

Evaluation the Rate of Cancer Risk in Patients with Diabetes: A Systematic Review

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ABSTRACT

Introduction: Patients with diabetes increase the risk of cancer by 20 to 25 percent compared to those without diabetes. Cancer is one of the major causes of death in the world and mortality rates are higher in developed countries. Diabetes seems to increase the risk of developing various types of cancer. Therefore, this systematic review was conducted to determine the rate of cancer risk in Patients with Diabetes.

Materials and Methods: This study is a systematic overview That using articles published in the last 30 years about the risk of cancer in diabetic patients. Searching for articles in search engines, authoritative sites and databases SID, Magiran, Google Scholar, Research gate, Science direct, Google Scholar, PubMed, Springer in Persian and English. In the first stage, 42 articles were found. Of these, 10 related articles that have been published over the past 30 years have been reviewed.

Results: In several studies, there was a positive relationship between cancer and diabetes, one study, conducted by Manami Inoue et al., Entitled "Diabetes and the risk of cancer", In men, the risk of overall cancer increased by 27% in those with a history of diabetes. In this study, we also saw an increased risk of colon cancer and gastric cancer with borderline significance. In women, the incidence of cancer was significantly increased at the borderline, while the incidence of gastric cancer and liver cancer was statistically significant and the incidence of ovarian cancer was observed at the border.

Conclusion: Different studies have shown that there was a direct and significant correlation between the risk of various types of cancer in diabetic patients. Due to the high prevalence of diabetes in the world and the risk of cancer, it is better be done to plan the Ministry of Health in Iran and the World Health Organization to reduce diabetes and cancer.

Keywords: Cancer, Diabetes, Risk Factor, Diabetic Patients

INTRODUCTION

Have been reported that patients with diabetes, increase the risk of cancer by 20 to 25 percent compared to those without diabetes (1). Cancer is one of the leading causes of death in the world, and mortality rates are higher in developed countries (2). In particular, epidemiological evidence suggests that Increased Type 2 Diabetes is associated with an increased risk of certain specific cancers such as breast cancer, colorectal cancer, liver cancer and pancreatic cancer (3). Diabetes is a chronic disease characterized by increased levels of blood glucose and carbohydrate metabolism, protein, and lipids. (4-9). Diabetes is also a potential disabling disorder affecting more than 300 million people worldwide, has become the fastest chronic disease in the world and a major cause of morbidity and mortality in the industrialized world (10-16). Due to its late and

dangerous effects, it has been paying more attention day by day (17). For example, one of the complications of diabetes among diabetic patients is depression, which is one of the most common psychiatric disorders (18). Depression is one of the most common and debilitating problems for youth and adolescents (19-21). Depression and occupational stress daily can cause some health disorders (22). Diabetes is one of the most common endocrine complications in people with thalassemia (23). Thalassemia is a hereditary blood disease and the annual incidence of thalassemic patients is estimated at one in 100,000 worldwide (24-28). Patients with diabetes are at greater risk than the general population of the growing urinary tract, liver, biliary, pancreatic, colon, endometrial, and kidney cancer. Several confounding factors are directly related to clinical diagnoses of diabetes at various levels of metabolic control, duration

of diabetes, anti-diabetic treatment profiles, and the presence of complications or association with diseases (29,30). Therefore, it is difficult to assess the risk of developing cancer in diabetes. Additionally, common risk factors for both diseases, such as age, sex, ethnicity, alcohol, tobacco, diet, obesity and physical activity, and body mass index, seem to make the relationship more complicated. In recent years, there has been a large number of evidence suggesting a significant increase in the incidence of cancer in diabetic patients (31).

Note that cancer is the second leading cause of death and the Diabetes Association refers to the disease as a growing and costly cancer related and a major health concern (32). And that there is a compelling evidence today that Diabetes and obesity increases the risk of developing various cancers, including colorectal cancer, breast cancer or cancer, endometrial cancer, kidney carcinoma, adenocarcinoma, pancreatic cancer, and liver cancer. Therefore, a systematic review study was conducted to determine the rate of cancer risk in Patients with Diabetes.

MATERIALS AND METHODS

This study is a systematic overview That using articles published in the last 30 years about the risk of cancer in diabetic patients. Searching for articles in search engines, authoritative sites and databases SID, Magiran, Google Scholar, Researchgate, Scencedirect, Google Scholar, PubMed, Springer in Persian and English. In the first stage, 42 articles were found. Of these, 10 related articles that have been published over the past 30 years have been reviewed.

In order to achieve the goal of the study and to improve the accuracy of its study and its comprehension, this integrated overview study was conducted based on the Broome method. This method is performed in three steps: searching for texts, evaluating data and analyzing data. So that in the search phase of post-retrospective study texts, four stages are considered in terms of inclusion criteria. After reviewing the content of the study, the content of the study is evaluated and at the end of the data analysis.

Studies in the field of research were written in English or Persian, access to their full text was possible and published during the last 30 years and unnamed studies were deleted without history and non-academic. To achieve relevant studies, a wide range of keywords including diabetes, cancer, risk factor, gastric cancer,

cancer, diabetic patients, cancer patients in the form of single-track and combination search, and using the method "And and OR "were used.

RESULTS

In a study by azizi et al. It has shown that diabetes can increase the chances of developing colorectal cancer. In this study, 207 patients with colorectal cancer had 48 patients with diabetes, in contrast, of the 207 controls, only 21 were diabetic. The final analysis, in the presence of other effective factors, showed that diabetes may increase the chances of developing colorectal cancer (35).

In a study by Rodney Eddi et al Done, that this study showed a significant relationship between type 2 diabetes and colon adenomas. Exposure to insulin and thiazolidinediones were associated with the formation of adenomas. None of the analgesic drugs and HbA1c levels were predictive of adenoma. Cigarette smoking Aspirin and statins increase the risk of developing adenoma (36).

In a study by Manami Inoue et al. Titled "Diabetes and the risk of cancer", A total of 6462 new cases of cancer were diagnosed. In men, the risk of total cancer has increased by 27% in those with a history of diabetes. HR was very high for people with liver, pancreatic and kidney cancer. In this study, we also saw an increased risk of colon cancer and gastric cancer with borderline significance. In women, the incidence of cancer was significantly increased at the borderline, while the incidence of gastric cancer and liver cancer was statistically significant and the incidence of ovarian cancer was observed at the border (37).

The relationship between diabetes and primary liver cancer in a case-control study was confirmed by histology in 428 cases of cancer carcinoma incident, 59 cases of gallbladder and bile ducts, and 1502 controls in the hospital for non-acute diseases Sixty-four cases of hepatocellular carcinoma have been reported in 87 diabetic patients (38).

In a study by Juhua Luo et al. was done, there was no statistically significant relationship between diabetes and biliary, esophageal and stomach cancers. In the study, 145,765 postmenopausal women aged 50-79 years registered in the WHI and averaged 10.3 years. The Cox linear regression model was used to estimate the risk ratio (HR) and 95% confidence interval for the relationship between GI cancers and diabetes diagnosis, including duration and

treatment. Diabetes was associated with an increased risk of developing liver, pancreatic, colon, and rectal cancers. The severity of diabetes, due to the length of time or the need for drug therapy, seemed to have a stronger association with the risk of developing liver, pancreatic and rectal cancers, but it did not have colon cancer (39).

In a study by Marie-Claude Rousseau et al was done, and the authors conducted several major questions on the potential link between diabetes and various types of cancer in a disease-control project. Based on 3,107 male cancer cases and 509 population controls, the report uses information about diabetes and several variables collected by the interview. The link between diabetes and any of the 12 types of cancer was estimated. The risk of developing pancreatic and liver cancers among diabetic patients has increased. The increased risk of pancreatic cancer is fully affected by people with diabetes. It was probably a reverse causation demonstration. Conversely, an increased risk of liver cancer was independent of the distance between diabetes and the diagnosis of cancer. There was no association with melanoma, esophageal cancer, stomach, colon, rectum, lung, prostate, bladder, and kidney. As a result, diabetes was associated with an increased risk of developing liver cancer among men, but no other cancers, including pancreatic cancer, were seen (40).

In a meta-analysis study by SU Luo et al was done, in which 29 metrics including 10 case studies and 19 group studies were included in this meta-analysis. In a combined analysis of all studies, diabetes mellitus was associated with an increased risk of colorectal neoplasm. The risk of colorectal cancer also increased significantly (41).

In a large study by Wang et al. Was performed with 37001 diabetic patients and 148004 controls. The incidence of colorectal cancer in diabetic patients was 2.1 times higher than non-diabetic controls (42). In a study by Bosetti et al. Was performed, the odds of having colorectal cancer in diabetic patients were 1.23 times higher (43).

In a study by Susanna C Et al. Was performed and findings from this meta-analysis showed that diabetes is associated with an increased risk of breast cancer. Analysis of all 20 studies studied in this study. Showed that women with diabetes (versus diabetics) had an increased risk of developing breast cancer by 20% (44).

DISCUSSION

Considering that cancer is the second cause of death and the Diabetes Association cites the disease as a growing, costly and cancer-related disease and a major health concern. And today there is a convincing evidence that diabetes and obesity increase the risk of developing various cancers. Therefore, a systematic review of the present study aimed to determine the rate of cancer risk in Patients with Diabetes.

The findings of these studies have been shown in various studies diabetes mellitus increases the chances of developing colorectal cancer (35), (42.43). Research shows that people with diabetes are more at risk for colon cancer than non-diabetics, but it's not yet clear what the causes of this connection are and what should be done to prevent colon cancer in diabetics. Also, the risk of large intestinal cancers is higher in diabetic people than in healthy people. The risk of rectal cancer in diabetics is also higher than other people. Although this increase seems to be limited to men only.

Various studies have shown that diabetes is associated with colorectal cancer, however, its causative-causative aspects are difficult to diagnose because of the complexity of diabetes. But some of the things that happen in diabetes can cause colon cancer. One theory is that they interfere with the large intestinal cancers of the hormones. In people with diabetes, there is a high level of insulin hormones and hormones called insulin-like growth factors. These hormones cause the growth and development of cells and can also cause cancer cells to grow. This association with any mechanism that is involved, as long as diabetes is associated with colon cancer, its subsequent implications are still unclear. Also, according to some studies, in men, the risk of total cancer in people with a history of diabetes increased by 27%. HR was very high for people with liver, pancreatic and kidney cancer. Also, some studies have found that diabetes is associated with an increased risk of breast cancer (28). Lifestyle changes can reduce the risk of breast cancer. One of the factors that people with breast cancer are at risk for diabetes, estrogen resistance is in the stages of chemotherapy. Taking some medications such as glucocorticoid in chemotherapy can increase your blood glucose, these drugs are used to prevent inflammation and nausea. when the body resists insulin, it is prone to spreading diabetes and a variety of cancers that may happen in people who have breast cancer. Also,

in diabetics, with the increase in insulin levels, breast tissue changes that increase the risk of breast cancer. Statistics show that people with advanced breast cancer and at the same time have diabetes, they have larger tumors than other breast cancer patients and in these people, the possibility of spreading the disease is also higher in the case of diabetes. Studies have also shown that diabetes also increases the risk of developing liver cancer (40). Also, people with diabetes who have cirrhosis and hepatitis also increase the risk of developing liver cell carcinoma (HCC) Especially hepatitis C is especially important. Type 2 diabetes is associated with an increased risk of developing liver, pancreatic, and intestinal cancers and rectum in postmenopausal women. The severity of diabetes may increase the risk of pancreatic cancer, liver and rectum.

CONCLUSION

Several studies have shown that there was a direct and significant relationship between the risk of various types of cancer in diabetic patients. Due to the high prevalence of diabetes in the world and the risk of cancer, it is better be done plan the Ministry of Health in Iran and the World Health Organization to reduce diabetes and, as a result, cancer. It is also advisable for the curriculum to be conducted by members with higher literacy in the family for other members. It should also be emphasized on screening for breast cancer and other types of cancer by conducting tests and diagnostic work to diagnose cancer rapidly among diabetic patients. It is possible to detect early stage cancer and reduce mortality.

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