

Metformin may reduce oral cancer risk in patients with type 2 diabetes

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Purpose: To evaluate the risk of oral cancer associated with metformin use.

Methods: The reimbursement database of the National Health Insurance in Taiwan was used. Patients with type 2 diabetes mellitus at an onset age of 25-74 years during 1999-2005 and newly treated with either metformin ($n=288198$, "ever users of metformin") or other antidiabetic drugs ($n=16263$, "never users of metformin") were followed for at least 6 months for oral cancer until December 31, 2011. The treatment effect of metformin (for ever versus never users, and for tertiles of cumulative duration of therapy) was estimated by Cox regression adjusted for propensity score (PS) or incorporated with the inverse probability of treatment weighting (IPTW) using PS.

Results: The respective numbers of incident oral cancer in ever users and never users were 1273 (0.44%) and 119 (0.73%), with respective incidences of 92.7 and 163.6 per 100,000 person-years. The overall hazard ratios (95% confidence intervals) suggested a significantly lower risk [0.584 (0.483-0.707) for PS-adjusted model, and 0.562 (0.465-0.678) for IPTW model]. In tertile analyses, the PS-adjusted hazard ratios (95% confidence intervals) for the first (<21.5 months), second (21.5-45.9 months) and third (>45.9 months) tertile of cumulative duration were 1.403 (1.152-1.708), 0.557 (0.453-0.684) and 0.152 (0.119-0.194), respectively; and were 1.244 (1.024-1.511), 0.526 (0.429-0.645) and 0.138 (0.108-0.176), respectively, for IPTW.

Conclusions: Metformin may significantly reduce the risk of oral cancer, especially when the cumulative duration is more than 21.5 months.

Biography

Dr. Chin-Hsiao Tseng is a senior attending physician at the Department of Internal Medicine, National Taiwan University Hospital, a full professor at the Department of Internal Medicine, National Taiwan University College of Medicine and an adjunct research fellow at the National Health Research Institutes in Taiwan. He had been appointed as the directors of the Division of Endocrinology and Metabolism, and the Department of Medical Research and Development at the National Taiwan University Hospital Yun-Lin Branch from August 2006 to July 2008. He has published more than 200 refereed papers and more than 10 book chapters in either English or Chinese on arsenic-related health problems and the relationship between diabetes mellitus and cancer. He has been invited to write an article entitled "Arsenic-induced diabetes mellitus" for "*Encyclopedia of Metalloproteins*"; and invited as a consultant to the "Workshop on the Potential Role of Environmental Chemicals in the Development of Diabetes and Obesity" organized by the National Institute of Environmental Health Sciences/National Toxicology Program, US Department of Health and Human Services, which was held in North Carolina on January 10-13, 2011. Prof. Tseng has also been invited by the International Agency for Research on Cancer/World Health Organization to serve as an expert in the working group for the monograph volume 108 on "Carcinogenicity of some drugs and herbal medicines" held in Lyon, France in 2013. Prof. Tseng has been invited as a Lead Guest Editor for a Special Issue on "Diabetes and Cancer: Epidemiological, Clinical, and Experimental Perspectives" for *Experimental Diabetes Research*, which has been published in 2012. He has gained more than 20 research awards and has been invited to referee for scientific papers for more than 200 times by more than 100 international medical journals and to give lectures for several hundred times. He is currently serving as a member of the editorial advisory board of several medical journals including Current Diabetes Reviews, World Journal of Pharmacology, World Journal of Cardiology, World Journal of Diabetes, Open Diabetes Journal and Journal of Environmental Science and Health, Part C.