RISK FACTORS FOR THE DEVELOPMENT OF HEART FAILURE AMONG PATIENTS WITH DIABETES MELLITUS ATTENDING SOMALI SUDANESE SPECIALIZED HOSPITAL, 2022

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BACKGROUND

Diabetes mellitus is a set of metabolic syndrome characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both (Soh and Topliss, 2014).

Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980. The global prevalence of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population (WHO, 2016).

The classification of diabetes includes four clinical classes: Type 1 diabetes (results from beta- cell destruction, usually leading to absolute insulin deficiency), Type 2 diabetes (results from a progressive insulin secretary defect on the background of insulin resistance), gestational diabetes mellitus (GDM) (diabetes diagnosed during pregnancy) and other specific types of diabetes due to other causes, e.g., genetic defects in beta cell function, genetic defects in insulin action, diseases of the exocrine pancreas (such as cystic fibrosis), and drug or chemical-induced (such as in the treatment of AIDS or after organ transplantation) (AMERICAN DIABETES ASSOCIATION, 2009).

The most common types of diabetes are type2 and 1 diabetes mellitus; however, Type 2 diabetes is the predominant form of diabetes and accounts for at least 90% of all cases of diabetes mellitus (Massó González et al., 2009).

In type 2 diabetes, there is primarily a reduced sensitivity to insulin in the cells of the body and progressively a decreased insulin secretion10. Initially, the decreased sensitivity can be compensated by increasing insulin production, but this is not sufficient in the long run. (Zaccardi et al., 2016)

Clinical manifestation of diabetes includes frequent urination, excessive thirst, unexplained weight loss, extreme hunger, sudden vision changes, tingling or numbness in the hands or foot and Very dry skin (Costanzo, 2018).

Four diagnostic tests for diabetes are currently recommended, including measurement of fasting plasma glucose; 2-hour (2-h) post-load plasma glucose after a 75 g oral glucose tolerance test (OGTT); HbA1c; and random blood glucose in the presence of signs and symptoms of diabetes.

PROBLEM STATEMENT

Worldwide the prevalence of cardiovascular diseases and, risk factors are increasing, especially among diabetic patients.

Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980.

The global prevalent of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population.

In Somalia, according to the latest WHO data published in 2018 Coronary Heart Disease Deaths in Somalia reached 6,972 or 4.56% of total deaths, most of these patients were diabetic Knowing factors that accelerate cardiovascular complications in diabetic patients helps health authorities to put proper policies in controlling and improving patients' clinical status.

Justification

Diabetes mellitus is a chronic serious disease; its complication brings reduced life expectancy and substantial economic loss to both government and family. Death due to Cardiac complications (including heart failure) in diabetic patients represents 70% of all death of diabetic patients.

In Somalia little or no research has been done about heart failure in diabetic patients.

Research objectives

General objective

To describe the risk factors for the development of heart failure among patients with diabetes mellitus attending Somali Sudanese specialized hospital

Specific objective

To assess the prevalence of heart failure in diabetic patients

To measure random blood glucose

To find out the correlation between random blood glucose levels and heart failure among diabetic patients

METHODOLOGY

Data analysis

The statistical Package for the Social Sciences, version 22 (IBM Corp., Armonk, NY, USA). The chi-square test was used in the analysis of categorical variables and the student's t-test for continuous variables. The data are presented in figures and tables as frequency and percentage or mean ± standard deviation. Statistical significance was accepted for $p< 0.05$. Discussion

Diabetes mellitus is a chronic metabolic disease recognized as an emerging epidemic that has a negative impact on health, the workforce, and the economy. The number of people with DM is increasing year after a year. It has serious consequences in various organ systems including the heart and blood vessels.

In this study, 110 diabetic patients were examined, 90% of them had type 2 DM which is in line with a previous study done by Massó González and colleagues which recognized Type2 DM is predominant and accounts for at least 90% of all cases of diabetes mellitus (Massó González et al., 2009). Other studies have shown that Type diabetes represents up to 95% of patients with diabetes (Wu et al., 2014).

More than half of the participants (55.5%) had heart failure. This result ties well with a previous regional study carried out in Addis Ababa by Senbeta Guetta and colleagues wherein more than half of (64.1%) of the participants had heart failure (Abdissa, Deressa, and Shah, 2020). Contrary to this study, another study found fewer percentages where the prevalence of heart failure was only 40% in diabetic patients (Shaw and Cooper, 2020).

The present study shows a significant association between heart failure and patient age. Similarly, previous studies reported that the incidence of heart failure is strongly dependent on age, and the lifetime risk of developing HF for both men and women at age 80 is 20% (Pevzner, 2017).

CONCLUSION

According to the findings of this study, there are numerous factors linked to the development of heart failure in diabetic patients. These factors include:

• Advanced age
• Being married
• Residence in rural areas

Type of diabetes

• Prolonged duration of diabetes mellitus
• Positive family history of diabetes mellitus.
• Comorbidities such as ischemic heart disease, hypertension,
• Excessively increased blood levels of lipid profile.
• On the other hand, these factors have statistically negligible relationships with development of heart failure:
• Gender of the participants
• Body mass index
• Random blood glucose levels
• Chronic substance use

RECOMMENDATIONS

To improve patients' educational levels to adopt healthier lifestyle modifications, regular use of drugs.

Better control of lipid blood levels and comorbidities is mandatory.

Further large scale cohort studies are needed to explain the mechanisms of heart failure in DM.

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