

Medicine Induced Hypoglycemia in HIV Patients - A Review Article

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Abstract

The further most progressive stage of Human Immunodeficiency virus infection, acquired immunodeficiency syndrome, may take more time to manifest depending on the person. Treatment regimens for this disease can include antiretroviral drug combinations. Antiretroviral therapy, as it is now administered, reduces viral replication while enabling the immune system of the patient to heal, strengthen, and regain the capacity to fight HIV infection, opportunistic infections, some types of cancer, and other infections. Since 2016, World Health Organization has promoted Treat All, which advocates for all HIV-positive people to receive lifelong antiretro viral therapy, regardless of their clinical state. This includes children, adolescents, adults, pregnant women, and nursing mothers. WHO recommends prompt ART introduction for all HIV-positive people in addition to the Treat All strategy, including giving ART to those who are ready to start treatment the same day as their diagnosis. Kenteu B,etal. In his study stated that Co-trimoxazole-induced hypoglycemia is a rare but well-recognized side effect. The mechanisms imply a sulfonylurea-like mechanism since they stimulate and enhance insulin secretion. Therefore, when co-trimoxazole is used with glipizide or glyburide, severe hypoglycemia may happen. There is still much to learn about how pentamidines produce hypoglycemia. The purpose of this study is to provide you with a brief summary of recent findings on hypoglycemia brought on by HIV treatment. Due to space restrictions, a new study on hypoglycemia brought on by medication cannot be thoroughly examined. We do, however, highlight gaps in the literature that contribute to our lack of knowledge of the socioeconomic factors behind persistent racial/ethnic hypoglycemia in HIV patients in order to inform future research attempts. This review of hypoglycemia induced by the medicine used in the treatment of HIV infection shows that there are many studies shown on this and all the studies shows that there is hypoglycemia episode in patient with HIV infection who receive the Co-trimoxazole medicine for the infection The review is helpful to understand the need of the interventions for the prevention of hypoglycemia and the management of hypoglycemia during treatment

Keywords: *Hypoglycemia, HIV, Medicine.*

INTRODUCTION

The most advanced stage of HIV infection, acquired immunodeficiency syndrome, may take many years to manifest depending on the person. Treatment regimens for HIV disease can include antiretroviral drug combinations. Antiretroviral therapy, as it is now administered, reduces viral replication while enabling the immune system of the patient to heal, strengthen, and regain the capacity to fight HIV infection, opportunistic infections, some types of cancer, and other infections. Since 2016, WHO has promoted Treat All, which advocates for all HIV-positive people to receive lifelong ART, regardless of their clinical state. This includes pregnant women's, children, adults, adolescents,, and postnatal mothers. By June 2022, 189 countries had already adopted this recommendation, covering 99% of all HIV-positive people globally with healthcare. WHO recommends prompt ART introduction for all HIV-positive people and even they can start the treatment on the day of diagnosis of disease. Ninety-Seven countries had adopted this policy said it had been put into practice nationally in June 2022. Advanced immune suppression raises the likelihood of opportunistic infections in those who seek or re-seek medical care often. World Health Organization is aiding countries in putting the advanced HIV disease package of care into place to reduce illness and mortality.¹

The term hypoglycemia is defined as per Diabetic Association of America is "any abnormally low plasma glucose level less than seventy milligram which exposes the subject to potential harm, the variety of clinical manifestation be determined by extent and sternness of low sugar level and there are clinical features seen in the patient start from the giddiness and goes till the comatose state².

The direct management of hypoglycemia should be known to the entire diabetic client to prevent the further hypoglycemia and the admission in hospital can be prevented.

Uneducated patients and aged patients with dementia requires more detail knowledge about the management So, educating the patient for the self- management ,monitoring of sugar level, and the knowledge about the change in dose as per doctors order will prevent the hypoglycemia. Alertness on clinical manifestation and its initial treatment is also important in the management. Commencement of home based carefulness monitored by care in the hospital is the main method to avert plain influences of low blood sugar level. The team of healthcare members plays and significant character in teaching about the hypoglycemia as complication of diabetes mellitus, and also to teach them to understand its manifestation and do the proper management during this episode so can reduce and prevent the further complications.³

Jeremy H. Pettus et al (2019) Occurrences of major Hypoglycemia and Ketoacidosis and Occurrence of Micro vascular Problems A Practical Study The objectives of the study was to measure the problem of disease for adults with type 1 diabetes. This is a retroactive observational study of adults with type 1 diabetes categorized in disease duration more than twenty four months and, during a 12-month starting point period, The pregnant women were excluded from the study, the patient on insulin and done the HbA1c investigation were included in the study. Individual data, there The findings of the study shows that HbA1c in Older patients had lower than younger patients with deprived glycemic regulator had the upper most yearly occurrence of severe hypoglycemia and a higher pervasiveness of neuropathy and nephropathy. The study concluded patient with type 1 diabetes and having poor glycemic control are having major complication⁴.

