Type 2 Diabetes And Its Complications

Introduction

Type 2 Diabetes Mellitus has taken the lead among other causes to several deaths in the world as a whole and the case of the United States in general. These cases are however due to pregnancy related causes, generic factors, pathophysiological reason and other risk factors such as family history, gestational diabetes, obesity and sedentary lifestyle. Given the above, it will be imperative to breakdown the various causes of the number one leading cause of death from those suffering from Diabetes by implementing effective measures to prevent the disease. Although there are other leading causes of type 2 diabetes, the epidemiological factor has been another cause of concern which requires intervention to curb the disease.

Etiology

Type2 diabetes normally occurs when the body alters the way it breakdown sugar in the body. Studies have shown that resistance to insulin action in cells or situations when the pancreases have not been able to produce enough insulin have contributed to some of the causes of type 2 diabetes. Such negative actions may cause adverse effects on the cells of the liver and muscles walls which may thus fail to utilize the glucose from the blood for energy. Over time, the blood sugar level goes up which will cause some medical complications leading to illnesses such as type2 diabetes.

Family history, especially first-generation relatives has been one of the major risk factors in developing Type2 Diabetes. This is as a result of parents who already have the disease. This is closely linked to genetics as heritage is directly related to the cause. Studies have also shown that the risk of type2 diabetes increases due to lack exercise and physical fitness enabling the glucose levels to clog the cell walls (Baghikar et al, 2019).

Studies have shown that type2 diabetes is more commonly diagnosed in male at an early age that female but are more prevalent in female than male. This can be attributed to biological (differences in sex chromosomes) and psychosocial factors that may have a greater effect on women than men.

Another risk cause of type2 diabetes has been lifestyle and environmental influences. These two factors are also held responsible for the global epidemic of obesity which is directly responsible for type2 diabetes. This is evident in a high body mass index (BMI) and the kind of

food people eat such as meat rather than plant-based food. Over time, this places them at high risk of type2 diabetes.

Pathophysiology

This is the study of changes in the body functions due to abnormal mechanical, biochemical or physical activities of the body. Type 2 diabetes has been known to result from progressive resistance of insulin action on the peripheral linings and declining cell action. Here, insulin allows glucose to travel into cellulose as a normal physiological need to be used as energy and stored as glycogen. This will in turn stimulate protein synthesis and stored. However, insulin deficiency may block tissue access to essential nutrients for fuel and storage, causing resistance to insulin action in the target tissues, and hence over production of glucose, also referred to as inappropriate hepatic gluconeogenesis. To further illustrate this point, it should be noted that, instead of sugar moving into the cells, sugar instead builds up in the blood stream. As blood sugar levels increase, the insulin-producing beta cells in the pancreas release more insulin, but eventually these cells become impaired and can't make enough insulin to meet the body's demand (Norman, 2016).

It is worth noting here that, as a result of the pathophysiological process and the resultant disease outcome of insulin resistance, signs and symptoms of the disease often develop slowly which, amongst others, includes, increased thirst, increased hunger, frequent urination, unintended weight loss, fatigue, blurred vision, slow healing sore.

As a result of the above factor, two metabolic complications of type2 diabetes with one being diabetic metoaciclosis (DIAA) and the other being Hyper osmolar Hyperglycomix Non- ketotic Syndrome (HHNS) (Mayo clinic, 2019). For example, HHNS occurs in patients with type 2 diabetes specifically. However, it may also occur to any patient who has undergone procedures like hemodialysis, peritoneal dialysis or anyone whose insulin tolerance is stressed.

In addition, inadequate buildup of insulin hinders glucose absorption for conversion to energy, leading to the accumulation of glucose in the blood. Correspondingly, the liver begins to convert glycogen to glucose in responds to the demands of the energy-starved cells thus releasing glucose into the blood stream which in turn increase blood glucose level. It should be noted that, when this level exceeds the renal threshold, excess glucose is excreted in urine making it unavailable for the insulin-deprived cells. Consequently, rapid metabolism of protein may result in loss of intracellular potassium and phosphorus and excessive liberation of amino acids. The liver converts these amino acids into glucose and urea, (William & Wilkins, 2016). Thus blood glucose levels are grossly elevated. This can lead to increased serum osmolarity and glycosuria (high amount of glucose in urine, leading to osmotic diuresis. Glycosuria is higher in HHNS than in DKA because of blood glucose blood glucose level at higher in HHNS.

The above deadly cycle leads to massive fluid loss whereby glucose excretion further raises blood glucose levels, hyper osmolarity and dehydration can cause shock, coma and death. Some of the most common chronic complications that can normally occur include cardiovascular peripheral vascular disease. Patients with type 2 diabetes will have a higher risk of various chronic complications being cardiovascular disease, peripheral vascular disease, eye disease, kidney and skin disease. Some of these complications of type2 diabetes will be elucidated in the paragraph below.

Complications

Heart and Blood disease: Diabetes has been found to drastically increase the risk of heart disease, stroke, high blood pressure and narrowing of blood vessels, a condition called atherosclerosis, (William & Wilkins, 2016).

Nerve damage (neuropathy). When sugar reaches high levels in the body, it can cause several complications that may lead to tingling, burning, pain or numbness that usually begins at the tips of the toes or fingers and gradually spread upwards.

Kidney damage: Kidney transplant or dialysis may be required due to the effects of Diabetes in order to avoid kidney failures which can be irreversible at the end stage kidney disease.

Eye damage: The risk of eye damage increases due to diabetes including cataracts and glaucoma, and may damage the blood vessels of the retina, potentially leading to blindness.

Conclusion

Conclusively, type 2 diabetes also called diabetes mellitus, has its short- and long-term complications to content with. Some of these complications are cataract formation in the eyes, kidney failure, nerve damage, just to mention these few. However, early awareness through primary prevention will save lives from a lifelong complication from diabetes. It will therefore be imperative for people to maintain a healthy lifestyle by eating healthy food, getting active in daily activities, losing weight and above all avoid being sedentary for a long period.

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