

Counteracting Sarcopenia in Patients with Malignant Lymphoma undergoing Chemotherapy Treatment

BRIEF PROJECT DESCRIPTION

Sarcopenia is an independent prognostic factor predicting poor outcome in a wide range of cancer diagnoses. The adverse effects of chemotherapy are a great challenge and can negatively affect medical treatment and patient outcomes e.g., leading to treatment delays or dose reduction, difficulty for patients to return to daily living and work. At present, there is a lack of knowledge regarding the prevalence of sarcopenia in lymphoma patients and the potential effect of exercise to preserve muscle function and prevent muscle dysfunction in patients newly diagnosed with malignant lymphoma referred to 1st line treatment. Further, our understanding of mechanisms regulating muscle plasticity during chemotherapy are sparse.

OBJECTIVE

The overall aim of the present study is to increase our knowledge about how chemotherapy affects skeletal muscle to counteract physical deconditioning during chemotherapy. More specifically, we will address the challenge of physical deconditioning in patients with malignant lymphoma by investigating:

- The prevalence and the prognostic role of muscle dysfunction in patients with malignant lymphoma undergoing 1st line treatment.
- Evaluate the effectiveness of a progressive resistance training program in patients diagnosed with diffuse large B-cell lymphoma and Hodgkin Lymphoma undergoing anthracycline-containing combination chemotherapy regimen.
- Provide insight the approach of the support persons role as an 'exercise ambassador'. From the perspective of the patient and exercise ambassador.

STUDIES

Study 1: A prospective observational cohort study is conducted to investigate the prognostic role of muscle dysfunction in lymphoma patients undergoing 1st line anthracycline-containing combination chemotherapy regimen and compared with a recently established cohort of age-matched healthy individuals for level of muscle mass, strength and function. A total of 72 patients newly diagnosed with malignant lymphoma is enrolled in this study. All patients will undergo two standardized assessments of body composition, muscle strength functional capacity and patient reported outcomes of quality of life and physical activity by questionnaires. Patients will undergo two assessments, at baseline prior to treatment and a six-month follow-up after treatment start.

Study 2: The STAY STRONG TRAIL. The effectiveness of a progressive resistance training will be investigated in a randomized controlled trial including 42 patients with diffuse large B-cell lymphoma and Hodgkin Lymphoma undergoing anthracycline-containing combination chemotherapy regimen. Participants will be randomized 1:1 to either an intervention or control group. The intervention is a 16-week supervised and group based progressive resistance training program, performed three times a week. As part of the intervention, the patient will be encouraged to designate an "exercise ambassador". The key principle of the "exercise ambassador" is to support (motivational and practical) the patient to adhere to the four months exercise intervention. The control group

will receive usual care in accordance to current clinical practice at Rigshospitalet. Patients will undergo four assessments, at baseline (pre-intervention), 4 months (end of intervention). Follow-up assessment will be conducted at 8- and 12-months after intervention start. Body composition measured by DXA scans; lean body mass (primary outcome). Secondary outcome includes functional performance, muscle strength, quality of Life, symptoms burden, psychological symptoms, physical activity. Explorative outcomes: Blood samples and muscle biopsies (optional procedure) are analysed for parameters related to exercise response.

Study 3: Lastly, a qualitative interview study with 10 participants (patients and their ambassadors) will be conducted. Patients will be selected via purposive sampling to ensure a variety in patients' diagnoses, age-groups and gender. The interview will focus on their experiences of the intervention (challenges, barriers, facilitators to physical exercise training during chemotherapy, the use/importance of practical and mental support).

IMPLICATIONS AND PERSPECTIVES

This project holds important implications for future management of patients with malignant lymphoma with the prospects of identifying high-risk populations in addition The STAY STRONG TRAIL has the potential to become the future model of care and rehabilitation with the prospect of reducing the complex symptom burden, supporting treatment tolerance, maintaining physical function and, by extension, improve the patient's chances of survival and quality of life.

ECONOMY

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ORGANIZATION

The study was initiated by the Department of Physiotherapy at Rigshospitalet (MSc, Ph.D.-student Charlotte N. Grønset & MSc, Ph.D. Jan Christensen), who in collaboration with Center for Cancer and Organ Diseases and Models of Cancer Care Research Program, Rigshospitalet (Clinical Professor, MScN, PhD Mary Jarden), Department of Hematology, Rigshospitalet (Professor, MD, PhD Martin Hutchings) and Geriatric Department Bispebjerg/Frederiksberg & Herlev/Gentofte Hospitals, (Professor, MD, PhD, DmSci Charlotte Suetta) will conduct the study. The project group is a multidisciplinary team with proven experience in Physiotherapy and Physical Exercise, Patient and Public Involvement, Hematology and Sarcopenia.

TIMEPLAN

PhD and project period: November 2021 – December 2024

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