

powered by



GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION

Contribution ID: 60

Type: 1 - Scientific Poster

Loss of Skeletal Muscle Mass During Systemic Cancer Treatment: A Systematic Review and Meta-analysis

Wednesday 22 July 2026 12:20 (20 minutes)

Background: Loss of skeletal muscle mass (SMM) is common during systemic cancer treatment, but the extent and variability across cancer and treatment types remain uncertain. This systematic review and meta-analysis aimed to describe changes in SMM during systemic cancer treatment.

Materials and methods: We systematically searched PubMed, Embase, and Web of Science until April 11, 2025, for longitudinal studies reporting SMM during chemotherapy and/or immunotherapy (\pm targeted therapy) in patients with cancer across diagnoses (PROSPERO CRD42022308388). The standardized mean change (SMC) relative to the baseline standard deviation was pooled using random-effects models with Hartung-Knapp adjustment. Risk of bias was assessed with the NIH Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies.

Results: Seventy-eight studies ($n=10,502$; 52% male; median age 64 years, range: 34–77) were included. Meta-analysis across cancers showed a decline in SMM (59 studies; $n=6,373$; SMC = -0.24 , 95%CI: -0.29 to -0.20), corresponding to an average loss of 5% over a mean follow-up of 107 (SD: 63) days. Declines were most pronounced during chemotherapy (+ targeted therapy), whereas changes were not statistically significant with immunotherapy or combined chemo- and immunotherapy. Decline in SMM was greatest among patients with pancreatic (SMC = -0.41 , 95%CI: -0.63 to -0.19), urological (SMC = -0.30 , 95%CI: -0.42 to -0.18) and lung cancer (SMC = -0.30 , 95%CI: -0.54 to -0.06). In 26 (84%) of reporting studies, the prevalence of low SMM increased during treatment, with the mean percentage rising from 43% to 51%.

Conclusion: Across cancer types, SMM declines rapidly during systemic cancer treatment, most prominently in patients receiving chemotherapy. The average SMM decrease observed over 3.5 months is equivalent to roughly five years of age-related SMM loss, underscoring the potential importance of routine body composition monitoring to support treatment planning and targeted strategies to preserve SMM.

Keywords

Muscle mass; Wasting; Cancer; Systemic treatment

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

Author: SVENDSEN, Lukas (Department of Clinical Oncology and Palliative Care, Zealand University Hospital, Denmark)

Co-authors: Dr SKJØDT RAFN, Bolette (Danish Cancer Society National Cancer Survivorship and Late Effects Research Center (CASTLE), Department of Oncology, Rigshospitalet; Institute of Clinical Medicine, Faculty of Health, University of Copenhagen, Denmark); Dr SIMONSEN, Casper (Centre for Physical Activity Research, Copenhagen University Hospital, Rigshospitalet); Prof. SUETTA, Charlotte (Institute of Clinical Medicine, Faculty of Health, University of Copenhagen, Denmark; Geriatric and Palliative Department, Copenhagen University Hospital, Bispebjerg and Frederiksberg Copenhagen, Denmark); Prof. JOHANSEN, Christoffer (Danish Cancer Society National Cancer Survivorship and Late Effects Research Center (CASTLE), Department of Oncology, Rigshospitalet; Institute of Clinical Medicine, Faculty of Health, University of Copenhagen, Denmark); Dr AMMITZBØLL, Gunn (Department of Clinical Oncology & Palliative Care, Zealand University Hospital, Denmark; Danish Research Center for Equality in Cancer (COMPAS), Denmark; Cancer Survivorship, Danish Cancer Institute, Copenhagen, Denmark); Prof. PAPPOT, Helle (Institute of Clinical Medicine, Faculty of Health, University of Copenhagen, Denmark; Department of Oncology, 5073, Rigshospitalet, University Hospital of Copenhagen, Copenhagen, Denmark); Dr HERMANN TANG, Lars (The research and implementation unit PROgrez, Department of Physiotherapy and Occupational Therapy, Naestved-Slagelse-Ringsted Hospitals & The Department of Regional Health Research, University of Southern Denmark); Ms JENSEN, Sandra (Danish Cancer Society National Cancer Survivorship and Late Effects Research Center (CASTLE), Department of Oncology, Rigshospitalet); Ms HANSEN, Stine (Danish Cancer Society National Cancer Survivorship and Late Effects Research Center (CASTLE), Department of Oncology, Rigshospitalet); Prof. DALTON, Susanne (Department of Clinical Oncology & Palliative Care, Zealand University Hospital, Denmark; Danish Research Center for Equality in Cancer (COMPAS), Denmark; Cancer Survivorship, Danish Cancer Institute, Copenhagen, Denmark; Institute of Clinical Medicine, Faculty of Health, University of Copenhagen, Denmark); Mr SØRENSEN, Victor (Mental Health Center Glostrup, Centre for Applied Research in Mental Health Care (CARMEN), University of Copenhagen, Copenhagen, Denmark)

Presenter: SVENDSEN, Lukas (Department of Clinical Oncology and Palliative Care, Zealand University Hospital, Denmark)

Session Classification: Poster Session