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Lifestyle and Neuro-endocrine Tumor (NET) Development Within the European Prospective Investigation into Cancer and Nutrition (EPIC) Cohort

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BACKGROUND

There has been increasing interest in the relationship between lifestyle and NET. Results from previously published small observational studies indicate that smoking, alcohol and diabetes may contribute to NET development, but the reported data is conflicting. Additionally, little data is available on diet and physical activity. The aim of the current study is to investigate the association between lifestyle factors and NET development in a large prospective cohort.

METHODS

A cohort of in total 450,111 participants from 9 participating countries was established from the European Prospective Investigation into Cancer and Nutrition (EPIC) study. Information on lifestyle and diet was obtained at baseline through questionnaires. For this study, lifestyle factors including smoking, alcohol consumption, Mediterranean diet score, body mass index and Cambridge Physical Activity Index were assessed.

RESULTS

193 lung and gastroenteropancreatic (GEP) NET cases were diagnosed. Smoking was significantly associated with all NET development in multivariable analysis in all NETs (HR 1.46, 95% CI 1.02 – 2.11) and GEP NETs (HR 1.58, 95% CI 1.04 – 2.41). Alcohol consumption was not associated with NET development. Hazard ratios for medium (7-10 points) and high adherence (11-18 points) to the Mediterranean diet were 0.71 (95% CI 0.51 – 0.98) and 0.39 (95% CI 0.25 – 0.62) for all NETs, 0.47 (95% CI 0.25 – 0.90) and 0.36 (95% CI 0.15 – 0.86) in lung NETs, and 0.80 (95% CI 0.55 – 1.16) and 0.40 (95% CI 0.23 – 0.69) in GEP NETs. Obesity and physical activity were statistically not-significantly associated with NET development.

CONCLUSIONS

This is the largest prospective cohort study looking at the relation between lifestyle and NET development. Smoking is strongly associated with NET development in both the entire NET population and GEP NETs in the EPIC cohort. Body mass index increases the risk of NET development. Increased adherence to the Mediterranean diet has a protective association with NETs. The observations from our study provide support for further research into lifestyle and NETs with regard to natural course, disease stage and treatment response, eventually contributing to preventive measures.

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