

Press release

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Basic information

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Department of: Clinical Medicine

Main supervisor: Reimar Wernich Thomsen

Title of dissertation: Diabetic polyneuropathy in type 2 diabetes - Prevalence, risk factors, mental health, and diagnostic coding

Date for defence: 20.12.2019 at (time of day): 14.00 Place: The Auditorium at the Department of Clinical Epidemiology, Aarhus University Hospital

Press release (Danish)

Type 2 Diabetes og Diabetisk Nervebetændelse

Diabetisk nervebetændelse i form af diabetisk polyneuropati (DPN) er en alvorlig diabetisk komplikation. Udover ubehagelige føleforstyrrelser kan DPN være forbundet med svære og invaliderende nervesmerter samt med betydende sygelighed inklusiv forekomst af diabetiske fodsår og amputationer. Vores viden om hvilke risikofaktorer, der er forbundet med DPN samt vores viden om, hvorfor det kun er nogle patienter, der udvikler smertefuld DPN, er begrænset. Af denne grund er den nuværende forebyggende indsats mod DPN rettet mod opnåelse af normalt blodsukkerniveau. Desværre har studier vist, at blodsukkerkontrol kun har en begrænset reducerende effekt på DPN-risiko blandt patienter med type 2 diabetes.

I et nyt ph.d.-projekt fra Aarhus Universitet blev der udført en spørgeskemaundersøgelse blandt 6,726 nyligt diagnosticerede type 2 diabetikere i Dansk Center for Strategisk Forskning i Type 2 Diabetes (DD2) kohorten. Spørgeskemaet omhandlede nervebetændelse, smerter og mental sundhed. Baseret på data fra spørgeskema undersøgelsen, fra DD2 kohorten og fra danske registre fandt man:

- 1) At 1 ud af 5 havde DPN og 1 ud af 10 havde smertefuld DPN. DPN-diagnosen var baseret på validerede spørgeskema-redskaber.
- 2) Både fedme, andre metaboliske risikofaktorer samt usund livsstil i form af tobaksrygning og lavt fysisk aktivitetsniveau associerede med en højere forekomst af DPN 2.8 år senere. Nervesmerter blandt patienter med DPN associerede tydeligst med usund livsstil incl. højt alkohol indtag.
- 3) DPN og det at have nervesmerter associerede uafhængigt af hinanden med dårligere mental sundhed i form af både lavere livskvalitet, dårligere søvnkvalitet og symptomer på depression and angst.

Slutteligt undersøgte man i ph.d.-projektet om danske registerdata potentielt kan anvendes til fremtidig forskning indenfor DPN risiko og prognose. Resultaterne viste, at diagnosekoder i Landspatientregisteret kunne anvendes til at identificere patienter med DPN. Data på receptindløsning af smertestillende medicin kunne derimod ikke bidrage til at adskille patienter med ikke-smertefuld og smertefuld DPN.

Samlet set viser ph.d.-projektet, at DPN og smertefuld DPN er både hyppigt forekommende og har betydning for mentale sundhedsparametre - selv blandt relativt nydiagnosticerede type 2 diabetes patienter. Heldigvis er DPN associeret med modificerbare risikofaktorer. Heraf er associationen mellem både DPN og nervesmerter med usund livsstil særlig interessant, da livsstil er modificerbart uden brug af farmaka.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 20/12 kl. 14.00 i Klinisk Epidemiologisk Afdelings auditorium, Aarhus Universitetshospital, Olof Palmes Allé 43-45, 8200 Aarhus N. Titlen på

projektet er "Diabetic polyneuropathy in type 2 diabetes - Prevalence, risk factors, mental health, and diagnostic validity". Yderligere oplysninger: Ph.d.-studerende Diana Hedevang Christensen, e-mail: dhcr@clin.au.dk, tlf. 8716 8248.

Bedømmelsesudvalg:

Annelli Sandbæk, Professor, ph.d., cand.med., Formand for bedømmelsesudvalget og moderator af forsvaret. Institut for Folkesundhed, Sektion for Almen Medicin, Aarhus University & Steno Diabetes center Aarhus, Aarhus Universitetshospital.

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Press release (English)

Type 2 Diabetes and Diabetic Polyneuropathy

Diabetic polyneuropathy (DPN) is a devastating diabetes complication. Besides sensory discomfort, DPN may be followed by invalidating pain and is associated with substantial morbidity including foot ulcers and amputations. Understanding of risk factors for DPN in early type 2 diabetes and knowledge on why only some people develops neuropathic pain is limited. Thus, current prevention of DPN is restricted to glycemic control, which unfortunately has limited effect in type 2 diabetes.

In a new PhD project from Aarhus University, a questionnaire survey on neuropathy, pain, and mental health was conducted among patients (N = 6,726) enrolled in the Danish Centre for Strategic Research in Type 2 Diabetes (DD2) cohort. Studies based on these questionnaire data in combination with DD2 data and linked register data showed that:

1) 1 in 5 patients with early type 2 diabetes had DPN and 1 in 10 had painful DPN. The DPN diagnosis was based on validated questionnaire tools.

2) Obesity, other metabolic factors, and unhealthy lifestyle factors (tobacco smoking and low physical activity) at diabetes diagnosis associated with higher prevalence of DPN 2.8 years later. Neuropathic pain associated most clearly with unhealthy lifestyle including alcohol overconsumption.

3) DPN and neuropathic pain associated independently of each other with lower quality of life, poor sleep, and symptoms of depression and anxiety.

Finally, as part of the ph.d.-project, the potential of using Danish register-data for future research on DPN risk and prognosis was investigated. The results showed that diagnosis codes in the Danish National Patient Register can be used to identify individuals with DPN. However, adding data on prescription redemption for pain medication did not allow to distinguish between painful and non-painful DPN.

In summary, this ph.d.-project provides evidence that DPN and painful DPN are frequent complications and are closely associated with lower quality of life, poorer sleep, and symptoms of depression and anxiety in patients with early type 2 diabetes. Moreover, DPN associates with modifiable risk factors. The association of DPN and neuropathic pain with unhealthy lifestyle are particularly encouraging since these factors are modifiable without the need for medications.

The defence is public and takes place on 20/12 at 14.00 in the Auditorium at the Department of Clinical Epidemiology, Aarhus University Hospital, Olof Palmes Allé 43-45, 8200 Aarhus N. The title of the project is Diabetic polyneuropathy in type 2 diabetes - Prevalence, risk factors, mental health, and diagnostic coding. For more information, please contact PhD student Diana Hedevang Christensen, email: dhcr@clin.au.dk, Phone +45 8716 8248.

Assessment committee:

Annelli Sandbæk, Professor, PhD, MD, Chairman of the Committee and moderator of the defence. chairman of the committee and moderator of the defence

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