellem både serum MBL niveauer og MBL genotype og risikoen for udvikling af hjertekarsygdom, hvilket tyder på at serum MBL er direkte involveret i udviklingen af hjertekarsygdom i type 2 diabetes.
4) Lavt serum MBL er en svag risikofaktor for udvikling af infektioner hos personer med type 2 diabetes. Projektet er gennemført af Anne Gedebjerg, der forsvarer det d. 25/6-2020.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 25/6/2020 kl. 13.00 via Zoom. Link med adgang til forsvaret kan fremsendes ved henvendelse til Anne Gedebjerg via nedenstående kontaktoplysninger. Titlen på projektet er ”Complications of type 2 diabetes - Prevalence and association with mannose-binding lectin”. Yderligere oplysninger: Ph.d.-studerende Anne Gedebjerg, e-mail: aged@clin.au.dk, tlf. 20732471.

Bedømmelsesudvalg:
Anne-Mette Hvas, Professor, ph.d., cand.med., Formand for bedømmelsesudvalget og moderator af forsvaret. Blodprøver og Biokemi, Aarhus Universitethospital, Aarhus, Danmark. E-mail: annehvas@rm.dk

Lars Christian Mørch Stene, Senior forsker, ph.d., Department of Chronic Diseases and Ageing, Norwegian Insitute of Public Health, Oslo, Norway. E-mail: LarsChristianMorch.Stene@fhi.no

Morten Dahl, Professor, ph.d., dr.med., cand.med., Klinisk Biokemisk Afdeling, Sjællands Universitetshospital, Køge, Danmark. E-mail: modah@regionsjaelland.dk

Press release (English)

Complications of type 2 diabetes -prevalence and association with mannose-binding lectin

The excess mortality and morbidity in diabetes is related to development of diabetes complications, divided into microvascular complications, macrovascular complications, and non-vascular complications e.g. infections. Understanding of why only some individuals develop microvascular or macrovascular complications and others do not is limited. After two decades of research, the exact role of mannose-binding lectin (MBL, a multifunctional protein involved in innate immunity) in the development of cardiovascular disease and early death remains uncertain. Several studies have found an association between MBL deficiency and increased risk of infections, but none in individuals with diabetes.

In a new PhD project from Aarhus University among ~7000 patients with recently diagnosed type 2 diabetes enrolled in the Danish Centre for Strategic Research in Type 2 Diabetes (DD2) cohort based on DD2 data and linked register data showed that:
1) A prevalence of diabetes complications of 35% among individuals with recently diagnosed type 2 diabetes.
2) Microvascular complications were associated with older age, higher HbA1c, higher blood pressure, higher triglyceride levels, and absence of lipid-lowering drug use. Macrovascular complications were associated with male sex, older age, higher C-peptide levels, obesity, smoking, low-grade inflammation, dyslipedemia, and use of lipid-lowering and antihypertensive drugs.
3) Both serum MBL and MBL genotype showed a U-shaped association with cardiovascular event risk which suggests that serum MBL is directly involved in the development of cardiovascular disease in type 2 diabetes.
4) Low serum MBL was a weak risk factor for developing infections in patients with type 2 diabetes.
The project was carried out by Anne Gedebjerg, who is defending her dissertation on June 25th.

The defence is public and takes place on June 25th at 1 pm via Zoom. Zoom link can be sent upon request from Anne Gedebjerg. The title of the project is Complications of type 2 diabetes - prevalence and association with mannose-binding lectin. For more information, please contact PhD student Anne Gedebjerg, email: aged@clin.au.dk, Phone +45 20732471.

Assessment committee:
Anne-Mette Hvas, Professor, PhD, MD, Chairman of the Commitee and moderator of the defence. Department of Biochemistry, Aarhus Universitet Hospital, Aarhus, Danmark. E-mail: annehvas@rm.dk

Lars Christian Mørch Stene, Senior Researcher, PhD, Department of Chronic Diseases and Ageing, Norwegian Insitute of Public Health, Oslo, Norway. E-mail: LarsChristianMorch.Stene@fhi.no

Morten Dahl, Professor, PhD, DMSc, MD, Department of Clinical Biochemistry, Zealand University Hospital, Køge, Danmark. E-mail: modah@regionsjaelland.dk

Permission

By sending in this form:

- I hereby grant permission to publish the above Danish and English press releases.
- I confirm that I have been informed that any applicable inventions shall be treated confidentially and shall under no circumstances whatsoever be published, presented or mentioned prior to submission of a patent application, and that I have an obligation to inform my head of department and the university's Patents Committee if I believe I have made an

invention in connection with my work. I also confirm that I am not aware that publication violates any other possible holders of a copyright.