Simon R Sellor et al (2020), low blood sugar level among patient with diabetes. Here remain numerous misconceptions about the occurrence and belongings of hypoglycemia in people with

type 2 diabetes whether it occurs or not occurs adverse side effect in type 2 diabetes. The study is conducted to prove that this is wrong. It shows that almost 26% patients on insulin for more than five years has severe hypoglycemia than type 1 diabetes patient on insulin within five years. The number of total episode is also high in the type two than type one. New suggestion advises grave significances of hypoglycemia might is more in type 2 mainly he cardiovascular complications. Hypoglycemia is usually self-reported. The main problem were unawareness of low blood glucose level, less checking of glucose level, Obstacles to healthcare provider investigation and writing contain deficiency of knowledge concerning the difficulty' sextant, challenging primacies in persistent official visit, the patients are not reporting about the episode, they need to check the blood glucose level on regular basis and the need to keep the glucose ready with them in case they need.⁵

A study on self-informed hypoglycemia in adult diabetic patients The goal of the study was to measure the scale of hypoglycemia and issues related with hypoglycemia between adult diabetic patients joining long-lasting monitor in hospital, The methodology used for the study is cross sectional in 395 diabetic client with simple random sampling method. The data collection done through interview method. The study discovered that majority of them has undergone the evidence since they have diagnosed. It also proved that type one diabetes has more episodes than type two. It also shows that government employees has more incidence than farmers so the study concluded that the incidence of hypoglycemia is mainly related to the type, job profile and the years of diagnosis. So, care is needed from governmental administrations and health care providers to drop the load of hypoglycemia and to talk the main causal issues.⁶

Pedro J Pines, et al (2020) conducted study on Prevalence of severe hypoglycemia of diabetes

mellitus type one taken in cohort shows that low blood sugar level is the sever problem and put the patient in danger and increase the morbidity. it assessed the incidence of severe hypoglycemia in diabetes and estimate the association among incidence and awareness. Methodology used for the study was demographic data like age, sex etc. and values of HbA1c and number of episodes. The finding of the study shows that majority of the patient get one episode in week and unconsciousness o for some time. Almost half of the sample is unaware about the incidence so cannot manage it properly. so the study concluded that number on episodes are there and awareness is not seen in the patients.⁷

The purpose of this study is to provide you with a brief summary of recent findings on hypoglycemia brought on by HIV treatment. Due to space restrictions, a new study on hypoglycemia brought on by medication cannot be thoroughly examined. We do, however, highlight gaps in the literature that contribute to our lack of knowledge of the socioeconomic factors behind persistent racial/ethnic hypoglycemia in HIV patients in order to inform future research attempts.

Sulfamethoxazole and trimethoprim are two antimicrobial medications that are combined in a fixed dose to treat a number of bacterial, fungal, and protozoan illnesses. This medication is called co-trimoxazole. A practical, well-tolerated, and affordable option for people living with HIV to lower HIV-related morbidity and mortality is co-trimoxazole preventative treatment. Co-trimoxazole is an off-patent medication that is readily available in settings with minimal resources. The WHO published guidelines on co-trimoxazole prophylaxis in areas with limited resources in 2006. Co-trimoxazole prophylaxis is advised to be used as a crucial part of the HIV care programme, according to the guidelines. Importantly, these recommendations highlighted how co-

trimoxazole prophylaxis can lower mortality and morbidity despite varied degrees of cotrimoxazole background resistance and malaria frequency.⁸

Cotrimoxaloe-induced hypoglycemia at high doses: a study by CA Hughes et al. demonstrates that hypoglycemia started 10 days after high dosage cotrimoxazole was started and continued for more than 24 hours. The patient had no underlying renal failure or serious liver disease. Additionally, there was no indication of an adrenal or growth hormone insufficiency. His C-peptide and insulin levels, however, were high, indicating that his hypoglycemia may have resulted from enhanced insulin secretion. Before starting cotrimoxazole, the patient was also getting acetaminophen and propoxyphene, both of which have been known to produce hypoglycemia.⁹

Kenteu B,etal. In his study stated that Cotrimoxazole-induced hypoglycemia is a rare but well-recognized side effect. The mechanisms imply a sulfonylurea-like mechanism since they stimulate and enhance insulin secretion.¹⁰ Therefore, when cotrimoxazole is used with glipizide or glyburide, severe hypoglycemia may happen. There is still much to learn about how pentamidines produce hypoglycemia. Research involving both mice and rats leads to the conclusion that pentamidine damages pancreatic b cells, resulting in hyperglycemia after hypoglycemia.¹¹

On the tenth day of treatment, she lost consciousness unexpectedly. Her blood sugar level was 20 mg/dL, and a hypoglycemic attack was determined to be the cause. This has been acknowledged as a side effect of cotrimoxazole. Co-trimoxazole was consequently momentarily stopped. One of the most commonly used medications is tenofovir disoproxil fumarate (TDF), which has been successfully used at home with oral glucose treatment to treat two different hypoglycemia

episodes at 39 mg/dl and 41 mg/dl and altered mental state alterations. The history revealed no clear triggering factor. His Humalog dosage was decreased to 0.85 units per hour, and the episodes of hypoglycemia stopped.¹²

Diabetes and HIV are both chronic conditions that have a big impact on lifestyle. The treatment plans needed for both disorders might be burdensome for people when they coexist. The most important aspects of care for patients at risk include understanding the glucose disturbances that are possible with antiretroviral therapy/HAART, conducting appropriate testing for glucose intolerance and diabetes, changing HIV therapy prudently when necessary, and treating patients for changes in glucose metabolism.¹³

This review of hypoglycemia induced by the medicine used in the treatment of HIV infection shows that there are many studies shown on this and all the studies shows that there is hypoglycemia episode in patient with HIV infection who receive the Co-trimoxazole medicine for the infection The review is helpful to understand the need of the interventions for the prevention of hypoglycemia and the management of hypoglycemia during treatment.

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