

Association between computed tomography assessment of skeletal muscle index and muscle attenuation and chemotherapy intolerance in patients with head and neck cancer: preliminary results

M.J. Sealy^{1,2}, H. Jager-Wittenaar^{1,2}, T. Dechaphunkul^{3,6}, W.P. Krijnen^{1,4}, C.P. van der Schans^{1,5}, J.L.N. Roodenburg², V.E. Baracos³

1 Research Group Healthy Ageing, Allied Healthcare and Nursing, Hanze University of Applied Sciences, Groningen, The Netherlands
2 Department of Maxillofacial Surgery, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands
3 Palliative Care Medicine, Department of Oncology, University of Alberta, Edmonton, AB, Canada
4 Johan Bernoulli Institute for Mathematics and Computer Science, University of Groningen, Groningen, The Netherlands
5 Department of Rehabilitation Medicine, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands
6 Department of Otorhinolaryngology Head and Neck Surgery, Faculty of Medicine, Prince of Songkla University, Songkla, Thailand

Aim

We aimed to assess the association between pre-treatment computed tomography (CT) body composition measurements and chemotherapy intolerance in patients with head and neck cancer (HNC).

Conclusion

Lower pre-treatment values of skeletal muscle index (SMI) at T4 and L3 level are associated with higher occurrence of chemotherapy intolerance in HNC patients, suggesting that taking into account SMI may help preventing chemotherapy intolerance.

Rationale

It is unclear whether muscle mass depletion is associated with chemotherapy intolerance in patients with head and neck cancer (HNC).

Results

- Inclusion: n=218 (age: 57.8±10.3 years, male: 78%). T4 image: n=97, L3 image: n=121.
- Univariate analysis: no significant association between chemotherapy intolerance and SMI (p=0.109, OR=0.98 [0.96-1.00]) or skeletal muscle radiation attenuation (MA: p=0.547, OR=0.99 [0.96-1.02]).
- Multivariate analysis: significant association between SMI and chemotherapy intolerance (p=0.002, OR 0.95 [0.91-0.98]).
- SCAD model included type of chemotherapy, body mass index (BMI), interaction between smoking and drinking, and comorbidity.

Methods

- Design: retrospective analysis of data from oncological database of Northern Alberta, Canada.
- Patients: adult HNC patients with (surgery and) platin-based chemo-radiotherapy. Provided availability of pre-treatment CT scan at T4 or L3 level.
- Measurements: body composition evaluated by assessment of SMI (cm²/m²) and skeletal muscle radiation attenuation (Hounsfield Units). SMI and MA were corrected for deviation from the mean to enable merged T4 and L3 measurements
- Chemotherapy intolerance: considered present if unplanned reduction or termination in chemotherapy regime ascribed to toxicity.
- Analysis: univariate and multivariate logistic regression analyses with SCAD best model selection. Multivariate analysis corrected for age, sex, smoking, drinking, body weight, BMI, comorbidity, location and stage of cancer, type of treatment and chemotherapy, and time between CT scan and start of chemo-radiotherapy. A p-value <0.05 was considered significant. Odds Ratios (OR) [95% CI] were presented.

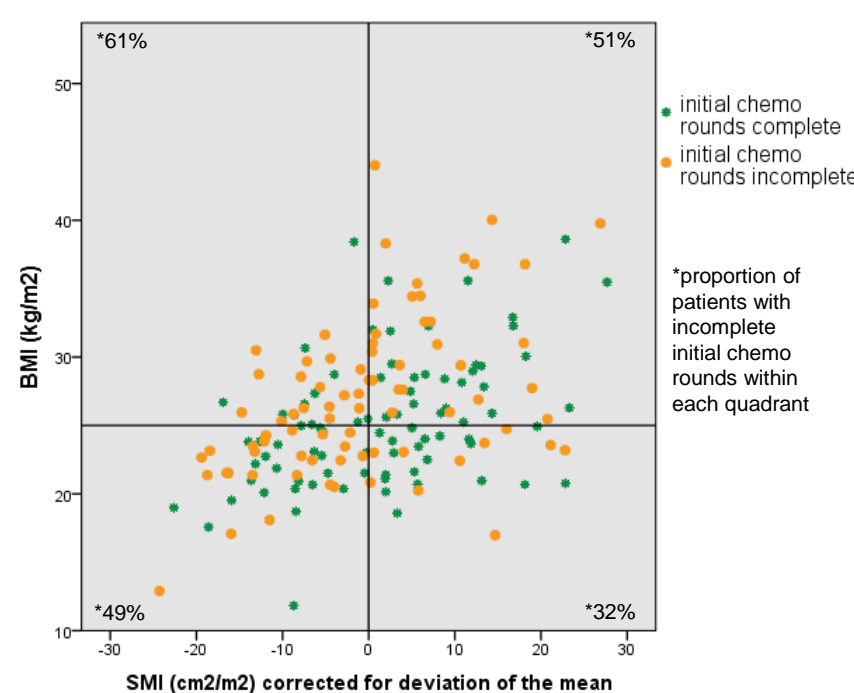


Figure 1a. Merged SMI (L3 and T4), BMI and chemotherapy intolerance in 170 HNC patients treated with cisplatin

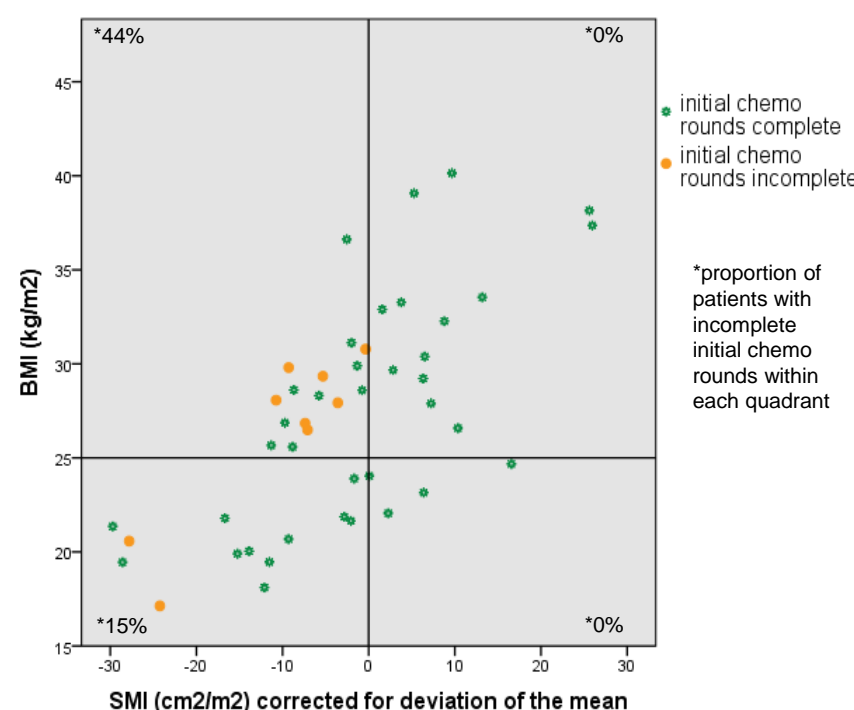


Figure 1b. Merged SMI (L3 and T4), BMI and chemotherapy intolerance in 48 HNC patients treated with carboplatin

Contact Details

Martine Sealy: m.j.sealy@pl.hanze.nl

share your talent.
move the world.

Healthy ageing

