Short description of the SUPE_R study

SUrveillance with **PE**T/CT and liquid biopsies of stage I-III lung cancer patients after completion of definitive therapy; a **R**andomized controlled trial

In Denmark 300,000 people lives with a cancer diagnosis. Despite scarcity in evidence, resources spend by the patients and society on cancer surveillance is substantial and increasing. Using lung cancer, one of the most frequent and deadliest cancer, as a real-life model, this national multi-disciplinary initiative will test, develop and implement a scenario where automated highly-specialised analysis of blood samples are used for calculating individual risk profiles which not only provides the information necessary to tailor the need for imaging and hospital appointments, but also diagnose and guide the treatment of a relapse: a cost-effective surveillance system improving survival.

OBJECTIVES

Lung cancer patients treated with curative intent have a high risk of relapse and a dismal prognosis. The purpose of this study is to improve early detection of relapse, thereby enabling more patients to receive definitive treatment of their relapse, ultimately leading to improved survival.

1. Evaluate if the addition of imaging with ^{18}F-Fluordeoxyglucose positron emission tomography with CT (PET/CT) to the current follow-up program will enable **faster and more accurate detection of relapse.**
    a. Primary endpoint: frequency of treatable relapse.
    b. Secondary endpoints: survival and quality of life during follow up and at the time of relapse, number and type of invasive procedures, adverse events and type of treatment after verification of relapse, as well as use of healthcare resources.
2. Evaluate if monitoring patients with Liquid Biopsy enable us to track cancer evolution and detect early signs of relapse. Specific aims:
    a. Follow the dynamics of alterations and acquisition of novel mutations relating to resistance and the correlation to patients' outcome and relate the changes to the results of imaging.
    b. Evaluate potential new stratification of patient cohort with focus on high-risk and low-risk groups. Hereby, designing an **optimal surveillance strategy** for individual patients.

DESIGN AND SETTING

The study is an on-going national, multicentre, randomized controlled trial comparing two strategies for surveillance of patients with stage I-III non-small cell lung cancer treated with curative intent. The study aims to include 375 patients in each experimental arm.

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