

Session Title: Sarcopenia: Revisiting Criteria Definition and Association With Protein Intake and Insulin Resistance

Session Type: Symposium

Date: July 24, 2017

Time: 6:00 PM - 7:30 PM

GENERAL ABSTRACT BODY:

Sarcopenia is an important component of frailty and its diagnosis could lead to specific intervention to improve functional capacity in older adults. There are several clinical oriented criteria definitions of sarcopenia available in literature for case finding based on low gait speed and handgrip strength. These criteria may be too sensitive, mandating unnecessary body composition measures. Total protein intake is important for muscle mass maintenance but we will present evidence from the Quebec Longitudinal Study on Nutrition and Successful Aging (NuAge) Study that distribution across meals may also prevent losses. Although muscle is considered the principal site of glucose uptake and its loss to contribute to the development of insulin resistance, these assumptions have not always been verified. The method used to present muscle mass index correcting absolute mass by either height squared or weight could account for the discrepancies in establishing the relationship with insulin resistance. Data from the NuAge Study will illustrate this concept and arguments will be brought forth to propose the most appropriate method. Furthermore, several hormonal and inflammatory factors associated with insulin resistance are also responsible for loss of muscle mass, therefore creating a false relationship between insulin resistance and low muscle mass. Using data from the NuAge Study, we will show how the application of logistic regression analysis of these factors along with muscle mass index will disentangle this spurious association.

FIRST PRESENTATION

CONTROL ID: 2582651

SPEAKER: Roberto A. Lourenço

TITLE: Sarcopenia and Frailty: What's the Issues Related to Gait Speed and Handgrip Strength Cutoff Values?

ABSTRACT BODY:

There is still no consensus on the strategies to diagnose frailty and sarcopenia. Gait speed (GS) and handgrip strength (HS) are included in most of the diagnostic criteria of sarcopenia – e.g., European Working Group (EWGSOP) – and frailty – e.g., Fried's scale. However, their cutoff points to select individuals with poor performance are not adequately determined. For instance,

there is evidence that the cutoff points suggested by EWGSOP to screen elderly to muscle mass measurement select a very high proportion of individuals. Recently, three studies from Brazil, Mexico, and Spain reported that 83.4% of their cohorts were selected as suspected of sarcopenia using EWGSOP criteria. Cutoff-values tailored for these cohorts reduced the proportion of abnormal results to 34.2%. Also, in frailty studies, using inadequate GS and HS cutoff-values may overestimate in almost 10% their prevalence. In conclusion, to be epidemiologically/clinically useful, the cutoff-values of GS and HS must be adapted to specific populations.

SECOND PRESENTATION

CONTROL ID: 2583427.

SPEAKER: Stéphanie Chevalier

TITLE: Mealtime Distribution of Protein Intake and Lean Mass and Muscle Strength in Nuage Participants

ABSTRACT BODY:

In addition to total intake, protein distribution across meals may affect sarcopenia. An even distribution further increased muscle protein synthesis compared to a skewed intake, in young adults. We studied whether this short-term result translates into long-term preservation of lean mass (LM) and muscle strength in healthy older adults of the NuAge study (827 men, 914 women). Outcomes were measured at baseline and 2-3-year follow-up. Protein intake was calculated from 6x24-h food recalls. Results: In men and women, LM declined by 2.5% and 2.0%, muscle strength by 20.0% and 18.2%, and mobility score by 6.5% and 7.8 % ($P<0.05$). Rates of decline were not independently affected by the quantity and distribution of protein intake. Yet, participants with more evenly distributed protein intake had higher LM and muscle strength throughout follow-up, even after controlling for confounders ($P<0.05$). This could translate in delaying reaching a sarcopenic threshold, affecting functionality.

THIRD PRESENTATION

CONTROL ID: 2584323

SPEAKER: José. Morais

TITLE: Different Indices of Muscle Mass May Lead to Different Associations With the HOMA-IR Score

ABSTRACT BODY:

Muscle is considered the principal site of glucose uptake and its loss thought to contribute to the development of insulin resistance. The method used to present muscle mass index could account for the discrepancies in establishing the relationship with insulin resistance. We wished to determine the association of the HOMA-IR with two indices of muscle mass: height-muscle mass index (HMMI; kg muscle/height in m²), and weight muscle mass index (WMMI; kg muscle/body weight X 100) in 440 non-diabetic, men and women of the Quebec Longitudinal Study NuAge. HMMI was positively correlated with HOMA-IR (r=0.340, p<0.001) and WMMI negatively (r=-0.211, p<0.001). Correcting for fat mass made the association to disappear for the WMMI. Since correcting for fat mass eliminates this association for the WMMI, one can infer that this index gives a spurious inverse relationship, likely by creating a false relative low MMI for persons with higher adiposity.

FOURTH PRESENTATION

CONTROL ID: 2582514

SPEAKER: Joane Matta

TITLE: Predictors of Insulin Resistance in Community-Dwelling Older Adults of the NuAge Study

ABSTRACT BODY:

We explored the complex interrelationships of body composition, physical activity, protein intakes and serum biomarkers of aging with the HOMA-IR to tease out independent predictors. We first determined insulin resistant subjects over a 3-year period by trajectory analyses of the HOMA-IR in a sample of non-diabetic, participants of the Quebec Longitudinal Study on Nutrition and Successful Aging. Muscle mass index (MMI; kg/height in m²) and % body fat were derived from dual X-ray absorptiometry and bioimpedance analysis. Physical activity was assessed by the PASE questionnaire. Protein intakes were calculated from three non-consecutive 24h-food recalls. Serum biomarker profile included adiponectin, leptin, CRP, TNF- α , IL-6, IL-10, lipid profile, IGF-1 and IGFBP-3. Using path analysis without biomarkers, positive associations were observed for HOMA-IR score with MMI (β =0.42) and % body fat (β =0.094). There was a significant negative association for plant protein intake with MMI, whereas it did not reach significance with HOMA-IR. Logistic regression analysis without biomarkers provided only 3 significant predictors of insulin resistance: MMI [OR (95% CI): 1.72 (1.26-2.3)]; %body fat [1.18 (1.12-1.25)]; male sex [0.145 (0.04-0.45)]. When the biomarker profile was included, muscle mass was no longer retained, whereas adiponectin [0.58 (0.35-0.95)], TNF- α [1.12 (1.00-1.23)] and leptin [2.92 (1.29-6.64)] were independent predictors of insulin resistance. Conclusions: Our longitudinal analyses showed that a higher muscle mass and fat mass and being a man contribute to a higher odd of insulin resistance with aging over time, but this relationship is likely mediated through higher levels of TNF- α and leptin and lower adiponectin.