

Early detection of lung cancer by blood samples

– A prospective national observational study (DETECT-DK)

The aim of this study is to investigate the diagnostic use of methylated tumor DNA and protein biomarkers measured in a blood sample in patients referred from general practice with suspicion of lung cancer.

Lung cancer is the leading cause of cancer deaths in Denmark. This diagnosis has seen increasing focus in recent years, and survival rates have improved. However, early detection could further improve survival and reduce morbidity and treatment cost.

DNA modification in the form of methylation occurs in all cells including tumor cells. This process is involved in determining which genes are active. Aberrant methylation occurs in almost all tumor cells, and methylation of specific regions of the DNA may serve as a prognostic marker for recurrence or progression of lung cancer. This marker can be measured in a blood sample and has been suggested for early diagnosis of lung cancer, but this has not yet been validated. A new, international study found, that measuring certain protein biomarkers in the blood can contribute to early detection of lung cancer.

In this national multi-center study, a total of 250 patients from the whole country will be enrolled. Blood will be sampled at the first visit to the hospital. If the diagnosis is uncertain and the patient is to be followed up in the outpatient clinic, blood will be sampled at each follow-up visit throughout one year. The blood samples will be analyzed for methylated DNA and protein biomarkers. The results will be correlated to the patient's diagnosis in order to evaluate the diagnostic use of the biomarkers.

If the blood sample biomarkers can be used as a diagnostic tool in lung cancer, it would mean shorter time from referral to diagnosis and fewer invasive procedures for the patient.