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Diabetes Mellitus: General aspects

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ABSTRACT

Knowing Diabetes Mellitus, as well as its main characteristics is a means of prevention. From this perspective, this chapter aims to analyze the main characteristics about Diabetes Mellitus, taking as an approach the general aspects that involve epidemiology, costs, correlation with arterial hypertension, in addition to Gestational Diabetes.

Keywords: Classification, Epidemiology, Gestational Diabetes

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Introduction

The Diabetes Mellitus (DM) can be defined as a metabolic disorder of varying etiologies resulting from a deficiency in insulin secretion by beta cells (β) and peripheral resistance to insulin action or chronic effects resulting from chronic hyperglycemia¹, accompanied by disturbances in the metabolism of carbohydrates, proteins and fats, characterized by damage or failure of organs, especially kidneys, nerves, heart and blood vessels².

Classification

The American Diabetes Association – ADA³ classifies diabetes into four categories, characterized by their etiological and pathophysiological⁴ aspects, this classification being:

I - Type 1 diabetes mellitus

II- Type 2 diabetes mellitus

III- Gestational diabetes mellitus

IV-Other specific types of diabetes

The most common is type 2 diabetes mellitus, which occurs when the body becomes insulin resistant or not produces enough of this molecule. The Type 1 of diabetes mellitus is a chronic condition in which the pancreas produces little or no insulin on its own⁵. The distinction between the two types has historically been based on the age of onset, the degree of loss of β cell function, the degree of insulin resistance, the presence of autoantibodies associated with diabetes and the need for insulin treatment for survival⁶.

Epidemiology and costs

The treatment of patients with diabetes mellitus (DM) presents many challenges to caregivers and represents a large proportion of health spending worldwide⁷. In Brazil, between 2006 and 2016, there was a 60 % increase in the diagnosis of diabetes and its cost is expected to double by 2030, reaching US \$ 97 billion, in more conservative numbers, or up to US \$ 123 billion, in the worst scenario⁸.

DM is one of the most serious health problems today, both in terms of the number of people affected, disabilities, premature mortality, and

costs involved in its control and treatment of its complications⁹.

According to the WHO, it is estimated that there are 415 million adults living with diabetes in 2015 and this number increases to 642 million in 2040¹⁰, where in Brazil it affects 6.9% of the population, representing more than 13 million people, according to data from the Brazilian Diabetes Society¹¹. Among chronic non-communicable diseases, type 2 diabetes mellitus is considered a problem, since it represents about 90 % of all cases of the disease¹².

In addition, The International Diabetes Federation (IDF)¹³ says about 1.1 million children and adolescents between 14 and 19 years of age has DM1. This disease is responsible for about 5 % of all deaths worldwide, where 80 % of diabetics are in low or medium development countries, according to the World Health Organization.

As a way to increase awareness about the disease and the care related to its prevention and treatment, the blue circle (Figure 1), to the agreement with IDF¹³, has become the official symbol of diabetes.

Diabetes and hypertension

Food is one of the factors that encompass the control and prevention of

systemic arterial hypertension (SAH) and diabetes mellitus (DM)¹⁴, where the costs in the Brazilian Health System of hypertension and diabetes, also associated with obesity, reached R \$ 3.45 billion in 2018, where 59 % were related to treatment of hypertension, 30 % to diabetes and 11 % to obesity¹⁵. In addition, arterial hypertension and diabetes mellitus represent two of the main risk factors for the occurrence of cardiovascular diseases¹⁶.

Diabetes and pregnancy: risks

Gestational diabetes mellitus (GDM) is a pathology of carbohydrate intolerance of varying degree and severity, diagnosed for the first time in pregnancy. It is a common pathology, with several means of prevention and treatment¹⁷. The prevalence of GDM varies in different parts of

the world, according to different racial and ethnic groups¹⁸, being considered a Public Health problem. If not controlled it can cause complications for the mother and the fetus, where the fetal im-

pairment is directly linked to the maternal hyperglycemic state, interfering with fetal homeostasis and causing macrosomia, fetal prematurity or even malformations¹⁹.

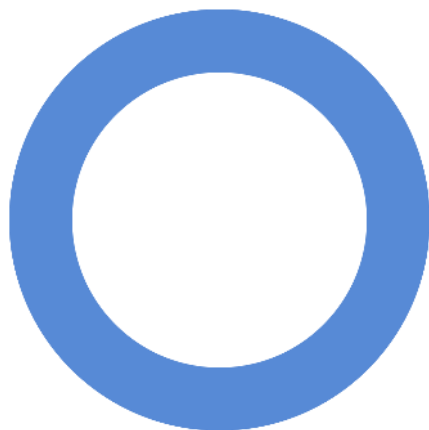


Figure 1. Universal symbol of diabetes **Source:** Author

Complications

The complications of GDM are many, both for the mother and baby, being them for neonatal hypoglycemia and newborns large for gestational age, in addition to prematurity, jaundice requiring phototherapy, respiratory distress syndrome, sepsis, greater risk of developing obesity, systemic arterial hypertension, metabolic syndrome and diabetes Mellitus in adulthood; macrosomy, hyperbilirubinemia, caudal regression syndrome, polycythemia, hypocalcemia, intrauterine growth retardation, tocotrauma and shoulder distortion²⁰.

Gestational process

Pregnancy is a biological process that has social, economic, emotional and psychological repercussions, so it is important to know the socio-economic conditions of pregnant women with diabetes for a better diagnosis and effective treatment²¹. Due to the importance of the topic, you should study the characteristics of managers with diabetes, establishing a wide discussion about the use of oral hypoglycemic agents in the life stage and their possible teratogenic potential²².

As the insulin needs increase and more than half of pregnant women with DM1 present excessive weight gain²³, where the predisposition for this pathological condition involves characteristics such as age equal to or greater than 35 years, overweight or obesity, central deposition of pre-gestational body fat, gain excessive in the current pregnancy, hypertension or pre-eclampsia in the current pregnancy, family history of first-degree diabetes, obstetric history of macrosomia, fetal or neonatal death, malformations, polycystic ovary syndrome and maternal height less than 1.5 meters²⁴.

The management of diabetes must be carried out within a hierarchical health system, being the base or the primary level. Women with gestational diabetes mellitus should be referred to Secondary Care Centers. As carriers of the pre-pregnancy diagnosis, they should be attended to in tertiary care centers by a multidisciplinary team²⁵.

For those monitored in Secondary or Tertiary Care Centers or follow-up it will be through Primary Care Teams, the greater control and adherence to the procedures recommended at the most complex levels²⁶.

Conclusions

Understanding the main resources related to diabetes mellitus provides an effective therapeutic approach against the main clinical manifestations of the disease, in addition to promoting disease prevention in therapeutic situations such as pregnancy.

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