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| **Group:** |
| 8B-5 |
| **Basic Science Question:** |
| What is Diabetes? |
| **Report:** |
| For my basic science question, I aimed to address what type I and type II diabetes are and the differences between the two types, who is most likely to get each type, and when in their lifetime are individuals most likely to get a given type. According to information gathered from articles in *The World Journal of Diabetes* and the Centers for Disease Control and Prevention website*,* both type I and type II diabetes are metabolic diseases that result in chronic hyperglycemia. Type I diabetes is a form of the health condition in which the pancreas either makes very little insulin or does not make insulin at all due to an autoimmune reaction that destroys the cells of the pancreas responsible for producing insulin, called beta cells. Another characteristic of type I diabetes is the presence of autoantibodies against pancreatic islet cells. The insulin produced by beta cells is an important anabolic hormone that helps blood sugar, from the foods we eat, enter our cells and be used for energy. Without this hormone, hyperglycemia occurs which can eventually lead to more serious health problems such as heart disease, vision loss, and kidney disease if left untreated. Although there is no cure for type I diabetes, it can be managed by insulin therapy to regulate blood sugar levels. Type I diabetes is much less common than type II, affecting only 5-10% of Americans with diabetes, and is usually diagnosed in children and adolescents. While it can develop at any age, genetic predisposition is an important factor. There may also be environmental factors that play a role in the development of type I diabetes; however, it remains controversial. Unlike type I diabetes, type II diabetes is a result of insulin resistance, in which there is an increased demand for insulin in the body because the cells are less sensitive to insulin. The pancreatic beta cells are unable to meet the increased demands which leads to hyperglycemia. Approximately 90-95% of American with diabetes have type II. In contrast with type I, type II diabetes most often develops in people over the age of 45, although the rates of type II diabetes in youth under the age of 20 are rising. Diet and lifestyle play a big role in predisposing individuals to type II diabetes. Obesity is a major cause of insulin resistance and therefore a significant risk factor, along with having direct relatives with type II diabetes, and leading a sedentary lifestyle. Treatment for type II usually involves lifestyle changes such as increasing physical activity, and weight loss to increase the sensitivity of cells to insulin in the body along with regular monitoring of blood sugar and insulin medication. Overall, while both type I and type II diabetes are caused by either the body’s inability to produce insulin or inability to use it effectively, the populations at risk and timeline of the onset of symptoms differ. |
| **References:** |
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