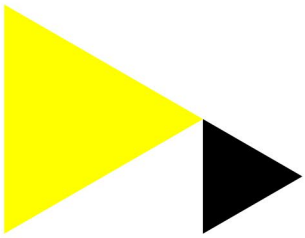
Evaluating routine dietetic interventions in geriatric rehabilitation: implications to address malnutrition, sarcopenia and underweight



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ORAL PRESENTATIONS

O2. SENESCENCE-ASSOCIATED SECRETORY PHENOTYPE FACTORS ARE ASSOCIATED WITH SARCOPENIA IN THE CARE75+ COHORT

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Background: Cellular senescence is both a biomarker of ageing and a causal mechanism within the ageing process. The senescence-associated secretory phenotype (SASP) is secreted by senescent cells and can be measured in serum. Schafer demonstrated that circulating SASP factors are associated with both advanced chronological age and biological age and Fielding demonstrated an association of SASP with physical function. We hypothesised there is also an association between SASP and physical frailty and sarcopenia.

Methods: SASP was determined using multiplex technology on 448 serum samples from the Care75+ cohort with associated clinical phenotyping. Data were analysed using Spearman's correlation coefficients and Spearman's partial correlations, and independent samples median test.

Results: We confirmed that SASP factors correlated with chronological age (GDF-15, TNFR1, CCL4, FAS, CCL3, TNFα, IL-6) and frailty index when controlling for age (GDF-15, TNFR1, FAS). We also demonstrated a correlation when controlling for age between SASP and: frailty phenotype (GDF-15, OPN, TNFR1), muscle mass (GDF-15, IL-6, TNFR1, FAS), walk time (GDF-15, CXCL1, TNFα) and sex adjusted grip strength (GDF-15, OPN, IFNγ). There was a statistically significant increase in GDF-15 (no sarcopenia: 1115.1, confirmed sarcopenia: 1212.9, severe sarcopenia: 2149.8; p<0.001) and TNFR1 (no sarcopenia: 1324.8, confirmed sarcopenia: 1499.5, severe sarcopenia: 1740.0; p=0.14) through the severity categories of sarcopenia using EWGSOP2 criteria.

Conclusions: We have demonstrated a relationship between sarcopenia and its components with circulating SASP factors and confirmed a relationship between SASP and chronological and biological age, and physical function. Our data supports the theory that senescent cells and SASP contribute to both sarcopenia and the resulting functional limitations. It suggests that interventions targeting senescence could improve outcomes in older adults with sarcopenia. Interestingly, the effect of metformin as a geroprotector drug is thought to be partially mediated through the manipulation of GDF-15 expression which in our data is repeatedly associated with sarcopenia, physical function and frailty.

The published abstracts are those accepted to the ISTRC 2023 conference that have not been previously published, either in abstract form or as a full scientific paper. Abstract numbers are taken from the abstract list presented at the conference and are therefore not consecutive.

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O9. EVALUATING ROUTINE DIETETIC INTERVENTIONS IN GERIATRIC REHABILITATION: IMPLICATIONS TO ADDRESS MALNUTRITION, SARCOPENIA AND UNDERWEIGHT

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Background: Although diagnosing and treating malnutrition, sarcopenia and underweight are recommended to be embedded and sustained within nutritional care, it is unknown if that is facilitated in geriatric rehabilitation. This study determined the proportion of geriatric rehabilitation inpatients with malnutrition, sarcopenia or underweight receiving dietetic interventions as part of routine clinical care and if these patients have greater improvements in body weight and composition compared to patients not receiving dietetic interventions.

Methods: Geriatric rehabilitation inpatients from the observational REStORing health of acutely unwell adulTs (RESORT) cohort were included (n=971, median age 83.2 [77.7-88.8] years, 58.5% (n=568) females). Malnutrition, sarcopenia and underweight were defined by the Global Leadership Initiative of Malnutrition, European Working Group on Sarcopenia in Older People 2 and age-specific body mass index cut-offs. Data on dietetic interventions initiated by dietitians as part of clinical care was extracted from the centralised hospital database. Changes in body weight (kg), skeletal muscle mass (kg, %), and fat mass (kg, %) from admission to discharge were determined using linear mixed models.

Results: Dietetic interventions were received by 306 (62.0%), 138 (71.5%) and 153 (76.9%) of patients with malnutrition (n=493), sarcopenia (n=193) and underweight (n=199). Duration and frequency of dietetic interventions were higher in patients with malnutrition, sarcopenia or underweight compared to patients without those conditions. There were no differences in body weight/composition changes in patients with malnutrition, sarcopenia or underweight receiving dietetic interventions compared to those not receiving interventions.

Conclusions: One-third of geriatric rehabilitation inpatients with malnutrition, sarcopenia or underweight are not receiving dietetic interventions and therefore the referral and diagnostic process require improvements. Patients with malnutrition, sarcopenia or underweight receiving dietetic interventions had no greater improvements in body weight/composition compared to those who did not receive interventions. Tailoring dietetic interventions for malnutrition, sarcopenia and underweight diagnosis may improve patient outcomes.

O11. CHRONIC ORAL ADMINISTRATION OF THE mTOR INHIBITOR RAPAMYCIN TO OLDER PEOPLE IS SAFE AND DOES NOT LIMIT RESISTANCE EXERCISE-INDUCED MUSCLE STRENGTH GAINS

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Background: Altered muscle protein turnover, regulated by mechanistic target of rapamycin (mTOR) signalling, contributes to sarcopenia. The mTOR pathway becomes hyper-active with ageing leading to impaired responsiveness to nutrition, exercise and dysregulated autophagy. Drugs targeting this pathway may have therapeutic potential, with the mTOR inhibitor rapamycin enhancing lifespan in pre-clinical models and attenuating healthspan declines. In humans, the muscle and immunobiological consequences of rapamycin administration are unknown. Therefore, we assessed the effects of 8-weeks rapamycin treatment in older people on safety and the interaction with exercise-induced muscle growth.

Methods: Thirteen healthy males were randomised to take a sub-clinical dose of Rapamune (Sirolimus 1mg daily; n=7, 62±6y) or a matched placebo tablet orally (n=6, 66±6y) for 8 weeks. Blood samples were obtained weekly to determine blood sirolimus concentrations via liquid chromatography-mass spectrometry and for blood biochemistry. Following a 2 week tablet adjustment period, unilateral resistance exercise training (RET) was performed at 75% 1-repetition maximum (1-RM) 3-times per week for 6-weeks; 1-RM was determined before and following the training period. Two-way ANOVAs were performed with significance of $P<0.05$.

Results: Blood sirolimus concentrations were non-detectable