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Midlife insulin resistance increases the risk for brain amyloid accumulation in carriers and non-carriers of APOEε4 genotype – A follow-up study of 15 years

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Aims: The aim of this study was to examine if midlife insulin resistance is an independent risk factor for brain amyloid accumulation after 15 years, and whether this risk is modulated by APOEε4 genotype.

Methods: In this observational study 60 non-demented elderly volunteers from the Finnish nationwide Health 2000 study (mean age at baseline 55.4 years, 55.5 % women) were examined with [11C]Pittsburgh compound B PET imaging in 2014–2016. The participants were recruited according to their Homeostatic Model Assessment of Insulin resistance (HOMA-IR) values in the year 2000, and their APOEε4 genotype. The exposure group (IR+, n=30) consisted of individuals with HOMA-IR > 2.17 at baseline (highest tertile of the Health 2000 study population), and the control group (IR-, n=30) of individuals with HOMA-IR < 1.25 at baseline (lowest tertile of HOMA-IR). 50% (n=15) of individuals in both groups were APOEε4 carriers.

Results: 33.3% of the IR- group, and 60.0% of the IR+ group had an amyloid positive PET scan at a mean age of 71 years (relative risk 1.8, 95 % CI 1.0–3.2, p=0.04). The increased risk was similar in carriers and non-carriers of APOEε4 genotype. Baseline insulin resistance predicted a higher PIB composite score at follow-up after multivariate adjustments for other cognitive and metabolic risk factors (β=0.31, 95% CI 0.07–0.55, p=0.01).

Conclusions: The results indicate that midlife insulin resistance is an independent risk factor for brain amyloid accumulation in non-demented elderly individuals, suggesting that midlife insulin resistance is a risk factor for Alzheimer´s disease.

Biography

Laura Ekblad has graduated from the Medical faculty of the University of Turku in 2007. She has worked at the geriatric and internal medicine departments at the Turku City Hospital, at the neurological department at the Turku University Hospital, and as a family doctor at the Turku Health Care Centre She has started her PhD at the Turku PET Centre in 2013 on the topic "Insulin resistance, cognition and brain amyloid accumulation". She has published two articles on insulin resistance and cognition, and is expecting to finnish her PhD in January 2018.

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