

International Conference on

Metabolic Syndromes

October 17-18, 2016 Rome, Italy

Associations between vitamin D status and measures of glycemia in participants with normoglycemia, impaired fasting glucose and type 2 diabetes during winter months

Ffion Curtis

University of Lincoln, UK

As a consequence of changing lifestyles, the prevalence of diabetes is on the increase, with the world prevalence estimated to increase from 6.4% in 2010 to 7.7% in 2030 among adults aged 20-79 years. The global prevalence of vitamin D deficiency is also increasing and inverse associations have frequently been reported between serum 25(OH)D concentration and measures of glycaemia in a variety of different populations. Furthermore, results from a number of cross sectional studies have shown that participants with impaired glucose tolerance or type 2 diabetes have significantly lower concentrations of 25 hydroxy vitamin D [OH]D when compared to healthy controls. Vitamin D status is influenced by a number of factors including both latitude (sunlight exposure) and lifestyle (influenced by culture and religion). It is therefore, important to establish region specific relationships between vitamin D status and glycaemic control prior to any recommendations in relation to vitamin D supplementation and diabetes. The aim of this study was to identify any significant relationships between 25(OH)D concentrations and measures of glycaemic control in 116 participants with varying levels of glucose control living in Mid-Wales at a latitude of 52°N during winter months. Hypothesis: there will be a correlation between concentrations of serum 25(OH)D and insulin sensitivity as measured by HOMA, and that participants with abnormal glucose control (FPG \geq 6.1 mmol/l) will have significantly lower 25(OH)D concentrations when compared to those with normal glucose control. Spearman's rank-order correlations revealed significant negative correlations between 25(OH)D (nmol/l) and several measures of glycaemic control (fasting plasma glucose (mmol/l) ($r=-.224$, $n=101$, $p=0.02$), fasting plasma insulin (pmol/l) ($r=-.242$, $n=98$, $p=0.01$), insulin sensitivity (%) ($r=.256$, $n=93$, $p=0.013$), and HOMA score ($r=-.233$, $n=93$, $p=0.02$). No significant relationship was observed between 25(OH)D and HbA1c (mmol/mol) or between 25(OH)D (nmol/l) and β -cell function (%). When the data for the two clinical groups were combined to form two groups (fasting plasma glucose \leq 6 mmol/l vs. \geq 6.1 mmol/l), there was a significant difference between the groups, Mann-Whitney test ($U=884.000$, $p=0.03$). Low 25(OH)D concentrations (42.6 ± 23.8 nmol/l) observed in the study population, alongside the inverse association (and large proportion of participants with high FPG), demonstrates how adults living in Wales could be at an increased risk during the winter months. Whilst vitamin D only accounted for a small proportion of the variance (~4-8%) in the measures of glycaemia, the development of T2D is multifactorial and any easily modifiable risk factors are noteworthy. These results support the emerging evidence suggesting that vitamin D supplementation is a promising candidate for a cost effective intervention for glycaemic control.

Biography

Ffion Curtis has completed her PhD from Lincoln Institute for Health where her research focuses on lifestyle and type-2 diabetes. Her other research interest includes public engagement activities such as diabetes information events, systematic reviews and patient education. She is currently developing a collaborative project looking at the effect of exercise on diabetic retinopathy.

fcurtis@lincoln.ac.uk

Notes: