Incidence of Uterine Cancer in Women with Obesity and Diabetes

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A woman's uterine cancer, also known as endometrial cancer, is one of the most common types of cancer in her reproductive system. Researchers have identified several risk factors that contribute to its development. Among the most significant of these risk factors are obesity and diabetes. Both of these conditions have a severe impact on the development of uterine cancer, influencing the body's hormonal balance, inflammation levels and metabolic processes. Obesity is widely recognized as a significant risk factor for uterine cancer. According to the American Cancer Society, women who are overweight or obese are at an increased risk of developing endometrial cancer compared to those with a healthy weight. The association between obesity and uterine cancer is particularly strong in postmenopausal women [1-3].

Obesity increases the risk of uterine cancer through the abnormal production of estrogen. Fat cells, particularly in the abdomen, can convert androgens (male hormones) into estrogen, disrupting the body's hormonal regulation. Estrogen promotes endometrial growth (the lining of the uterus), and when progesterone does not balance it, the result can be endometrial hyperplasia, a condition in which the endometrial lining becomes abnormally thickened and increases the risk of cancer. In obese women, the increased production of estrogen without the counterbalancing effects of progesterone contributes to the development of endometrial cancer. This hormonal imbalance plays an essential role in the disease's pathogenesis, as it can lead to uncontrolled growth of cells in the endometrial lining. Additionally, adiposity (fat tissue) is linked to chronic low-grade inflammation, which further elevates the risk of cancer by promoting an environment conducive to cell proliferation and malignant transformation. Diabetes, particularly type 2-diabetes is another condition that is closely linked to an increased risk of uterine cancer. Type 2 diabetes is characterized by insulin resistance, in which the body’s cells become less responsive to insulin, leading to elevated blood sugar levels. Insulin resistance and the resulting hyperinsulinemia (high levels of insulin in the blood) have been shown to play a significant role in the development of uterine cancer [4,5].

A number of types of tumors, including endometrial cancer, are directly affected by insulin. Elevated insulin levels can stimulate the production of growth factors such as Insulin-like Growth Factor 1, which promotes cell proliferation and inhibits cell death. This creates an environment that encourages cancerous cells to grow and divide. Furthermore, high levels of insulin and glucose can alter the balance of sex hormones in the body, contributing to the hormonal changes that favor the development of endometrial cancer. In addition to hyperinsulinemia, diabetes is often associated with other metabolic disturbances such as obesity, dyslipidemia (abnormal levels of fats in the blood) and hypertension. These conditions collectively contribute to an increased cancer risk. Chronic hyperglycemia (high blood sugar levels) has been shown to promote oxidative stress and inflammation, both of which can damage cells and increase the likelihood of malignant transformations in the uterine lining [6,7].

It appears that obesity and diabetes together are even more detrimental to the development of uterine cancer than their individual effects. Women who are both obese and diabetic face a substantially higher risk of developing uterine cancer than those with just one of these conditions. In part, this effect may be due to the similar metabolic and hormonal changes resulting from obesity and diabetes, which together create a highly favorable environment for cancer development [8-10].

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