powered by

dkfz.
GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION

Contribution ID: **255** Type: **1 - Scientific Poster**

Tissue blood flow at rest and during exercise in lymphoma and breast cancer patients

Thursday 23 July 2026 12:40 (20 minutes)

INTRODUCTION:
Blood flow (BF) during exercise in non-cancerous tissues in patients may among other things play a role in the development of metastasis, but remains poorly understood. Therefore, the main aim of the present investigation was to determine tissue BF responses in multiple organs during exercise.
METHODS:
Tissue blood flow responses during exercise were analyzed in patients with Hodgkin or non-Hodkin lymphoma (n=8) and breast cancer (n=20) with [15O]-H2O positron emission tomography (PET). PET/CT scans were performed at rest, and during supine cycling for 10 minutes at the individuals chosen intensity by Borg (RPE 11-16). BF was analyzed from vertebra, spinal cord, subcutaneous fat, lungs, sternum, bone and non-exercising muscle. Furthermore, spleen, liver and kidney BF were measured if they were located in the imaging area.
RESULTS: In patients with lymphoma, BF responses in all the analyzed tissues were largely unchanged during cycling. However, in patients with breast cancer the BF in the following tissues was decreased during exercise (mean ± standard deviation at rest and during exercise, respectively): 0.083 ± 0.060 ml/(ml/min) and 0.053 ± 0.059 ml/(ml/min), $p < 0.01$: spinal cord, spleen 0.783 ± 0.368 ml/(ml/min) and 0.466 ± 0.197 ml/(ml/min), $p = 0.01$ and liver 0.41 ± 0.15 ml/(ml/min) and 0.30 ± 0.15 ml/(ml/min), $p < 0.01$. In contrast, BF in the following tissues was increased during exercise: intercostal muscle 0.037 ± 0.024 ml/(ml/min) and 0.055 ± 0.026 ml/(ml/min), $p = 0.010$ and costal bone 0.047 ml/(ml/min) ± 0.026 ml/(ml/min) and 0.061 ml/(ml/min) ± 0.026 ml/(ml/min), $p = 0.046$. Other measured tissue BF remained unchanged during exercise in breast cancer patients.
CONCLUSION:
According to our results, tissue blood flow is reduced in spinal cord, spleen and liver, but increased in breathing-associated thorax tissues, intercostal muscle and costal bone, during exercise in breast cancer patients.

Keywords

Exercise oncology, blood flow, breast cancer, lymphoma

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

Authors: Ms LAITINEN, Venny (Turku PET Centre); Dr KOIVULA, Tiia (Turku PET Centre); Dr LEMPIÄINEN,

Salla (Turku PET Centre); Dr KIRJAVAINEN, Anna (Turku PET Centre); Prof. SUNDBERG, Carl-Johan (Karolinska Institutet); Dr RUNDQVIST, Helene (Karolinska Institutet); Prof. MINN, Heikki (Turku University Hospital); Prof. KALLIOKOSKI, Kari (Turku PET Centre); Dr HEINONEN, Ilkka (University of Turku)

Presenter: Ms LAITINEN, Venny (Turku PET Centre)

Session Classification: Poster Session