

## CANCER

**Diabetes therapy and lung cancer**

Therapy for diabetes mellitus, especially with insulin, could increase the risk of lung cancer among postmenopausal women, according to the results of a new study. Association between diabetes mellitus therapy and different types of cancers, such as liver, pancreas and endometrial cancers, has been previously reported. However, evidence for a link between diabetes mellitus therapy and lung cancer has been conflicting.

Luo *et al.* investigated the potential association of diabetes mellitus and therapy for diabetes mellitus with lung cancer in a large prospective study. The study included postmenopausal women from the Women's Health Initiative (WHI) trial cohort, in whom detailed information on diabetes mellitus and other risk factors had been collected at baseline. A total of 145,765 women aged 50–79 years were followed up over a mean of 11 years. Women who had a history of cancer at baseline, who did not provide follow-up information or had missing information, or who were diagnosed with diabetes mellitus before the age of 20 and/or those who had been hospitalized owing to a diabetic coma were excluded from the study. Information on diabetes mellitus status and the type of treatment was collected via self-reported questionnaires at baseline and at semi-annual and annual follow up visits. Women were also asked to bring their medications to be recorded in a medical inventory.

The study cohort was grouped into four categories according to diabetes mellitus status and treatment type: no diabetes mellitus, diabetes mellitus not treated with medication, diabetes mellitus treated with metformin or other oral medication (without insulin), and diabetes mellitus treated with insulin (alone or in combination with oral medication). Lung cancer incidence was assessed via questionnaires and was confirmed by reviewing the medical records and pathology reports.

Among women who self-reported treatment for diabetes mellitus, lung cancer risk was increased by 27% compared with those with diabetes mellitus not treated with medication. When the type of treatment was taken into account (both according to the medical inventory and self-reported use), lung cancer risk was significantly higher in women with diabetes mellitus treated with insulin, compared to those without diabetes mellitus.

Luo *et al.* also performed stratification analyses to adjust for confounding factors. The association between tobacco smoking and lung cancer is well known, and smoking has also been shown to be associated with an increased risk of diabetes mellitus. When stratified for smoking status, the findings in never smokers were similar to those in the entire cohort: women who never smoked and had diabetes mellitus treated with medication had a higher risk of lung cancer than never smokers with diabetes mellitus not treated with medication. In women who were former or current smokers, the lung cancer risk was only increased in the group with diabetes mellitus treated with insulin. Moreover, lung cancers in women who were former or current smokers and had diabetes mellitus treated with insulin were more likely to be non-small-cell lung cancer, localized and well differentiated, compared with lung cancers in the group who were treated with metformin.

Further stratification analyses showed that the association between lung cancer and therapy for diabetes mellitus among postmenopausal women was not affected by BMI, waist-to-hip ratio or the use of hormone therapy.

This study demonstrates that postmenopausal women with diabetes mellitus who receive medication, especially insulin, could have an increased risk of lung cancer. Although larger prospective studies are needed to confirm these results, the findings call for more research into new and better therapies for diabetes mellitus. Understanding the molecular mechanism through which insulin treatment increases lung cancer risk will be helpful in future drug development. Moreover, whether therapy for diabetes mellitus in men is also associated with increased lung cancer risk should be investigated.

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