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Applying First-Order Perturbation Theory of Quantum Mechanics to Predict and Build a Postprandial Plasma Glucose Waveform (Gh-Method: Math-Physical Medicine)

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The author presents his techniques of applying first-order perturbation theory of quantum mechanics to predict and build a postprandial plasma glucose (PPG) waveform based on the "perturbation factor" of carbs/sugar intake amount. This is a part of his GH-Method: math-physical medicine research methodology. Initially, he applied segmentation pattern analysis to analyze his 1,825 meals with 23,725 PPG Sensor data collected during a period of 5/5/2018 - 12/13/2019. His two segments are based on both "first factor" of meal's carbs/sugar intake amounts and "second factor" of post-meal walking steps. His low-carb meals occupy about 2/3 of the total meals (1,209 meals with 8.5 grams per meal) and high-carb meals occupy about 1/3 of the total meals (615 meals with 27.1 grams per meal). His post-meal walking steps are comparable (4,238 vs. 4,282 steps). A standard waveform (curves) contains 13 data points for each PPG curve and one input data for each 15-minute time segment. Glucose variance is an extremely complex biochemical and biophysical phenomenon. After a diabetes patient collects and establishes an initial waveform with an accurate input dataset, we can then predict the glucose behavior and then draw a new approximate PPG waveform according to one prominent perturbation factor, such as carbs/sugar intake or post-meal exercise. Therefore, a patient will have the ability to predict his PPG behavior before consuming his meal or initiates his post-meal exercise.

Keywords

Central blood vessel stiffness, Abstinence glucose, postprandial glucose, kind two polygenic disorders

Background

Cardiovascular disease constitutes a serious challenge for the health of community-dwelling population, it's essential to delay the event of hardening of the arteries. However, semipermanent prospective studies analyzing the result of kind two polygenic disorder (T2D) on central blood vessel stiffness area unit lacking, and roles of abstinence and postprandial glucose (FBG and PBG) during this result area unit arguable. Purpose of the present analysis was to analyze the result of T2D on central blood vessel stiffness throughout the five years of follow-up, and explore whether or not each FBG and PBG were determinants of this result in Chinese community-dwelling population.

Methods

The current analysis concerned 898 people with carotid-femoral pulse wave speed (cfPWV) ≤12 m/s. Central blood vessel stiffness was assessed by commonplace cfPWV at baseline and follow-up.

Results

Incidence of cfPWV >12 m/s was twenty one.3% (102 participants). Participants while not T2D had a rise of cfPWV with a median of zero.6 m/s, whereas participants with T2D had a rise of cfPWV with a median of one.2 m/s (p = zero.007). T2D had A freelance result on exaggerated cfPWV in variable supplying regression models (p < zero.05 for all). Elevated levels of each FBG and PBG determined the freelance result on exaggerated cfPWV in variable rectilinear regression models (p < zero.05 for all).

Conclusions

Type two polygenic disorders had a freelance result on the event of central blood vessel stiffness in Chinese community-dwelling population. Each FBG and PBG ought to be to blame for the event of central blood vessel stiffness and treated because the targets of glycemic management.

Type two polygenic disorders (T2D) place the people at high risk for developing the disorder (CVD). Since T2D and CVD area unit quite common in China, the underlying mechanisms between them are recognized as a big public health issue and not been totally elucidated publicly health field. Central blood vessel stiffness could also be a big pathway linking T2D to CVD risk. Central blood vessel stiffness has been thought of as a helpful marker of hardening of the arteries and a big determinant of CVD risk. Many medical specialty studies have reported that central blood vessel stiffness predicts the mortality and morbidity of CVD. Among the noninvasive ways offered to assess the central blood vessel stiffness, carotid-femoral pulse wave speed (cfPWV) has been accepted because the gold commonplace because of its dependableness and validity.

Cardiovascular disease constitutes a serious challenge for the health of Chinese community-dwelling population, it's essential to delay the event of hardening of the arteries during this population. In previous studies, central blood vessel stiffness will increase when aldohexose bodily function, and exaggerated {blood aldohexose|blood sugar|glucose} when glucose bodily function is a freelance risk issue for vas risk. However, there's an absence of semipermanent prospective studies analyzing the result of T2D on cfPWV, particularly in Chinese community-dwelling population. Moreover, roles of abstinence glucose (FBG) and postprandial glucose (PBG) during this result area unit arguable, with some studies action PBG instead of FBG and alternative studies regarding FBG however not PBG. Recent study has urged that exaggerated vas risk because of postprandial symptom can be related to blood vessel pathology and stiffening, and it's vital to look at the result of FBG and PBG on central blood vessel stiffness. Purpose of the present analysis was to analyze the result of T2D on cfPWV throughout the five years of follow-up, and explore whether or not each FBG and PBG were determinants of this result in Chinese community-dwelling population.

Biography

Gerald C. Hsu received an honorable PhD in mathematics and majored in engineering at MIT. He attended different universities over 17 years and studied seven academic disciplines.

He has spent ~30,000 hours in endocrinology research with an emphasis in diabetes. First, he studied six metabolic diseases and food nutrition from 2010 to 2013, then conducted his own diabetes research from 2014 to 2019. His approach is “quantitative and precision medicine” based on mathematics, physics, optical and electronics physics, engineering modeling, wave theory, energy theory, signal processing, computer science, big data analytics, statistics, machine learning, and artificial intelligence. His main focus is on preventive medicine using prediction tools. He believes that the better the prediction, the more control you have. Thus far, he has written, published, and presented more than 200 medical papers.