

# ESPEN 2015 Abstract Submission

**Topic:** *Critical Care*

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## THE RELATIONSHIP BETWEEN BIA- AND CT-DERIVED MUSCLE MASS IN CRITICALLY ILL PATIENTS

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**Presentation Method:** Oral or Poster presentation

**Please indicate your professional occupation:** Physician

**The presenting author fulfills the above conditions and wants to apply for a travel award:** Yes

**I confirm that the presenting author is under the age of 35:** Yes

**Rationale:** Muscle wasting is a devastating complication of critical illness. Recently, we found that muscle area derived from CT-scans<sup>1</sup> and muscle mass from bio-impedance analysis (BIA)<sup>2</sup> are related to mortality. Both methods have their limitations. Aim of this study was to determine the relationship between CT- and BIA-derived muscle mass.

**Methods:** This prospective observational study included adult intensive care patients. BIA was performed  $\leq 4$  days after an abdominal CT-scan was made for clinical reasons. CT-scans were analysed using Slice-O-matic software and BIA was performed using an AKERN BIA device (phase sensitive 50 kHz). We calculated Pearson's  $\rho$  correlation coefficient. Muscle area ( $\text{cm}^2$ ) was converted to muscle mass ( $\text{kg}$ )<sup>3</sup> to calculate bias and limits of agreement (LoA). Finally, sensitivity and specificity for BIA to detect low muscle mass were calculated using recently published CT cut-off values<sup>1</sup>.

**Results:** 84 patients were included (58 male), mean age was  $62 \pm 15$  years. CT-scans were made  $1.15 \pm 3.7$  days after ICU admission and BIA was performed  $0.86 \pm 0.9$  days later. Mean BIA-derived muscle mass was  $35.4 \pm 10.1$  kg and CT-derived muscle mass was  $28.3 \pm 6.2$  kg. BIA-derived muscle mass and CT-derived muscle area were highly correlated ( $\rho = 0.84$ ,  $p < 0.001$ ). The mean difference (bias) between BIA and CT was  $7.05 \pm 6.0$  kg, LoA 18.8 and -4.7 kg. Bias increased at higher muscle mass. BIA and CT identified the same patients as having low muscle mass with a sensitivity of 83% and a specificity of 84%.

**Conclusion:** This study shows that BIA- and CT-derived muscle mass are highly correlated and identify the same at-risk patients. We found a proportional bias with higher muscle mass using BIA compared to CT. Further research is needed to analyse this discrepancy. However, our findings indicate BIA is a promising method to assess muscle mass without practical issues concerning CT-scanning.

**References:** 1 PubMed ID 24410863. 2 ESPEN 2014. 3 PubMed ID 15310748.

**Disclosure of Interest:** None Declared

**Keywords:** Critically ill patients, Muscle mass