Assessment of Plasma level of Nesfatin-1 in newly diagnosed Type 2 Diabetic patients

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Abstract
Introduction: Diabetes mellitus type 2 (formerly non insulin-dependent diabetes mellitus (NIDDM) is a metabolic disorder that is characterized by hyperglycemia in the context of insulin resistance and relative lack of insulin. **Aims of the Work:** The aim of the present study is assessment of plasma level of nesfatin-1 and its association with various metabolic parameters in newly diagnosed type 2 diabetic patients. **Subjects and Methods:** This study included 90 Patients were selected from those coming to Minia University hospital diabetes and outpatient clinics known to have newly diagnosed Diabetes Mellitus, diagnosed according to 2017 American Diabetes association (ADA) criteria. **Results:** This study was conducted on 90 persons our selected from our diabetic outpatient clinic and outpatient clinic of internal medicine .All subjected were divided into three groups. **Discussion:** Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. (ADA 2013). **Conclusion and recommendations:** The novelty of our study is that we showed, for the first time, significantly lower nesfatin-1 levels in diabetic patients (Type 2 DM) but less lower in prediabetic patients (IGT). Nesfatin-1 is a newly identified polypeptide probably involved, in the regulation of food intake. It is important to clarify the relationships between nesfatin-1 and insulin resistance with regard to diabetes. To elucidate its physiological role further studies are required.
Kay words: Electrocardiogram, Food and Drug Administration, Antibodies to glutamic acid decarboxylase

Introduction
Diabetes mellitus type 2 (formerly non insulin-dependent diabetes mellitus (NIDDM) is a metabolic disorder that is characterized by hyperglycemia in the context of insulin resistance and relative lack of insulin. Type 2 diabetes makes up about 90% of cases of diabetes, with the other 10% due primarily to diabetes mellitus type 1 and gestational diabetes (Kumar et al., 2005).

Diabetes is a chronic illness that requires continuing medical care and patient self-management education to prevent acute complications and to reduce the risk of long-term complications. Diabetes care is complex and requires that many issues, beyond glycemic control, be addressed. A large body of evidence exists that supports a range of interventions to improve diabetes outcomes. (ADA 2013).

Diabetes type 2 is a public problem and the prevalence of diabetic patients type 2 in Egypt according to World Health Organization (WHO) was about 11.4% in 2010 and will reach to about 13.7% in 2030. Obesity is thought to be the primary cause of type 2 diabetes in people who are genetically predisposed to the disease.

Prevalence of Diabetes 20%and impaired glucose tolerance found in rural Egypt was (13.1%) in 2013. (Manouk Bos et al., 2013).

The nesfatin-1 is prominently expressed in several regions of the hypothalamus and spinal cord autonomic nuclei. Also, it has been demonstrated to be present in peripheral tissues including adipocytes, gastric mucosa and in human pancreatic beta-cells, indicating the possible involve-

ment of nesfatin-1 in the regulation of insulin secretion frompancreatic beta-cells (Stengel 2009; Goebel 2009; Foo 2010).

Plasma levels of nesfatin-1 are reduced by fasting, and increased after refeeding. This suggests that nesfatin-1 plays a role in satiety regulation and, possibly, energy homeostasis (Kohno et al., 2008).

Type 2 Diabetes Mellitus incidence increased with Obesity which mainly caused by excessive food intake and /or reduced energy expenditure. It is an important public health problem and is associated with insulin resistance and T2DM (Rasouli and Kern,2008).

Aims of the Work

The aim of the present study is assessment of plasma level of nesfatin-1 and its association with various metabolic parameters in newly diagnosed type 2 diabetic patients.

Subjects and Methods

This study included 90 Patients were selected from those coming to Minia University hospital diabetes and outpatient clinics known to have newly diagnosed Diabetes Mellitus, diagnosed according to 2017 American Diabetes association (ADA) criteria.

They were classified into:

Group (I):

Included 30 patients who were newly Diagnosed type 2 diabetes mellitus Includes 17 males and 13 females their age ranged from 35 to 66 Mean±SD 48.76± 8.81.

Group (II):

Included 30 patients who were Prediabetic patients Includes 18 males and 12 females their age ranged from 36 to 65 Mean ± SD 48.1±6.43 .

Group (III) (control group):

Included 30 apparently healthy subjects Includes 16 males and 14 females with matched age and sex their age ranged from 34 to 65 Mean ± SD 48.06±10.61.

Exclusion criteria:

Subjects taking drugs like steroids, oral hypoglycemic drugs, thiazides, antiepileptic drugs, beta blockers.

Any systemic disease (e.g. renal impairment, chronic liver diseases, other endocrinal diseases, and malignancy.

Results

This study was conducted on 90 persons our selected from our diabetic outpatient clinic and outpatient clinic of internal medicine. All subjected were divided into three groups:

Group (I):

Included 30 patients who were newly Diagnosed type 2 diabetes mellitus Includes 17 males and 13 females their age ranged from 35 to 66 Mean±SD 48.76± 8.81.

Group (II):

Included 30 patients who were Pre diabetic patients Includes 18 males and 12 females their age ranged from 36 to 65 Mean±SD 48.1±6.43.

Group (III) (control group):

Included 30 apparently healthy subjects Includes 16 males and 14 females with matched age and sex their age ranged from 34 to 65 Mean±SD 48.06±10.61.

Table (1): Comparison between Demographic and some clinical data of studied groups:

	Group I (Diabetic) (n=30)	Group II (Pre-diabetic) (n=30)	P value
Polyuria	13(43.3%)	29(96.7%)	**I vs II**
			< 0.001*
polyphagia	15(50%)	0(0%)	**I vs II**
			< 0.001*
Polydipsia	14(46.7%)	1(3.3%)	**I vs II**
			< 0.001*
Weight loss	11(36.7%)	0(0%)	**I vs II**
			< 0.001*

- ***Chi square test for qualitative data between groups***
- ****: significant difference at p value < 0.05***

Discussion

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. (ADA 2013).

Type 2 diabetes mellitus is a genetically heterogeneous disorder and is associated with insulin resistance and impaired insulin secretion (Taylor et al., 1994).

Diabetes mellitus is a serious metabolic disease with potentially devastating complications that affects all age groups worldwide. In 1985,an estimated 30 million people around the world were diagnosed with diabetes; in 2000, that figure rose to over 150 million; and, in 2012, the International Diabetes Federation (IDF) estimated that 371 million people had diabetes. That number is projected to rise to 552 million (or 1 in 10 adults) by 2030, which equates to 3 new cases per second. Although the largest increase is expected to be in countries with developing economies (IDF, 2012).

T2DM typically takes years to develop and usually follows a decline in insulin sensitivity and a loss in beta cell function. Because of these pathological changes, there is a period of "prediabetes" in which circulating insulin levels are high (insulin resistance) and plasma glucose levels are slightly elevated from normal, either in the fasted state or in response to oral glucose challenge. Prediabetes is the term used to define individuals with slightly elevated blood glucose levels who are at higher risk for developing type 2 diabetes mellitus (T2DM) over the next few years. Exercise has long been touted as an effective approach for preventing the transition from a state of prediabetes to overt T2DM. (Riddell et al., 2010).

Conclusion and recommendations

The novelty of our study is that we showed, for the first time, significantly lower nesfatin-1 levels in diabetic patients (Type 2 DM) but less lower in prediabetic patients (IGT). Nesfatin-1 is a newly identified polypeptide probably involved, in the regulation of food intake. It is important to clarify the relationships between nesfatin-1 and insulin resistance with regard to diabetes. To elucidate its physiological role further studies are required.

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