

infections (UTI) among T2DM (pts) with matched non-T2DM pts.

Methods: We identified T2DM pts from electronic medical records (EMRs) of Kaiser Permanente Northwest during a 7-year window (2006-2012). The cohort study included 39,301 people with T2DM and 39,301 non-T2DM pts matched on age, sex, index year, and availability of a serum creatinine measurement in the index year (to account for health and propensity to use services). The T2DM group included pts with prevalent T2DM and newly diagnosed (incident) pts. Those with a diabetes recognition date prior to 2006 were assigned an index date of 1 January 2006. For cases identified on or after that date, the actual diagnosis date was the index date. Non-T2DM pts were assigned the same index date as their matched T2DM pts. History of urosepsis, UTI, and GI were identified from all available EMR data (look-back 1 January 2000 through the index date). We compared the outcomes of interest in total and separately for prevalent and incident T2DM.

Results: Incident T2DM pts (41% of total, $n = 16,234$) had a mean age of 58.3; 48% women. Mean age of prevalent T2DM pts (59%, $n = 23,067$) was 61.6; 48% women; mean diabetes duration at index date was 5.8 years. Overall, T2DM pts were more likely to have a history of urosepsis (29% vs. 26%, $p < .001$), UTI (31% vs. 28%, $p < .001$) or GI (41% vs. 37%, $p < .001$). T2DM incident pts compared with non-T2DM pts were more likely to have a history of urosepsis (28% vs. 26%, $p < .001$), UTI (30% vs. 28%, $p < .001$) and GI (40% vs. 39%, $p = .039$). However, these differences were substantially larger when comparing prevalent T2DM with non-T2DM pts (urosepsis, 30% vs. 25%; UTI, 32% vs. 27%; GI, 42% vs. 36%; $p < .001$ for all).

Conclusions: Compared with nondiabetic patients, history of urosepsis, UTI and GI was already more common among T2DM pts at diabetes diagnosis. The larger differences seen among prevalent T2DM patients vs. non-T2DM suggest that diabetes increases the risk of genitourinary infections.

113. Gastrointestinal Cancer Incidence in Type 2 Diabetes Mellitus; Results from a Large Retrospective Population-Based Cohort Study in the UK

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Background: Type 2 diabetes mellitus (T2DM) has been suggested as a risk factor for liver, pancreatic, and colorectal cancer. T2DM patients show higher incidences of these cancers compared to the non-diabetic (non-DM) population. Current evidence, however, is inconsistent with respect to the incidences of other gastrointestinal (GI) malignancies.

Objectives: To determine incidence rates (IRs) of all GI cancers in patients with and without T2DM.

Methods: A retrospective cohort study was conducted using the UK Clinical Practice Research Datalink (CPRD) during 1988-2012. A T2DM cohort of antidiabetic drug users was matched to a non-DM reference cohort, by age, sex, and practice. Crude incidence rates (IRs) per 100,000 person-years (10^5 py) and 95% confidence intervals (CI) were calculated, stratified by age, sex, and calendar period. IRs were compared using the normal theory test.

Results: 333,438 T2DM subjects and 333,438 non-DM subjects were analyzed, with a total duration of follow-up of >3.6 million py and 10,977 observed GI cancer cases. Overall, IRs of any GI cancer (IR 330 vs. 276 per 10⁵ py), liver cancer (IR 26 vs. 8.9 per 10⁵ py), pancreatic cancer (IR 65 vs. 31 per 10⁵ py), and colon cancer (IR 119 vs. 109 per 10⁵ py) were significantly higher in the T2DM cohort compared to the non-DM cohort, whereas the IR of esophageal cancer was significantly lower (IR 41 vs. 47 per 10⁵ py, $p < 0.05$). After stratification by sex, the higher IR of colon cancer only remained statistically significant in men, and the lower IR of esophageal cancer only remained statistically significant in women. No differences in IRs between the T2DM and non-DM cohort were found for gastric, biliary, and rectal cancer.

Conclusions: Higher IRs for liver, pancreatic, and colon cancer were found in T2DM patients versus non-DM controls. Furthermore, we found no differences in IRs for gastric, biliary, and rectal cancer. The results of this study underline the importance of clinical awareness for liver, pancreatic and colon cancer in the T2DM population. In addition, the lower observed IRs of esophageal cancer in T2DM patients warrants further investigation.

114. Association Between Insulin Treatment and Breast Cancer Characteristics

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Background: It is hypothesized that there is a link between insulin (analogues) and (breast) cancer. However, epidemiological studies regarding breast cancer (BC) among patients using insulin (analogues) are inconsistent.

Objectives: To investigate whether treatment with insulin (analogues) before BC diagnosis is associated with the development of specific BC characteristics.

Methods: For this case-control study, females with invasive BC (stage I-IV) diagnosed between 1998 and 2011 were selected from the Eindhoven area of the linked Netherlands Cancer Registry-PHARMO Database Network cohort. Females using insulin (analogues) were compared twice: once to females using oral antidiabetics (OAD) prior to their primary BC diagnosis (unmatched) and once to females with no antidiabetic (AD) treatment prior to diagnosis (matched (1:4)). Patient and tumour characteristics (TNM stage, morphology, grade, hormone receptor status and clinical subtype) were determined at the date of the first primary BC diagnosis. Multivariate (conditional) logistic regression analyses were used to investigate the association between AD treatment and different BC characteristics.

Results: A total of 149 females using insulin (analogues) were compared to 289 females using OAD and to 596 females with no AD treatment. Females using insulin (analogues) were more likely to have BC clinical subtype luminal B than BC clinical subtype luminal A compared to females using OAD (OR (95%CI): 3.0 (1.3-7.3)). This association was also observed compared to females with no AD treatment, but was statistically not significant (OR (95% CI): 2.2 (0.5-9.1)). Females using insulin (analogues) were more likely to have a poorly differentiated tumour (grade 3) than a well differentiated tumour (grade 1) compared to females using OAD (OR (95% CI): 2.2 (1.0-4.7)). This association was also observed when comparing to females with no use of AD treatment (OR (95%CI): 4.7 (1.5-15.2)). No statistical significant association was found for the other BC characteristics.

Conclusions: The results of this study indicate that females using insulin (analogues) are at increased risk of developing more aggressive breast tumours than females using oral or no AD treatment.

115. A Population Based Study of Metformin and the Association with Survival in Pancreatic Cancer Patients

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