Anti-Diabetic Drugs & Challenge of Cancer Risk

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Abstract

Diabetes has been recognized as a key factor contributing to the development of solid organ malignancies [2]. The strongest cancer association to type-2 DM in both sexes involves those of the liver and pancreas, creating a risk dilemma [2,7]. Descriptive clinical studies confirmed the increased prevalence of hepatocellular carcinoma (HCC) in patients with diabetes, as well as, an increased prevalence of diabetes in patients with HCC [8]. In Egypt, HCC is the second most common cancer in men and the 6th most common cancers in women. Since, approximately 80% of HCCs develop in cirrhotic livers, a rising incidence had been reported in Egypt mostly due to high prevalence of viral hepatitis and its complications. However, this incidence is boosted by the emerging association between DM, cirrhosis and HCC; as according to WHO statistics in 2008, it was estimated that 7.4% of Egyptian females and 7% of Egyptian males above the age of 25 years have elevated blood glucose. Increasing evidences of cancer development in diabetic patients were reported. Many studies demonstrated a correlation between some anti-diabetic drugs and a higher risk of cancer incidence. The highest incidence was shown in liver cancer and pancreatic cancer then kidney, endometrial, colorectal, non-Hodgkin lymphoma, bladder, and breast cancers. Meta-analysis of cohort studies calculating the Relative Risk (RR) of all-site or site-specific cancers in diabetic patients were accomplished notifying a different RR according to sex. Mechanisms suggested by authors were related to diabetes itself whether being complicated or a nonadherence to anti-diabetic medications. Obesity-related hyperinsulinemia acts as a critical link to the increased cancer risk through mitogen pathway activation and the enhanced cellular growth and survival. On the other hand, the influence of anti-diabetic medications itself on cancer has recently gained attention. Studies reported evidences that using metformin, as an insulin sensitizer, may decrease cancer development, progression, and mortality. However, treatment with insulin secretagogues, insulin analogues, thiazolidinediones, and some incretin-based therapies are related to increased incidence of development and mortality related to cancer. Currently there is no sufficient evidence to force withholding of certain antidiabetic drugs use on the basis of cancer concern. So cancer risk assessment is a useful primary prevention tool in selecting a suitable antidiabetic drug(s). Identification of the individuals at increased genetic or environmental risks of cancer by diabetes physicians should be done. Web-based tools for collecting and predicting individual risks of certain cancers and familial syndromes are easily accessible. Individuals with a high likelihood of having an inherited syndrome should be seriously considered for referral to the cancer genetics professional for further workup. Special attention should also be paid to potentially modifiable cancer risk factors regarding a healthy lifestyle. Nevertheless, to reduce the cancer risk associated with anti-diabetic medications use, treatment with metformin is recommended throughout the course of the disease as long as it is medically acceptable. Also, strong efforts to reduce excess of body weight should be taken. The selection of other anti-diabetic classes as an add-on treatment to metformin is based on cancer risk assessment and review of cohort studies and metanalyses reports on their associated cancer RR.

Nevertheless, to reduce the cancer risk associated with anti-diabetic medications' use, treatment with metformin is recommended throughout the course of the disease as long as it is medically acceptable. Also, strong efforts to reduce excess of body weight should be taken. The selection of other anti-diabetic classes as an add-on treatment to metformin is based on cancer risk assessment using RATs and review of cohort studies and met-analyses reports on their associated cancer relative risk.

Biography

Eman I. Anwar is a lecturer in Clinical Pharmacology at Alexandria Faculty of Medicine, Egypt, completed her Master degree Medical Basic Science in Pharmacology general grade Excellent, 2011 and Doctor degree in Clinical Pharmacology with GPA score: 3.642, August 2016.

She is Pharmacovigilance & drug counseling center advisor at university hospital clinics Since June 2015 and Egyptian Association of Medical Basic Sciences (EAMBS) member since 2009. Her research interest is on Experimental pharmacology in oncology, endocrinology, Pharmacovigilance, Medical education and E-learning.

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